



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2026 – 04:02 PM UTC

PDB ID : 1NJF / pdb_00001njf
Title : Nucleotide bound form of an isolated E. coli clamp loader gamma subunit
Authors : Podobnik, M.; Weitze, T.F.; O'Donnell, M.; Kuriyan, J.
Deposited on : 2002-12-30
Resolution : 2.30 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

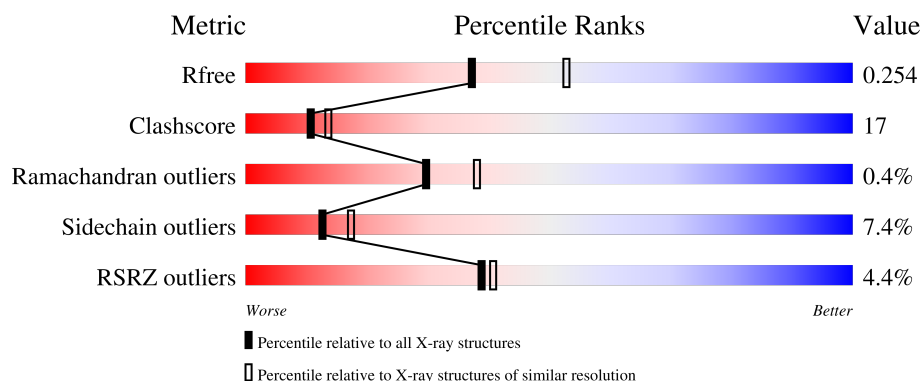
1 Overall quality at a glance

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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (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 $\leq 5\%$. 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	250	0% 71% 18% 6% • •
1	B	250	4% 68% 22% 5% •
1	C	250	8% 64% 28% • •
1	D	250	4% 65% 24% 6% •

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 7862 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 DNA polymerase III subunit gamma.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	239	Total	C	N	O	S	0	0	0
			1853	1159	340	347	7			
1	B	239	Total	C	N	O	S	0	0	0
			1853	1159	340	347	7			
1	C	239	Total	C	N	O	S	0	0	0
			1853	1159	340	347	7			
1	D	239	Total	C	N	O	S	0	0	0
			1853	1159	340	347	7			

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	GLY	-	cloning artifact	UNP P06710
A	-5	ALA	-	cloning artifact	UNP P06710
A	-4	HIS	-	cloning artifact	UNP P06710
A	-3	MET	-	cloning artifact	UNP P06710
A	-2	GLY	-	cloning artifact	UNP P06710
A	-1	GLY	-	cloning artifact	UNP P06710
A	0	SER	-	cloning artifact	UNP P06710
B	-6	GLY	-	cloning artifact	UNP P06710
B	-5	ALA	-	cloning artifact	UNP P06710
B	-4	HIS	-	cloning artifact	UNP P06710
B	-3	MET	-	cloning artifact	UNP P06710
B	-2	GLY	-	cloning artifact	UNP P06710
B	-1	GLY	-	cloning artifact	UNP P06710
B	0	SER	-	cloning artifact	UNP P06710
C	-6	GLY	-	cloning artifact	UNP P06710
C	-5	ALA	-	cloning artifact	UNP P06710
C	-4	HIS	-	cloning artifact	UNP P06710
C	-3	MET	-	cloning artifact	UNP P06710
C	-2	GLY	-	cloning artifact	UNP P06710
C	-1	GLY	-	cloning artifact	UNP P06710
C	0	SER	-	cloning artifact	UNP P06710

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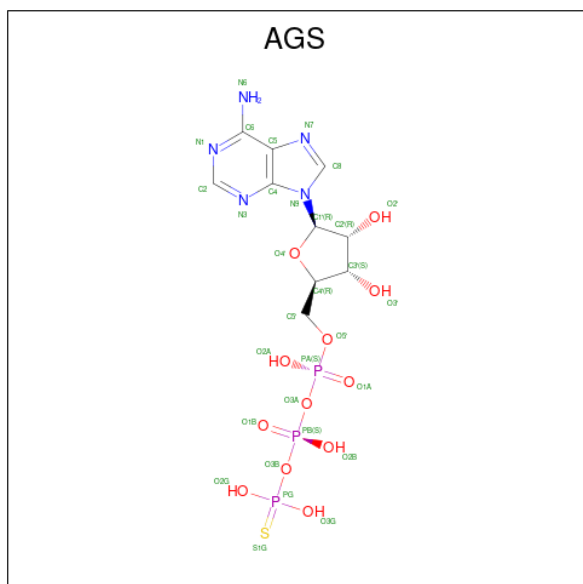
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Chain	Residue	Modelled	Actual	Comment	Reference
D	-6	GLY	-	cloning artifact	UNP P06710
D	-5	ALA	-	cloning artifact	UNP P06710
D	-4	HIS	-	cloning artifact	UNP P06710
D	-3	MET	-	cloning artifact	UNP P06710
D	-2	GLY	-	cloning artifact	UNP P06710
D	-1	GLY	-	cloning artifact	UNP P06710
D	0	SER	-	cloning artifact	UNP P06710

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Zn 1 1	0	0
2	B	1	Total Zn 1 1	0	0
2	C	1	Total Zn 1 1	0	0
2	D	1	Total Zn 1 1	0	0

- Molecule 3 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (CCD ID: AGS) (formula: C₁₀H₁₆N₅O₁₂P₃S).



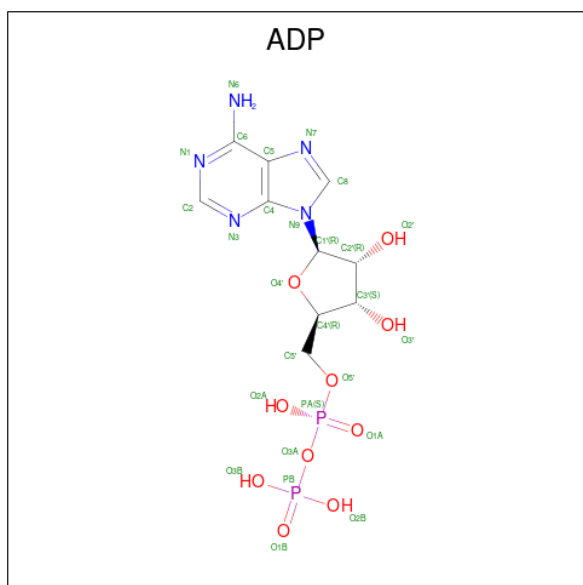
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O P S 31 10 5 12 3 1	0	0

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	B	1	Total	C	N	O	P	S	0	0
			31	10	5	12	3	1		
3	D	1	Total	C	N	O	P	S	0	0
			31	10	5	12	3	1		

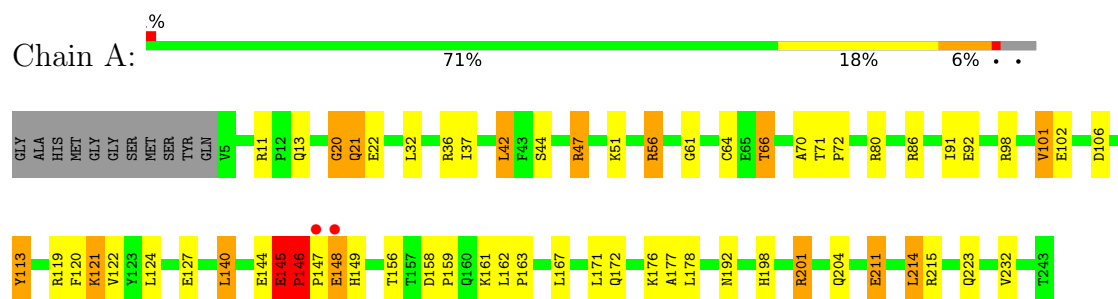
- Molecule 4 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



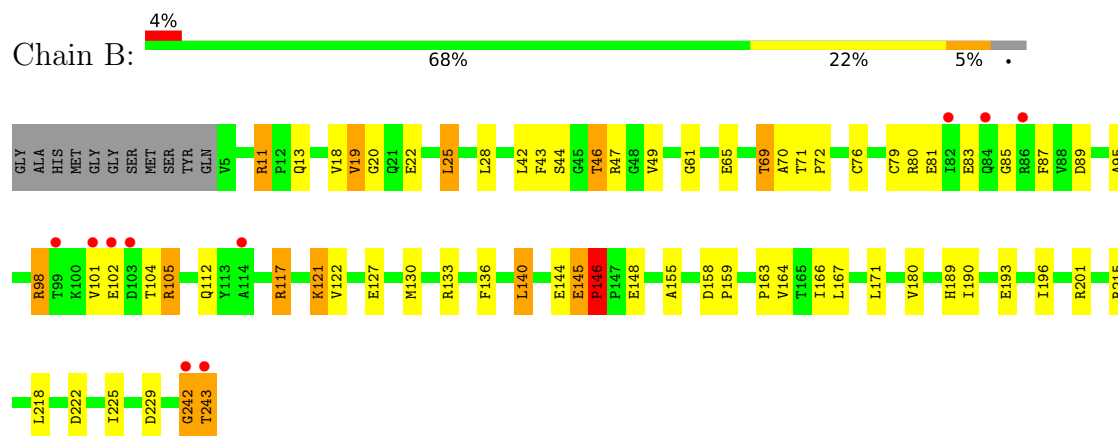
3 Residue-property plots [i](#)

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.

