W O R L D W I D E
wwPDB
PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 11, 2024 – 10:28 PM EDT

PDB ID	:	2QAG
Title	:	Crystal structure of human septin trimer 2/6/7
Authors	:	Sirajuddin, M.
Deposited on	:	2007-06-15
Resolution	:	4.00 Å(reported)

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

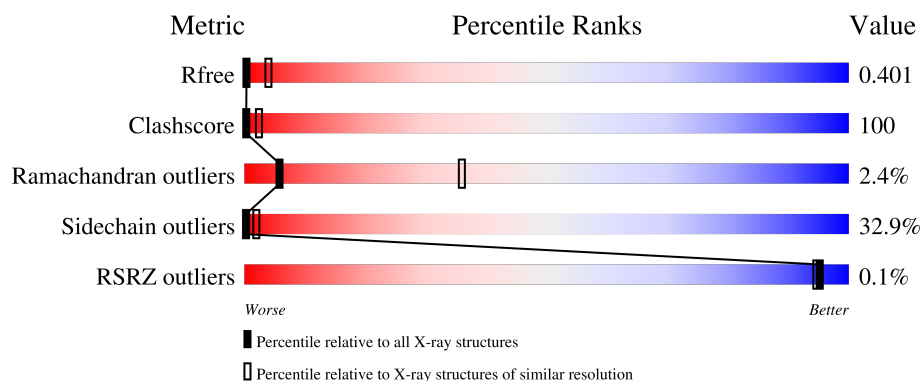|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1   Overall quality at a glance ⓘ

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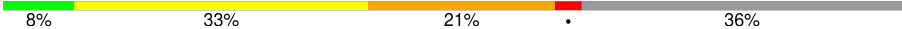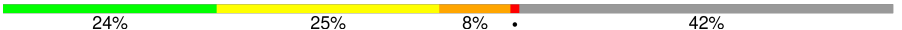*X-RAY DIFFRACTION*

The reported resolution of this entry is 4.00 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	Percentile Ranks	Value
Rfree		0.401
Clashscore		100
Ramachandran outliers		2.4%
Sidechain outliers		32.9%
RSRZ outliers		0.1%

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	1087 (4.30-3.70)
Clashscore	141614	1148 (4.30-3.70)
Ramachandran outliers	138981	1108 (4.30-3.70)
Sidechain outliers	138945	1099 (4.30-3.70)
RSRZ outliers	127900	1028 (4.34-3.66)

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	361	8% 33% 21% • 36%
2	B	427	24% 25% 8% • 42%
3	C	418	21% 24% 8% • 46%

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
4	GDP	A	362	-	-	X	-
4	GDP	C	419	-	-	X	-
5	GTP	B	428	-	-	X	-

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 4495 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 Septin-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	232	Total	C	N	O	S	0	0	0
			1765	1129	302	328	6			

- Molecule 2 is a protein called Septin-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	246	Total	C	N	O	S	0	0	0
			1369	837	254	269	9			

- Molecule 3 is a protein called Septin-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	224	Total	C	N	O	S	0	0	0
			1273	788	230	247	8			

- Molecule 4 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).
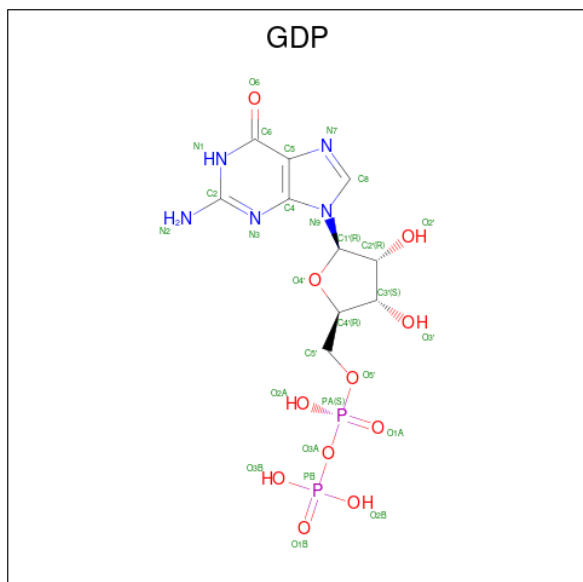
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
4	C	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 5 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).
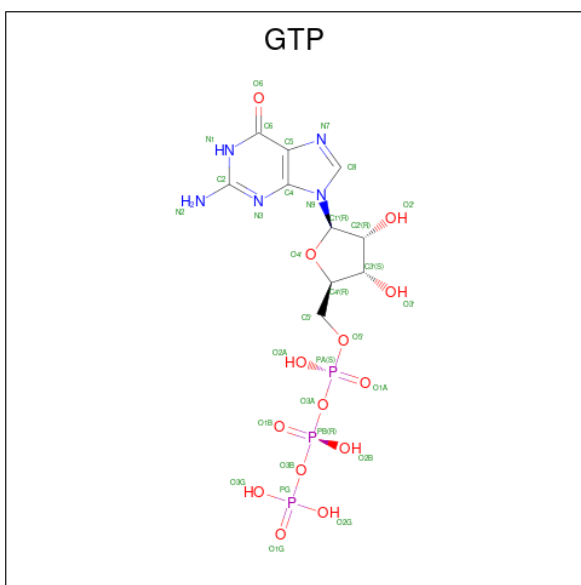
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total	C	N	O	P	0	0
			32	10	5	14	3		