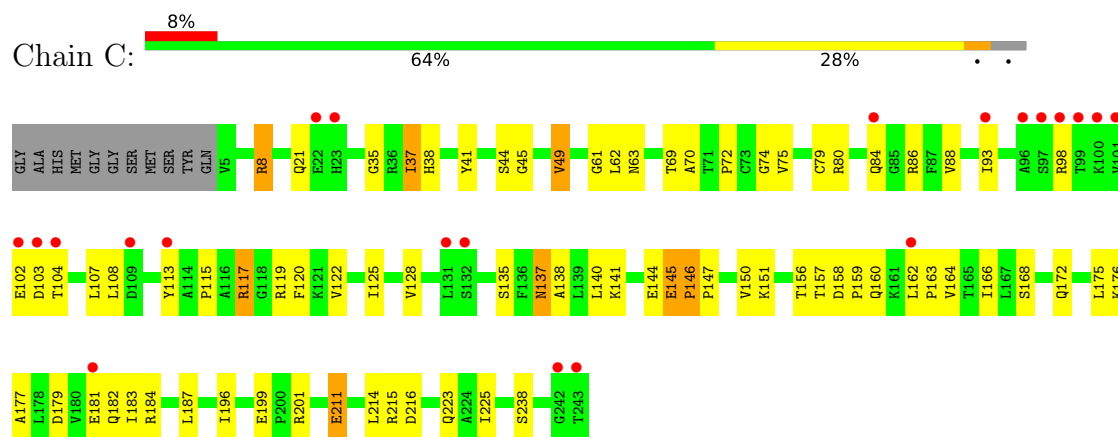
- Molecule 1: DNA polymerase III subunit gamma



- Molecule 1: DNA polymerase III subunit gamma

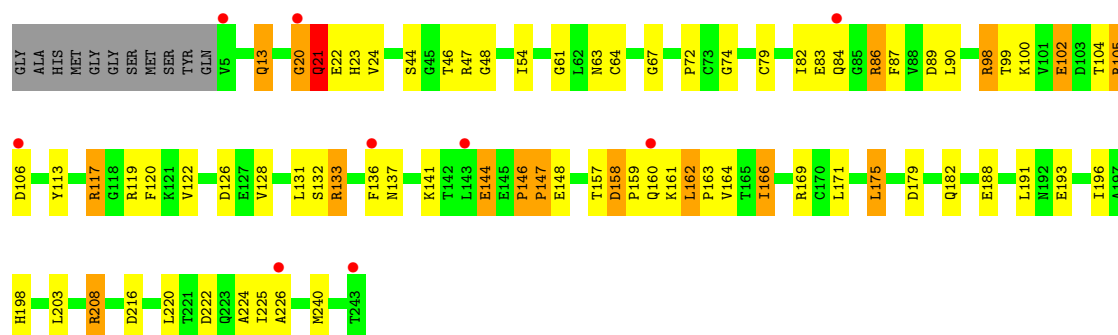


- Molecule 1: DNA polymerase III subunit gamma



● Molecule 1: DNA polymerase III subunit gamma

Chain D: 4% 65% 24% 6%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	71.71Å 113.35Å 121.36Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	82.84 – 2.30 82.83 – 2.30	Depositor EDS
% Data completeness (in resolution range)	95.7 (82.84-2.30) 95.6 (82.83-2.30)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.58 (at 2.29Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.210 , 0.248 0.216 , 0.254	Depositor DCC
R_{free} test set	8099 reflections (9.73%)	wwPDB-VP
Wilson B-factor (Å ²)	27.9	Xtriage
Anisotropy	0.336	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 44.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	7862	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 25.63 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.0586e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: AGS, ZN, ADP

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	0.45	0/1883	0.98	11/2550 (0.4%)
1	B	0.44	0/1883	1.04	15/2550 (0.6%)
1	C	0.43	0/1883	0.97	9/2550 (0.4%)
1	D	0.42	0/1883	0.97	11/2550 (0.4%)
All	All	0.44	0/7532	0.99	46/10200 (0.5%)

There are no bond length outliers.

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	146	PRO	N-CA-C	9.19	121.92	110.70
1	B	70	ALA	N-CA-C	-9.10	102.17	113.28
1	B	146	PRO	N-CA-C	9.03	121.72	110.70
1	B	145	GLU	CA-C-N	8.29	128.92	120.38
1	B	145	GLU	C-N-CA	8.29	128.92	120.38
1	B	11	ARG	CA-C-N	8.00	129.84	119.84
1	B	11	ARG	C-N-CA	8.00	129.84	119.84
1	A	146	PRO	N-CA-C	7.66	120.04	110.70
1	D	148	GLU	N-CA-C	7.42	119.01	111.07
1	A	145	GLU	CA-C-N	7.29	127.89	120.38
1	A	145	GLU	C-N-CA	7.29	127.89	120.38
1	C	177	ALA	N-CA-C	-7.24	100.29	110.50
1	A	20	GLY	N-CA-C	7.05	129.88	113.18
1	B	158	ASP	CA-C-N	6.97	126.79	119.05
1	B	158	ASP	C-N-CA	6.97	126.79	119.05
1	D	158	ASP	CA-C-N	6.97	126.79	119.05
1	D	158	ASP	C-N-CA	6.97	126.79	119.05
1	A	171	LEU	N-CA-C	-6.74	96.68	108.20
1	B	148	GLU	N-CA-C	6.65	118.33	111.14
1	C	145	GLU	CA-C-N	6.63	127.21	120.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	145	GLU	C-N-CA	6.63	127.21	120.38
1	B	121	LYS	N-CA-C	-6.55	98.06	108.73
1	C	199	GLU	CA-C-N	6.46	125.95	119.24
1	C	199	GLU	C-N-CA	6.46	125.95	119.24
1	A	21	GLN	N-CA-C	-6.33	102.84	110.44
1	A	47	ARG	N-CA-C	6.21	119.27	109.96
1	A	177	ALA	N-CA-C	-6.21	101.75	110.50
1	D	20	GLY	N-CA-C	6.20	127.87	113.18
1	B	180	VAL	N-CA-C	5.94	116.59	110.36
1	D	98	ARG	N-CA-C	-5.77	104.99	111.28
1	A	113	TYR	N-CA-C	5.74	119.38	112.38
1	A	122	VAL	N-CA-C	5.71	116.17	108.17
1	B	122	VAL	N-CA-C	5.61	115.97	108.11
1	D	21	GLN	N-CA-C	-5.46	103.89	110.44
1	B	171	LEU	N-CA-C	-5.35	100.37	108.67
1	B	242	GLY	N-CA-C	5.33	123.69	112.17
1	D	122	VAL	N-CA-C	5.24	115.51	108.17
1	A	37	ILE	N-CA-C	5.22	115.48	108.17
1	D	162	LEU	CA-C-N	5.22	124.98	119.76
1	D	162	LEU	C-N-CA	5.22	124.98	119.76
1	B	20	GLY	N-CA-C	5.21	125.53	113.18
1	C	70	ALA	N-CA-C	-5.14	107.01	113.28
1	D	171	LEU	N-CA-C	-5.12	100.17	108.41
1	C	69	THR	N-CA-C	5.11	116.84	109.07
1	C	122	VAL	N-CA-C	5.11	115.67	108.36
1	D	146	PRO	N-CA-C	5.07	116.89	110.70

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	1853	0	1870	64	0
1	B	1853	0	1870	60	0
1	C	1853	0	1870	70	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	1853	0	1870	83	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	31	0	12	3	0
3	B	31	0	12	5	0
3	D	31	0	12	5	0
4	C	27	0	12	3	0
5	A	115	0	0	3	0
5	B	81	0	0	2	0
5	C	67	0	0	3	0
5	D	63	0	0	4	0
All	All	7862	0	7528	252	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 17.

All (252) 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:117:ARG:HB2	1:C:117:ARG:HH11	1.13	1.05
1:D:133:ARG:HH21	1:D:137:ASN:HD21	1.10	0.96
1:A:11:ARG:HH21	1:A:56:ARG:HH21	1.07	0.92
1:D:169:ARG:HG3	1:D:169:ARG:HH11	1.36	0.91
1:A:101:VAL:HG11	1:B:215:ARG:NH2	1.86	0.90
1:D:47:ARG:HG3	3:D:302:AGS:O2G	1.73	0.89
1:D:63:ASN:HD21	1:D:120:PHE:H	1.21	0.88
1:D:158:ASP:OD2	1:D:161:LYS:HD3	1.75	0.86
1:D:21:GLN:HG2	1:D:175:LEU:HD13	1.58	0.85
1:C:162:LEU:HB3	1:C:166:ILE:HD11	1.59	0.84
1:A:11:ARG:HH21	1:A:56:ARG:NH2	1.75	0.84
1:C:196:ILE:HD13	1:C:225:ILE:HD13	1.61	0.83
1:D:102:GLU:HG3	1:D:105:ARG:NH2	1.96	0.80
1:A:148:GLU:CD	1:A:149:HIS:H	1.90	0.79
1:D:179:ASP:HB2	1:D:182:GLN:HG3	1.62	0.79
1:A:223:GLN:HE21	1:B:105:ARG:HH22	1.29	0.78
1:C:61:GLY:HA2	1:C:72:PRO:HG3	1.66	0.78
1:C:88:VAL:HG23	5:C:406:HOH:O	1.82	0.77
1:D:61:GLY:HA2	1:D:72:PRO:HG3	1.67	0.77
1:C:117:ARG:HH11	1:C:117:ARG:CB	1.94	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:105:ARG:HH11	1:D:105:ARG:HG2	1.50	0.76
1:A:61:GLY:HA2	1:A:72:PRO:HG3	1.67	0.76
1:D:133:ARG:HH21	1:D:137:ASN:ND2	1.83	0.75
5:C:466:HOH:O	1:D:161:LYS:HE2	1.87	0.75
1:D:137:ASN:O	1:D:141:LYS:HG2	1.86	0.74
1:A:144:GLU:C	1:A:146:PRO:HD3	2.13	0.74
1:B:117:ARG:HH11	1:B:117:ARG:HG3	1.53	0.74
1:B:46:THR:HG23	1:B:49:VAL:HG11	1.70	0.73
1:A:223:GLN:NE2	1:B:105:ARG:HH22	1.87	0.72
1:C:128:VAL:HG13	1:C:162:LEU:HD21	1.72	0.72
1:D:131:LEU:HB2	1:D:136:PHE:HD1	1.54	0.72
1:C:117:ARG:HB2	1:C:117:ARG:NH1	1.98	0.72
1:B:42:LEU:HD23	1:B:43:PHE:N	2.06	0.71
1:C:104:THR:O	1:C:108:LEU:HD23	1.91	0.71
1:C:163:PRO:O	1:C:166:ILE:HG12	1.89	0.70
1:C:8:ARG:HD2	1:C:8:ARG:O	1.91	0.70
1:B:87:PHE:CE2	1:B:89:ASP:HB2	2.27	0.70
1:C:61:GLY:CA	1:C:72:PRO:HG3	2.22	0.69
1:A:66:THR:HG21	5:A:579:HOH:O	1.92	0.69
1:A:21:GLN:HE22	1:A:176:LYS:H	1.38	0.69
1:C:63:ASN:HD21	1:C:120:PHE:H	1.40	0.69
1:A:113:TYR:HD2	1:A:147:PRO:HB3	1.56	0.68
1:D:131:LEU:HB2	1:D:136:PHE:CD1	2.28	0.68
1:C:144:GLU:C	1:C:146:PRO:HD3	2.19	0.68
1:B:117:ARG:HH11	1:B:117:ARG:CG	2.07	0.67
1:A:113:TYR:CD2	1:A:147:PRO:HB3	2.30	0.67
1:A:223:GLN:HE21	1:B:105:ARG:NH2	1.93	0.67
1:C:215:ARG:HH22	1:D:98:ARG:HB3	1.58	0.66
1:A:223:GLN:NE2	1:B:105:ARG:HH12	1.93	0.66
1:A:106:ASP:HB3	1:C:164:VAL:HG11	1.78	0.66
1:A:98:ARG:NH2	3:B:302:AGS:O3G	2.28	0.65
1:A:158:ASP:CG	1:A:161:LYS:HG2	2.22	0.65
1:D:133:ARG:NH2	1:D:137:ASN:HD21	1.90	0.65
1:B:140:LEU:HG	1:B:166:ILE:HD13	1.79	0.65
1:C:215:ARG:NH2	1:D:98:ARG:O	2.31	0.64
1:D:86:ARG:HH11	1:D:86:ARG:CG	2.10	0.64
1:A:223:GLN:HE22	1:B:105:ARG:HH12	1.45	0.64
1:D:196:ILE:HD13	1:D:225:ILE:HD13	1.79	0.63
1:A:20:GLY:HA2	1:A:22:GLU:OE2	1.97	0.63
1:D:169:ARG:HG3	1:D:169:ARG:NH1	2.06	0.63
1:A:101:VAL:HG11	1:B:215:ARG:CZ	2.29	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:148:GLU:OE1	1:A:148:GLU:HA	1.97	0.63
1:C:163:PRO:HD2	1:C:166:ILE:CD1	2.29	0.63
1:A:56:ARG:HG3	1:A:56:ARG:HH11	1.64	0.62
1:D:102:GLU:CG	1:D:105:ARG:NH2	2.62	0.62
1:D:166:ILE:HD13	1:D:166:ILE:O	1.99	0.62
1:A:11:ARG:NH2	1:A:56:ARG:NH2	2.46	0.61
1:C:44:SER:CB	1:C:159:PRO:HG3	2.31	0.61
1:B:79:CYS:O	1:B:83:GLU:HG3	2.02	0.60
1:C:147:PRO:HB2	1:C:150:VAL:HB	1.82	0.60
1:D:44:SER:HB2	1:D:159:PRO:HG3	1.82	0.60
1:C:44:SER:HB2	1:C:159:PRO:HG3	1.84	0.59
1:D:63:ASN:ND2	1:D:119:ARG:H	2.01	0.59
1:D:87:PHE:CE2	1:D:89:ASP:HB2	2.38	0.59
1:D:100:LYS:O	1:D:104:THR:HG23	2.02	0.59
1:C:98:ARG:CZ	3:D:302:AGS:O3G	2.51	0.59
1:D:84:GLN:CD	1:D:86:ARG:HD3	2.28	0.59
1:C:181:GLU:CD	1:C:184:ARG:HH12	2.11	0.58
1:D:128:VAL:O	1:D:136:PHE:HE1	1.85	0.58
1:B:46:THR:HG22	5:B:410:HOH:O	2.03	0.58
1:B:215:ARG:HD2	1:B:215:ARG:O	2.04	0.58
1:C:8:ARG:HD2	1:C:8:ARG:C	2.28	0.58
1:D:44:SER:CB	1:D:159:PRO:HG3	2.34	0.58
1:D:24:VAL:HG21	1:D:175:LEU:HD22	1.86	0.57
1:D:144:GLU:C	1:D:146:PRO:HD3	2.28	0.57
1:C:113:TYR:O	1:C:115:PRO:HD3	2.04	0.57
1:A:61:GLY:CA	1:A:72:PRO:HG3	2.34	0.57
1:A:140:LEU:HD22	1:A:144:GLU:HG3	1.87	0.56
1:A:148:GLU:CD	1:A:149:HIS:N	2.62	0.56
1:A:98:ARG:CZ	3:B:302:AGS:O3G	2.54	0.56
1:D:179:ASP:HB2	1:D:182:GLN:CG	2.32	0.56
1:B:47:ARG:HA	3:B:302:AGS:S1G	2.46	0.56
1:A:80:ARG:HH11	1:A:80:ARG:HG2	1.71	0.56
1:B:98:ARG:HA	1:B:101:VAL:CG2	2.35	0.56
1:D:21:GLN:CG	1:D:175:LEU:HD13	2.32	0.56
1:B:44:SER:HB2	1:B:159:PRO:HG3	1.88	0.55
1:A:113:TYR:HE2	1:A:147:PRO:HG3	1.71	0.55
1:B:18:VAL:HB	1:B:25:LEU:HD21	1.88	0.55
1:C:103:ASP:O	1:C:107:LEU:HB2	2.06	0.55
1:A:56:ARG:HG3	1:A:56:ARG:NH1	2.21	0.55
1:C:215:ARG:HD2	4:C:302:ADP:H5'1	1.87	0.55
1:D:74:GLY:HA2	1:D:79:CYS:HB3	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:47:ARG:NH2	1:B:95:ALA:O	2.40	0.55
1:B:215:ARG:HD2	1:B:215:ARG:C	2.32	0.55
1:A:102:GLU:OE2	1:C:168:SER:HB2	2.07	0.54
1:C:74:GLY:HA2	1:C:79:CYS:HB3	1.89	0.54
1:D:61:GLY:CA	1:D:72:PRO:HG3	2.36	0.54
1:D:86:ARG:CG	1:D:86:ARG:O	2.56	0.54
1:B:11:ARG:O	1:B:13:GLN:NE2	2.34	0.54
1:B:117:ARG:CG	1:B:117:ARG:NH1	2.67	0.54
1:C:93:ILE:CG2	1:C:104:THR:HG23	2.38	0.54
1:B:69:THR:HB	1:B:71:THR:H	1.73	0.54
1:D:163:PRO:O	1:D:166:ILE:HG22	2.08	0.54
1:B:144:GLU:C	1:B:146:PRO:HD3	2.34	0.53
1:A:159:PRO:O	1:A:162:LEU:HB2	2.08	0.53
1:B:166:ILE:CG2	1:B:167:LEU:N	2.71	0.53
1:C:216:ASP:OD2	1:D:132:SER:HB2	2.08	0.53
1:D:104:THR:HG21	5:D:440:HOH:O	2.08	0.52
1:B:22:GLU:CD	1:B:22:GLU:H	2.16	0.52
1:C:98:ARG:NE	1:D:126:ASP:OD1	2.42	0.52
1:C:119:ARG:HG3	1:C:120:PHE:CD2	2.44	0.52
1:C:163:PRO:HD2	1:C:166:ILE:HD13	1.90	0.52
1:B:196:ILE:HD13	1:B:225:ILE:HD13	1.92	0.52
1:A:145:GLU:N	1:A:146:PRO:HD3	2.25	0.51
1:C:93:ILE:HG21	1:C:104:THR:HG23	1.92	0.51
1:C:163:PRO:HD2	1:C:166:ILE:HD11	1.93	0.51
1:A:201:ARG:HA	1:A:204:GLN:HE21	1.76	0.51
1:B:61:GLY:HA2	1:B:72:PRO:HG3	1.91	0.51