3 Residue-property plots ⓘ

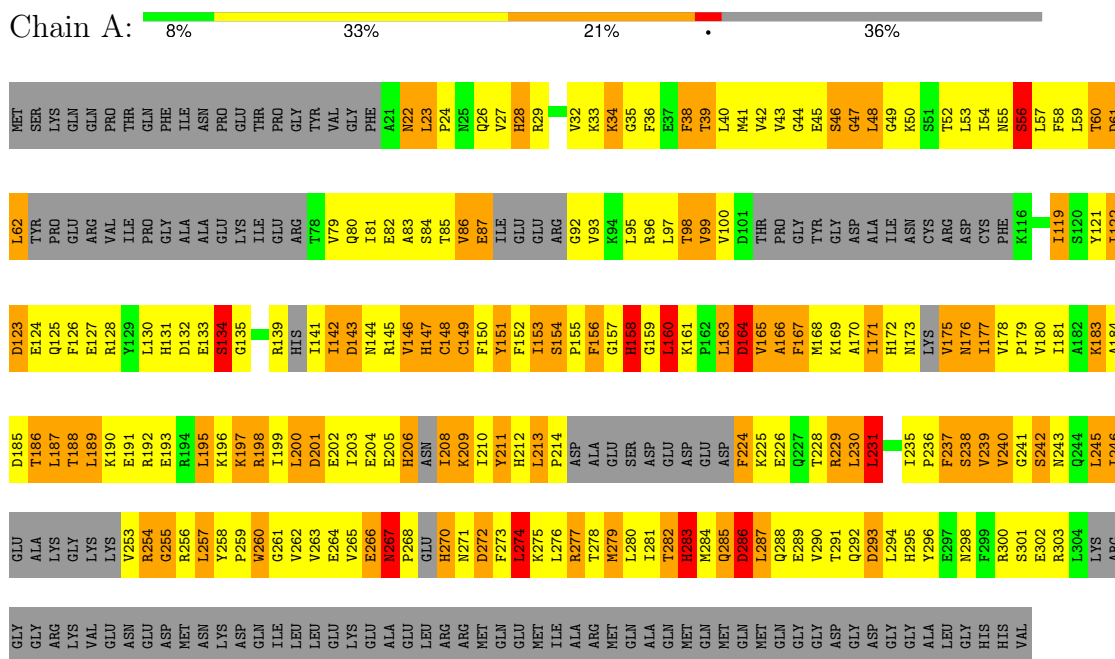These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Septin-2

Chain A:

• Molecule 2: Septin-6

Chain B:

M277 L278 I279 R280 V281 N282 M283 E288 Q289 T292 R293 H294 Y295 E296 L297 Y298 R299 K302 L303 M306 G307 PHE LYS ASP THR ASP PRO ASP SER LYS PRO PHE SER LEU GLN GLU THR TYR GLU ALA LYS ARG ASN GLU PHE LEU GLY GLU LEU GLN LYS LYS GLU GLU GLU MET

ARG GLN MET PHE VAL GLN ARG VAL LYS GLU GLU LYS GLU ALA GLU LEU LYS GLU ALA GLU LYS GLU LEU HIS GLU GLU LYS LYS LEU GLU ASP LYS LYS SER LEU ASP ASP GLU VAL ASN ALA PHE LYS GLN ARG LYS THR ALA

ALA GLU LEU LEU GLN SER GLN GLY SER GLN ALA GLY GLY SER GLN THR LEU LYS ASP LYS LYS GLU LYS LYS ASN

● Molecule 3: Septin-7

Chain C: 21%   24%   8% ●   46%

MET VAL ALA GLN LYS ASN LEU GLU GLY TYR VAL GLY PHE A15 N16 L17 P18 N19 Q20 R23 K24 S25 V26 K27 ARG G29 F30 E31 F32 T33 L34 M35 V36 V37 G38 E39 S40 G41 L42 G43 K44 S45 T46 L47 I48 N49 S50 L51 F52 L53 T54 D55 L56 Y57 S58 P59 E60 Y61