1:D:105:ARG:HG2	1:D:105:ARG:NH1	2.17	0.50
1:C:215:ARG:NH2	1:D:98:ARG:HB3	2.26	0.50
1:D:137:ASN:HB3	1:D:141:LYS:HE2	1.93	0.50
1:A:158:ASP:OD2	1:A:161:LYS:HG2	2.11	0.50
1:B:98:ARG:HA	1:B:101:VAL:HG23	1.94	0.50
1:B:76:CYS:O	1:B:80:ARG:HD2	2.12	0.50
1:A:91:ILE:HD11	1:A:121:LYS:HE3	1.94	0.50
1:A:215:ARG:NH2	3:A:402:AGS:O2G	2.45	0.50
1:D:86:ARG:CG	1:D:86:ARG:NH1	2.72	0.49
1:C:211:GLU:HG2	1:D:133:ARG:HG3	1.95	0.49
1:C:215:ARG:CD	4:C:302:ADP:H5'1	2.43	0.49
1:C:103:ASP:O	1:C:107:LEU:HD12	2.12	0.48
1:D:82:ILE:HG23	1:D:90:LEU:HD22	1.93	0.48
1:A:51:LYS:NZ	3:A:402:AGS:S1G	2.80	0.48
1:A:198:HIS:HD2	5:A:532:HOH:O	1.97	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:37:ILE:O	1:C:37:ILE:HG12	2.14	0.48
1:D:86:ARG:HH11	1:D:86:ARG:HG2	1.78	0.48
1:A:64:CYS:SG	1:A:66:THR:HB	2.53	0.48
1:B:42:LEU:HD23	1:B:42:LEU:C	2.38	0.48
1:C:63:ASN:HD21	1:C:120:PHE:N	2.10	0.48
1:A:198:HIS:HA	1:A:232:VAL:O	2.14	0.48
1:C:179:ASP:OD1	1:C:182:GLN:HG3	2.13	0.48
1:A:44:SER:HA	1:A:156:THR:O	2.14	0.48
1:B:229:ASP:HA	1:C:172:GLN:O	2.13	0.48
1:D:47:ARG:HA	3:D:302:AGS:S1G	2.54	0.48
1:D:48:GLY:H	3:D:302:AGS:PG	2.37	0.48
1:A:106:ASP:HB3	1:C:164:VAL:CG1	2.44	0.48
1:C:44:SER:HA	1:C:156:THR:O	2.14	0.48
1:D:63:ASN:HD21	1:D:120:PHE:N	2.01	0.48
1:C:21:GLN:NE2	1:C:49:VAL:HG13	2.29	0.47
1:D:54:ILE:HD12	1:D:175:LEU:HD11	1.96	0.47
1:D:166:ILE:HD13	1:D:166:ILE:C	2.39	0.47
1:A:158:ASP:CG	1:A:161:LYS:CG	2.87	0.47
1:B:46:THR:HG23	1:B:49:VAL:CG1	2.43	0.47
1:D:144:GLU:O	1:D:146:PRO:HD3	2.14	0.47
1:C:49:VAL:CG1	1:C:175:LEU:HB3	2.44	0.47
1:C:137:ASN:ND2	1:C:140:LEU:HD23	2.29	0.47
1:C:223:GLN:NE2	1:D:105:ARG:HD2	2.29	0.47
1:A:127:GLU:OE1	1:A:127:GLU:HA	2.16	0.47
1:A:211:GLU:HG2	1:B:133:ARG:HD3	1.98	0.46
1:D:113:TYR:CE2	1:D:147:PRO:HG3	2.50	0.46
1:B:242:GLY:C	1:B:243:THR:CG2	2.89	0.46
1:D:63:ASN:O	1:D:64:CYS:C	2.59	0.46
1:D:84:GLN:OE1	1:D:86:ARG:HD3	2.16	0.46
1:B:81:GLU:O	1:B:85:GLY:N	2.49	0.46
1:D:136:PHE:HZ	1:D:162:LEU:CD2	2.28	0.45
1:B:127:GLU:HB3	1:B:130:MET:HE2	1.98	0.45
1:B:242:GLY:O	1:B:243:THR:HG23	2.17	0.45
1:A:32:LEU:HD13	1:A:70:ALA:HA	1.97	0.45
1:B:71:THR:O	1:B:72:PRO:C	2.60	0.45
1:C:120:PHE:CE1	1:C:151:LYS:HE2	2.51	0.45
1:C:137:ASN:O	1:C:141:LYS:HG3	2.15	0.45
1:B:112:GLN:O	1:B:121:LYS:HG2	2.16	0.45
1:C:102:GLU:O	1:C:103:ASP:C	2.60	0.45
1:D:105:ARG:NH1	1:D:106:ASP:OD2	2.50	0.45
1:C:38:HIS:HB2	1:C:41:TYR:CZ	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:63:ASN:ND2	1:D:119:ARG:N	2.64	0.45
1:B:145:GLU:N	1:B:146:PRO:HD3	2.32	0.44
1:C:84:GLN:HE21	1:C:86:ARG:HE	1.65	0.44
1:A:167:LEU:HD21	1:A:172:GLN:OE1	2.17	0.44
1:A:223:GLN:HB2	1:B:105:ARG:NH2	2.32	0.44
1:B:44:SER:HB2	1:B:159:PRO:CG	2.47	0.44
1:D:22:GLU:H	1:D:22:GLU:CD	2.25	0.44
1:A:140:LEU:HD22	1:A:144:GLU:CG	2.47	0.44
5:A:551:HOH:O	1:D:208:ARG:HG2	2.17	0.44
1:D:163:PRO:HD2	1:D:166:ILE:CG2	2.48	0.44
1:A:140:LEU:O	1:A:144:GLU:HG3	2.18	0.44
1:D:216:ASP:O	1:D:220:LEU:HG	2.17	0.44
1:A:119:ARG:HG3	1:A:120:PHE:CD2	2.52	0.44
1:C:214:LEU:HD23	4:C:302:ADP:C4	2.53	0.44
1:A:223:GLN:NE2	1:B:105:ARG:NH1	2.63	0.43
1:D:169:ARG:NH1	1:D:169:ARG:CG	2.75	0.43
1:C:196:ILE:HD13	1:C:225:ILE:CD1	2.40	0.43
1:D:117:ARG:HG3	1:D:117:ARG:HH11	1.83	0.43
1:B:164:VAL:HG23	5:B:472:HOH:O	2.18	0.43
1:B:43:PHE:O	1:B:155:ALA:HA	2.19	0.43
1:C:158:ASP:OD1	1:D:161:LYS:NZ	2.48	0.43
1:D:191:LEU:HD12	1:D:203:LEU:HD21	1.99	0.43
1:B:136:PHE:HZ	1:B:163:PRO:HD2	1.83	0.43
1:C:62:LEU:HD13	1:C:151:LYS:HD2	2.01	0.43
1:C:145:GLU:N	1:C:146:PRO:HD3	2.33	0.42
1:D:104:THR:HG22	5:D:430:HOH:O	2.19	0.42
1:D:67:GLY:HA2	1:D:119:ARG:NH2	2.34	0.42
1:B:61:GLY:CA	1:B:72:PRO:HG3	2.49	0.42
1:B:65:GLU:CD	1:B:76:CYS:HB2	2.44	0.42
1:C:45:GLY:O	1:C:157:THR:HA	2.19	0.42
1:D:133:ARG:NH2	5:D:458:HOH:O	2.52	0.42
1:A:101:VAL:CG1	1:B:215:ARG:NH2	2.71	0.42
1:C:137:ASN:HD22	1:C:137:ASN:HA	1.63	0.42
1:D:160:GLN:OE1	1:D:160:GLN:N	2.44	0.42
1:C:117:ARG:HG3	5:C:457:HOH:O	2.19	0.42
1:A:223:GLN:NE2	1:B:105:ARG:NH2	2.59	0.42
1:B:44:SER:CB	1:B:159:PRO:HG3	2.50	0.42
1:A:11:ARG:HH12	3:A:402:AGS:PA	2.42	0.42
1:A:192:ASN:OD1	1:A:198:HIS:HE1	2.03	0.42
1:B:101:VAL:O	1:B:104:THR:HB	2.19	0.42
1:B:189:HIS:O	1:B:193:GLU:HG2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:44:SER:HB2	1:C:159:PRO:CG	2.50	0.42
1:C:93:ILE:O	1:C:125:ILE:HA	2.20	0.42
1:A:92:GLU:HG2	1:A:124:LEU:HD12	2.02	0.41
1:D:86:ARG:NH1	1:D:86:ARG:HG3	2.35	0.41
1:D:23:HIS:CE1	1:D:24:VAL:HG23	2.55	0.41
1:C:108:LEU:HD13	1:C:108:LEU:HA	1.90	0.41
1:C:162:LEU:HB3	1:C:166:ILE:CD1	2.40	0.41
1:A:148:GLU:O	1:A:149:HIS:HB2	2.21	0.41
1:C:183:ILE:O	1:C:187:LEU:HG	2.21	0.41
1:B:105:ARG:C	1:B:105:ARG:HD2	2.45	0.41
1:D:20:GLY:HA2	1:D:22:GLU:OE1	2.21	0.41
1:D:83:GLU:HG3	5:D:436:HOH:O	2.21	0.41
1:A:178:LEU:HD13	1:A:214:LEU:HD22	2.03	0.41
1:B:190:ILE:HD12	1:B:218:LEU:HD21	2.03	0.41
1:C:98:ARG:NH2	3:D:302:AGS:O3G	2.54	0.41
1:D:224:ALA:HB2	1:D:240:MET:HE1	2.03	0.41
1:A:113:TYR:CE2	1:A:147:PRO:CG	3.03	0.40
1:B:215:ARG:HG2	3:B:302:AGS:H5'1	2.02	0.40
1:D:13:GLN:OE1	1:D:13:GLN:HA	2.21	0.40
1:D:86:ARG:O	1:D:86:ARG:HG3	2.20	0.40
1:A:42:LEU:HD21	1:A:156:THR:HG22	2.04	0.40
1:B:19:VAL:HG13	3:B:302:AGS:N1	2.35	0.40
1:A:71:THR:O	1:A:72:PRO:C	2.63	0.40
1:D:162:LEU:HA	1:D:163:PRO:HD3	1.80	0.40
1:D:163:PRO:HD2	1:D:166:ILE:HG22	2.03	0.40
1:D:198:HIS:CD2	1:D:203:LEU:HD11	2.56	0.40
1:C:135:SER:O	1:C:138:ALA:HB3	2.22	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	237/250 (95%)	229 (97%)	7 (3%)	1 (0%)	30	38
1	B	237/250 (95%)	231 (98%)	5 (2%)	1 (0%)	30	38
1	C	237/250 (95%)	222 (94%)	14 (6%)	1 (0%)	30	38
1	D	237/250 (95%)	225 (95%)	11 (5%)	1 (0%)	30	38
All	All	948/1000 (95%)	907 (96%)	37 (4%)	4 (0%)	30	38

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	146	PRO
1	B	146	PRO
1	D	226	ALA
1	C	35	GLY

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	199/206 (97%)	184 (92%)	15 (8%)	12	17
1	B	199/206 (97%)	186 (94%)	13 (6%)	15	22
1	C	199/206 (97%)	187 (94%)	12 (6%)	17	25
1	D	199/206 (97%)	180 (90%)	19 (10%)	8	10
All	All	796/824 (97%)	737 (93%)	59 (7%)	13	17

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	GLN
1	A	36	ARG
1	A	42	LEU
1	A	56	ARG
1	A	66	THR
1	A	86	ARG
1	A	101	VAL

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Mol	Chain	Res	Type
1	A	121	LYS
1	A	140	LEU
1	A	145	GLU
1	A	148	GLU
1	A	163	PRO
1	A	201	ARG
1	A	211	GLU
1	A	214	LEU
1	B	19	VAL
1	B	25	LEU
1	B	28	LEU
1	B	46	THR
1	B	69	THR
1	B	98	ARG
1	B	102	GLU
1	B	105	ARG
1	B	117	ARG
1	B	140	LEU
1	B	201	ARG
1	B	222	ASP
1	B	243	THR
1	C	8	ARG
1	C	37	ILE
1	C	49	VAL
1	C	75	VAL
1	C	80	ARG
1	C	117	ARG
1	C	137	ASN
1	C	160	GLN
1	C	176	LYS
1	C	201	ARG
1	C	211	GLU
1	C	238	SER
1	D	13	GLN
1	D	21	GLN
1	D	46	THR
1	D	86	ARG
1	D	99	THR
1	D	102	GLU
1	D	105	ARG
1	D	117	ARG
1	D	133	ARG

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Mol	Chain	Res	Type
1	D	144	GLU
1	D	147	PRO
1	D	157	THR
1	D	164	VAL
1	D	166	ILE
1	D	175	LEU
1	D	188	GLU
1	D	193	GLU
1	D	208	ARG
1	D	222	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	21	GLN
1	A	160	GLN
1	A	174	HIS
1	A	198	HIS
1	A	204	GLN
1	A	223	GLN
1	B	30	ASN
1	B	112	GLN
1	B	172	GLN
1	B	195	HIS
1	B	231	GLN
1	C	30	ASN
1	C	63	ASN
1	C	78	ASN
1	C	84	GLN
1	C	112	GLN
1	C	137	ASN
1	C	172	GLN
1	C	195	HIS
1	C	223	GLN
1	C	231	GLN
1	C	235	GLN
1	D	38	HIS
1	D	63	ASN
1	D	137	ASN
1	D	198	HIS
1	D	223	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 4 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	AGS	A	402	-	32,33,33	1.88	4 (12%)	45,52,52	1.11	4 (8%)
4	ADP	C	302	-	28,29,29	1.50	7 (25%)	43,45,45	1.21	6 (13%)
3	AGS	D	302	-	32,33,33	1.89	5 (15%)	45,52,52	1.18	6 (13%)
3	AGS	B	302	-	32,33,33	2.52	7 (21%)	45,52,52	1.24	6 (13%)

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
3	AGS	A	402	-	-	5/21/38/38	0/3/3/3
4	ADP	C	302	-	-	3/16/32/32	0/3/3/3
3	AGS	D	302	-	-	3/21/38/38	0/3/3/3
3	AGS	B	302	-	-	4/21/38/38	0/3/3/3

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	302	AGS	PB-O3B	9.16	1.69	1.59
3	A	402	AGS	PG-S1G	-8.39	1.72	1.90
3	D	302	AGS	PG-S1G	-7.41	1.74	1.90
3	B	302	AGS	PG-S1G	-7.33	1.74	1.90
3	B	302	AGS	PA-O3A	4.61	1.64	1.59
3	D	302	AGS	PB-O3B	-4.07	1.55	1.59
4	C	302	ADP	C2-N1	2.91	1.39	1.33
4	C	302	ADP	C5-C4	2.81	1.44	1.39
4	C	302	ADP	C1'-N9	2.72	1.53	1.46
4	C	302	ADP	C4-N3	2.68	1.39	1.34
3	B	302	AGS	C1'-N9	2.50	1.53	1.46
3	A	402	AGS	C1'-N9	2.39	1.52	1.46
3	D	302	AGS	C2-N1	2.36	1.38	1.33
3	B	302	AGS	PB-O3A	-2.33	1.57	1.59
3	B	302	AGS	C2-N1	2.32	1.38	1.33
3	B	302	AGS	C5-C4	2.29	1.43	1.39
3	A	402	AGS	C2-N1	2.26	1.38	1.33
3	D	302	AGS	C1'-N9	2.26	1.52	1.46
3	A	402	AGS	C5-C4	2.26	1.43	1.39
4	C	302	ADP	C5-N7	-2.16	1.35	1.39
3	D	302	AGS	C5-C4	2.10	1.42	1.39
4	C	302	ADP	C5-C6	2.04	1.46	1.41
4	C	302	ADP	C2'-C1'	-2.01	1.47	1.53

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	402	AGS	C4-N9-C1'	3.50	134.81	126.63
4	C	302	ADP	C4-N9-C1'	3.46	134.73	126.63
3	D	302	AGS	C4-N9-C1'	3.43	134.65	126.63
3	B	302	AGS	C4-N9-C1'	3.34	134.44	126.63
3	B	302	AGS	O2G-PG-O3B	2.69	113.62	104.64
3	B	302	AGS	O2B-PB-O3B	2.64	114.40	107.27
3	A	402	AGS	C1'-N9-C8	-2.58	121.37	127.09
3	B	302	AGS	O3B-PB-O1B	-2.52	103.14	110.70
3	D	302	AGS	C1'-N9-C8	-2.42	121.72	127.09
3	D	302	AGS	O3A-PA-O1A	-2.40	103.49	110.70
3	B	302	AGS	C1'-N9-C8	-2.39	121.80	127.09
3	A	402	AGS	O3G-PG-O3B	2.33	112.41	104.64
4	C	302	ADP	C4-N9-C8	-2.32	103.30	105.74
4	C	302	ADP	C1'-N9-C8	-2.31	121.97	127.09
3	D	302	AGS	O3G-PG-O3B	2.31	112.34	104.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	302	ADP	O2A-PA-O3A	2.24	113.33	107.27
4	C	302	ADP	O3A-PA-O1A	-2.15	104.22	110.70
3	B	302	AGS	C3'-C2'-C1'	2.11	105.46	101.46
3	A	402	AGS	C3'-C2'-C1'	2.10	105.44	101.46
4	C	302	ADP	C3'-C2'-C1'	2.06	105.36	101.46
3	D	302	AGS	C4-N9-C8	-2.02	103.62	105.74
3	D	302	AGS	O2A-PA-O3A	2.01	112.70	107.27

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	402	AGS	C5'-O5'-PA-O2A
3	A	402	AGS	C5'-O5'-PA-O3A
3	B	302	AGS	C5'-O5'-PA-O1A
3	B	302	AGS	C5'-O5'-PA-O2A
3	B	302	AGS	C5'-O5'-PA-O3A
3	D	302	AGS	C5'-O5'-PA-O1A
3	D	302	AGS	C5'-O5'-PA-O2A
3	D	302	AGS	C5'-O5'-PA-O3A
4	C	302	ADP	C5'-O5'-PA-O3A
3	A	402	AGS	PA-O3A-PB-O1B
3	B	302	AGS	PA-O3A-PB-O1B
4	C	302	ADP	PB-O3A-PA-O2A
3	A	402	AGS	C5'-O5'-PA-O1A
4	C	302	ADP	C5'-O5'-PA-O1A
3	A	402	AGS	PA-O3A-PB-O2B

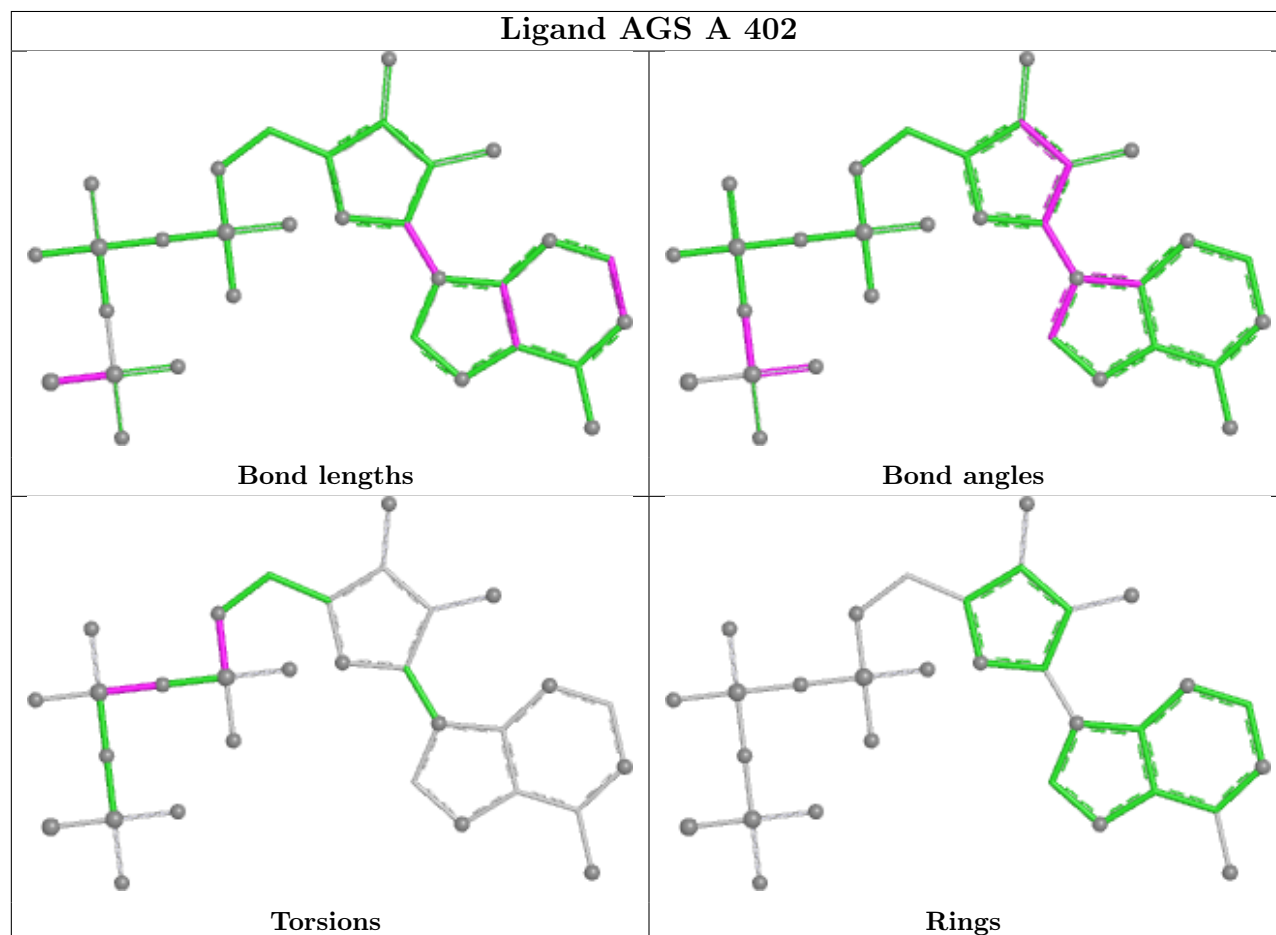
There are no ring outliers.

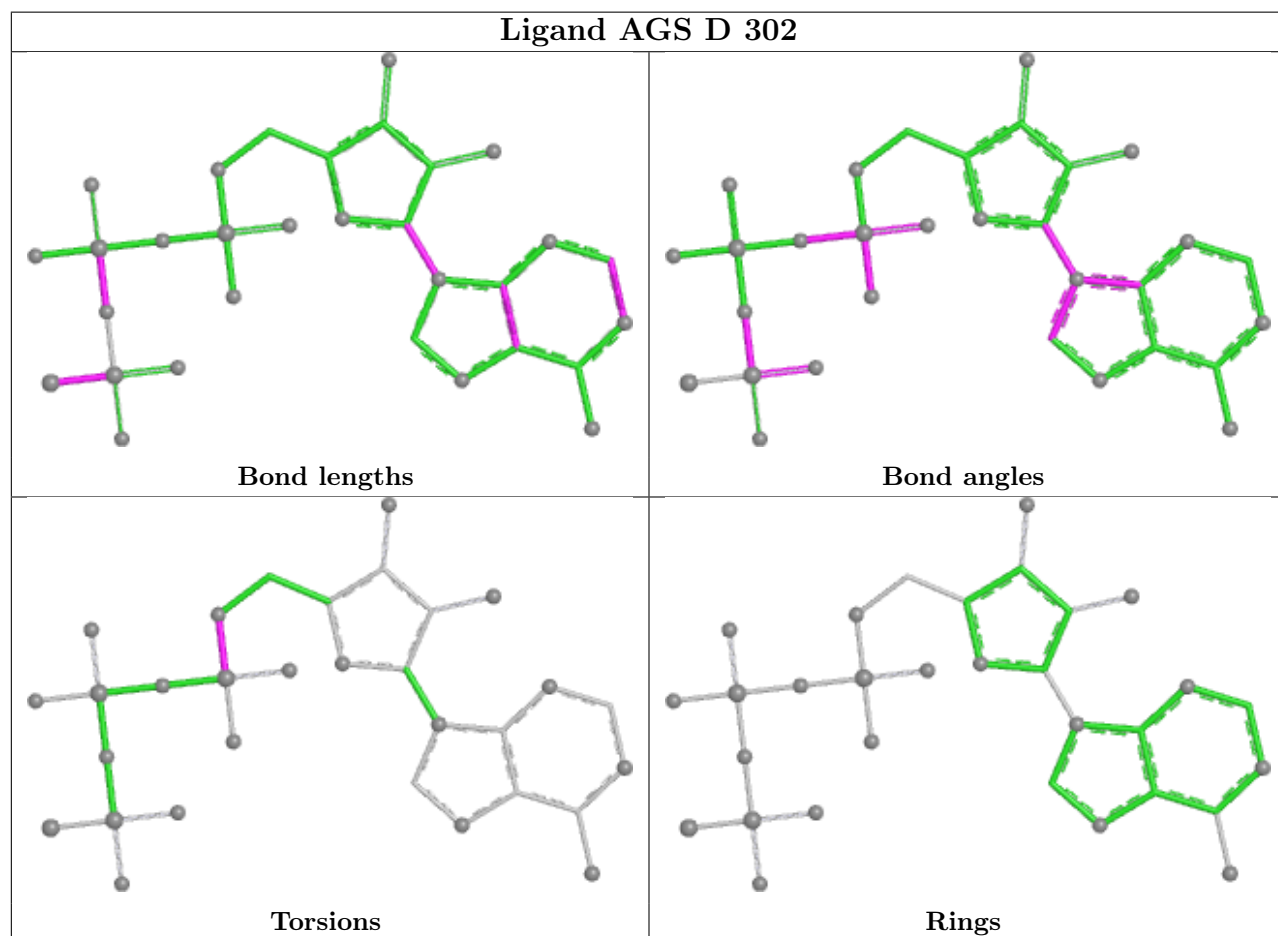
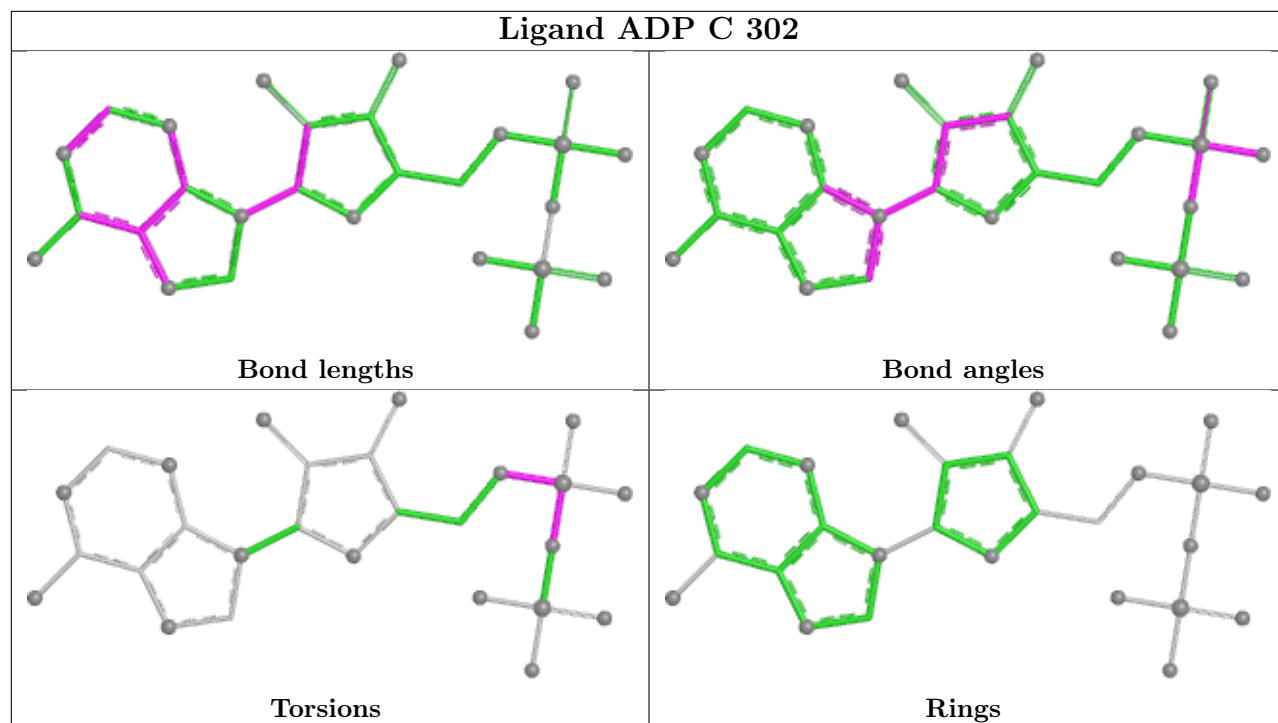
4 monomers are involved in 16 short contacts:

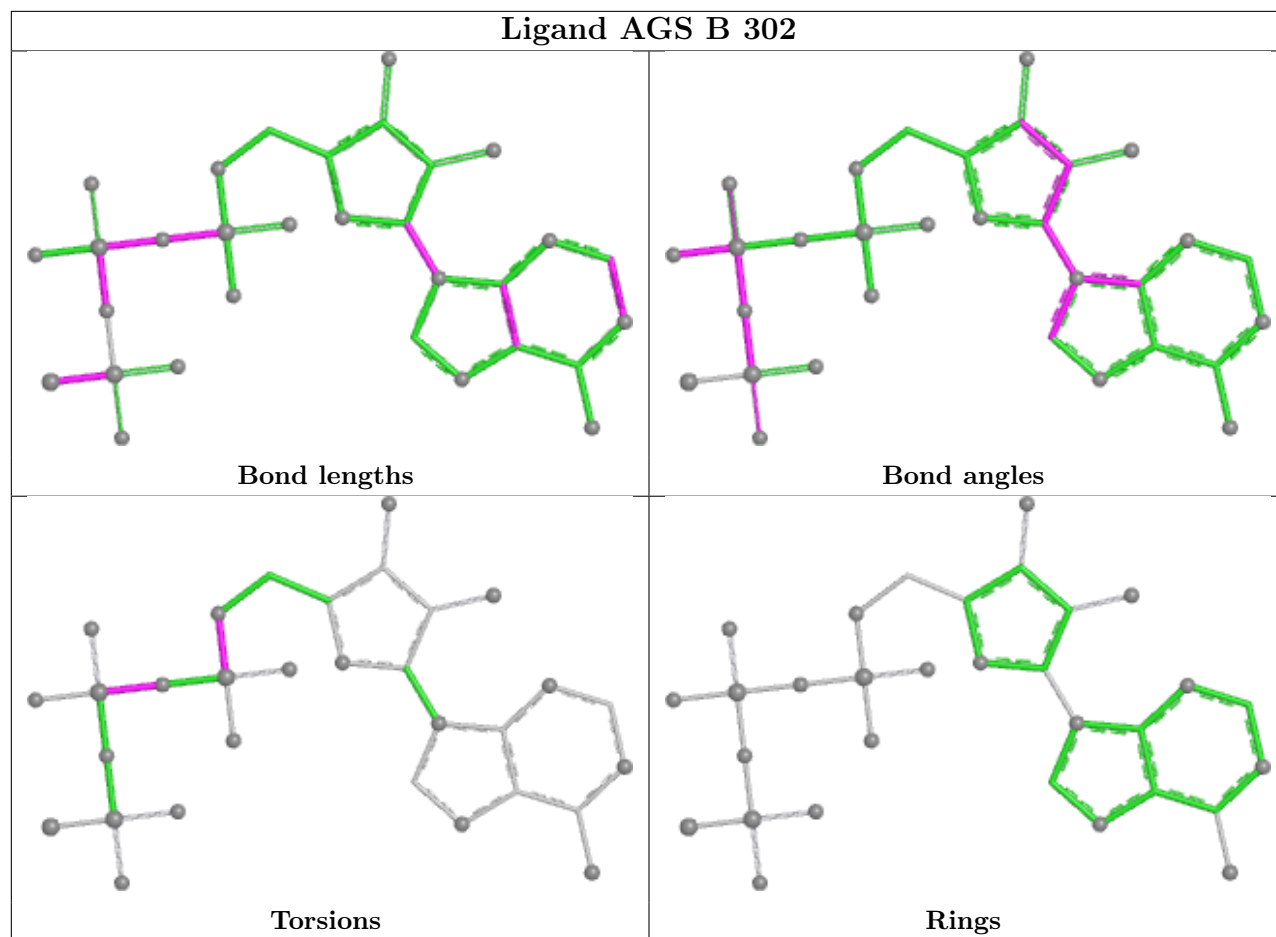
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402	AGS	3	0
4	C	302	ADP	3	0
3	D	302	AGS	5	0
3	B	302	AGS	5	0

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 than 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.







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 ⓘ

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	239/250 (95%)	-0.02	2 (0%) 82 83	11, 24, 43, 60	0
1	B	239/250 (95%)	0.32	10 (4%) 40 42	15, 30, 53, 66	0
1	C	239/250 (95%)	0.58	21 (8%) 15 17	18, 34, 63, 85	0
1	D	239/250 (95%)	0.48	9 (3%) 44 46	14, 34, 55, 67	0
All	All	956/1000 (95%)	0.34	42 (4%) 39 41	11, 31, 55, 85	0

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	101	VAL	6.2
1	C	243	THR	4.8
1	B	243	THR	4.7
1	D	243	THR	4.2
1	C	96	ALA	3.5
1	C	102	GLU	3.4
1	C	113	TYR	3.2
1	D	136	PHE	3.1
1	C	103	ASP	3.1
1	C	99	THR	3.0
1	A	148	GLU	3.0
1	B	103	ASP	2.9
1	B	101	VAL	2.8
1	C	104	THR	2.7
1	C	131	LEU	2.7
1	C	100	LYS	2.6
1	D	5	VAL	2.6
1	A	147	PRO	2.5
1	B	242	GLY	2.5
1	D	160	GLN	2.5
1	C	132	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	23	HIS	2.4
1	C	98	ARG	2.4
1	B	102	GLU	2.3
1	C	22	GLU	2.3
1	B	84	GLN	2.3
1	B	82	ILE	2.3
1	C	242	GLY	2.2
1	C	181	GLU	2.2
1	C	109	ASP	2.2
1	D	20	GLY	2.2
1	B	99	THR	2.2
1	C	97	SER	2.2
1	C	93	ILE	2.2
1	C	84	GLN	2.1
1	B	114	ALA	2.1
1	D	226	ALA	2.1
1	C	162	LEU	2.1
1	D	84	GLN	2.1
1	D	143	LEU	2.1
1	B	86	ARG	2.1
1	D	106	ASP	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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
3	AGS	B	302	31/31	0.91	0.11	23,28,60,62	0
3	AGS	D	302	31/31	0.93	0.10	18,27,54,56	0

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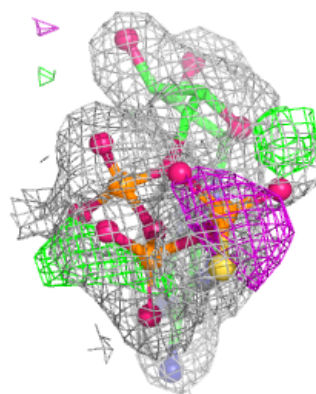
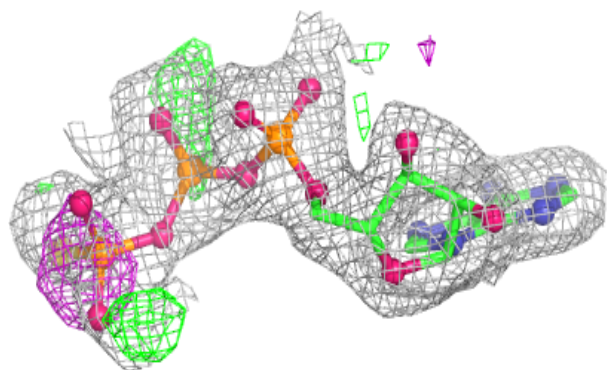
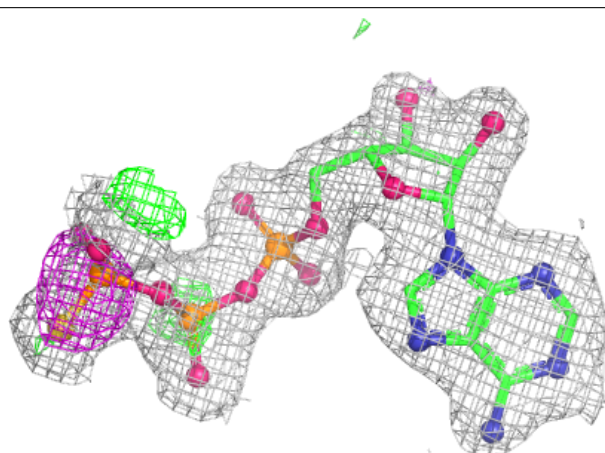
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	AGS	A	402	31/31	0.96	0.07	13,22,45,46	0
4	ADP	C	302	27/27	0.96	0.07	23,26,29,31	0
2	ZN	C	301	1/1	0.98	0.04	46,46,46,46	0
2	ZN	A	401	1/1	0.99	0.07	38,38,38,38	0
2	ZN	D	301	1/1	0.99	0.07	48,48,48,48	0
2	ZN	B	301	1/1	0.99	0.04	43,43,43,43	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.

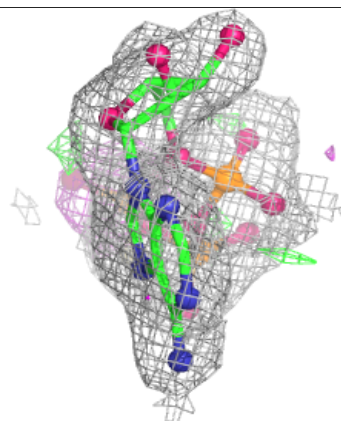
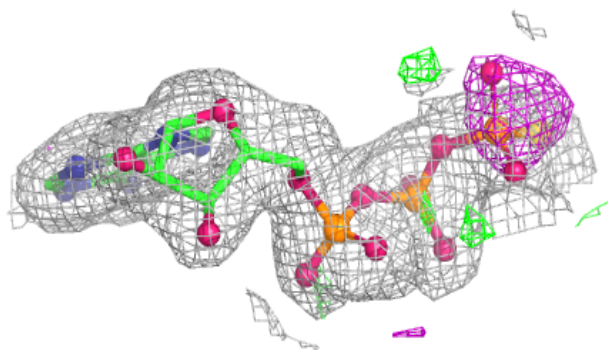
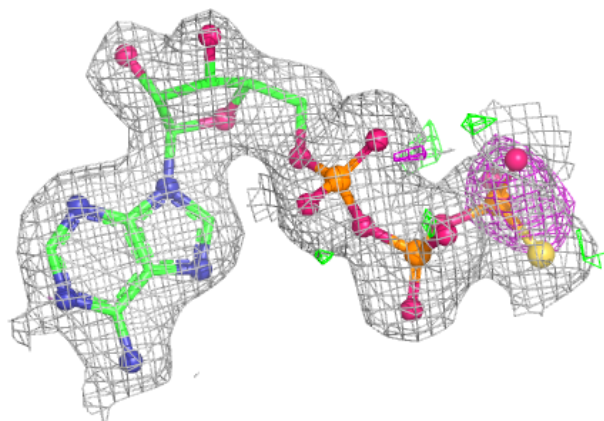
Electron density around AGS B 302:

2mF_o-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



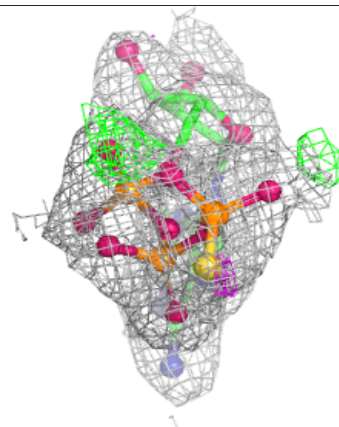
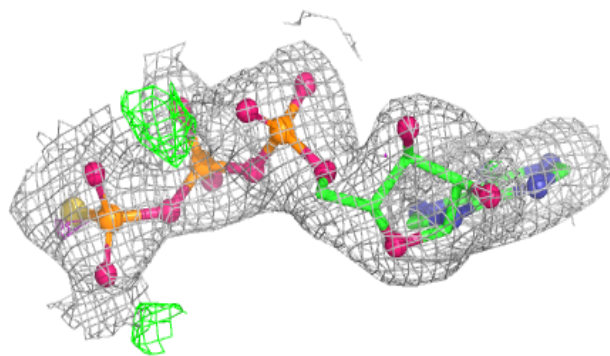
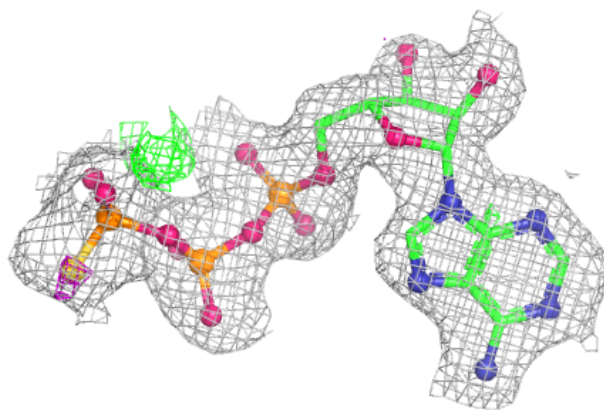
Electron density around AGS D 302:

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



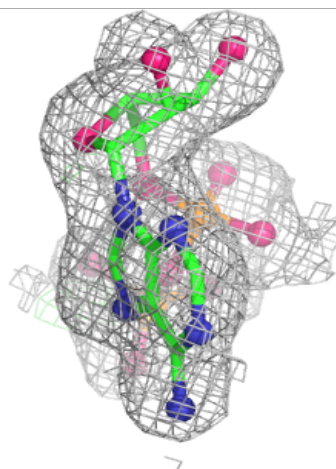
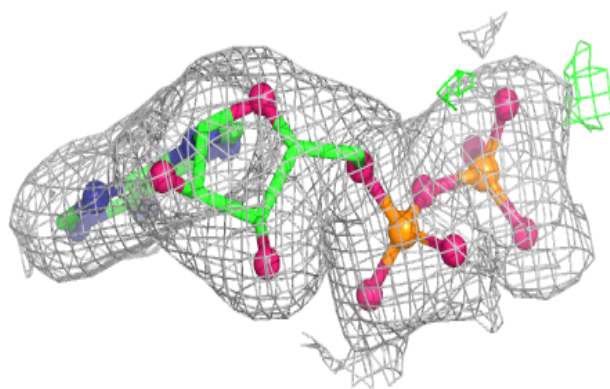
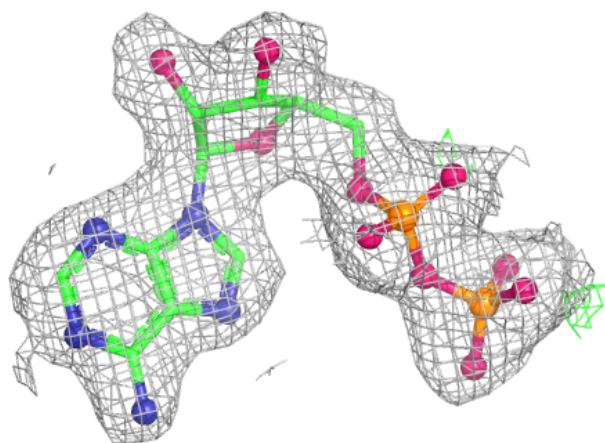
Electron density around AGS A 402:

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



Electron density around ADP C 302:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.