P62 S65 HIS ARG ILE LYS LYS T71 V72 Q73 V74 E75 Q76 S77 K78 V79 L80 ILE LYS GLU GLY GLY VAL Q87 L88 T91 I92 V93 D94 T95 P96 GLY PHE GLY ASP ALA VAL ASP ASN SER ASN CYS W108 Q109 P110 Y114 I115 D116 S117 K118 F119 E120 D121 Y122 A125

R128 VAL N130 R131 R132 Q133 M134 P135 D136 N137 ARG V139 Q140 C141 C142 L143 Y144 F145 I146 A147 P148 SER G150 K154 D157 I158 M161 K362 R163 L164 H165 E166 K167 V168 N169 L173 I174 A175 K176 A177 D178 T179 L180 T181 P182 E183 E184 C185 F188 I192 M193 K194 E195 I196

I203 Y204 P207 GLU THR ASP ASP GLU GLU GLU ASN LYS LEU VAL LYS ILE LYS ASP ARG L225 P226 L227 A228 V229 V230 G231 SER ASN THR ILE GLU VAL ASN GLY LYS ARG VAL ARG G245 R246 Q247 Y248 P249 W250 G251 V252 A253 E254 V255 GLU ASN G258 E259 H260 L266

R267 L270 I271 R272 Q276 K279 N283 H286 Y287 E288 N289 A296 ALA VAL THR TYR ASN GLY VAL ASP ASN LYS ASN LYS GLY LEU THR LYS SER PRO LEU ALA GLN GLU GLU GLU LYS ARG ARG GLN PHE GLU ASP GLU LYS HIS VAL ALA LYS MET LYS LYS MET GLU MET GLU MET

GLU GLN VAL PHE GLU MET LYS VAL LYS GLU LYS VAL GLN GLU LYS GLU LEU ASP SER GLU ALA GLU LEU GLN ARG ARG HIS GLU GLN MET LYS GLN ASN LEU LYS GLY LEU GLU ALA GLN HIS LYS GLU LEU GLU GLU GLU LYS ARG ARG GLN PHE GLU GLU GLU ASP GLU GLU LYS ALA ASN TRP GLU ALA GLN GLN ARG ILE

LEU GLU GLN GLN ASN SER SER ARG THR LEU GLU LYS ASN LYS LYS LYS GLY ILE PHE

4   Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 2 2	Depositor
Cell constants a, b, c, α, β, γ	252.51Å 252.51Å 156.49Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.15 – 4.00 49.13 – 4.00	Depositor EDS
% Data completeness (in resolution range)	98.3 (49.15-4.00) 98.3 (49.13-4.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.23	Depositor
$< I/\sigma(I) >$ [1]	3.89 (at 4.00Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.376 , 0.392 0.399 , 0.401	Depositor DCC
R_{free} test set	2125 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	96.4	Xtriage
Anisotropy	1.176	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.19 , 213.5	EDS
L-test for twinning[2]	$< |L| > = 0.39, < L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.75	EDS
Total number of atoms	4495	wwPDB-VP
Average B, all atoms (Å^2)	77.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 17.29% 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 ⓘ

5.1 Standard geometry ⓘ

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

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	0.54	2/1789 (0.1%)	0.86	7/2421 (0.3%)
2	B	0.40	0/1367	0.62	0/1865
3	C	0.62	2/1281 (0.2%)	0.85	3/1762 (0.2%)
All	All	0.53	4/4437 (0.1%)	0.79	10/6048 (0.2%)

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	44
2	B	0	49
3	C	0	39
All	All	0	132

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	156	PHE	CD2-CE2	5.68	1.50	1.39
1	A	240	VAL	CA-CB	-5.67	1.42	1.54
3	C	231	GLY	N-CA	5.30	1.53	1.46
3	C	230	VAL	CA-CB	-5.03	1.44	1.54

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	86	VAL	CB-CA-C	-7.97	96.26	111.40
1	A	164	ASP	CB-CG-OD1	-6.38	112.56	118.30
3	C	96	PRO	N-CA-CB	5.92	110.41	103.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	274	LEU	CB-CA-C	-5.72	99.33	110.20
3	C	50	SER	N-CA-C	5.32	125.36	111.00

There are no chirality outliers.

5 of 132 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	22	ASN	Peptide
1	A	33	LYS	Peptide
1	A	35	GLY	Peptide
1	A	38	PHE	Peptide
1	A	46	SER	Peptide

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	1765	0	1694	481	0
2	B	1369	0	854	180	0
3	C	1273	0	822	149	0
4	A	28	0	12	14	0
4	C	28	0	12	15	0
5	B	32	0	12	18	0
All	All	4495	0	3406	791	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 100.

The worst 5 of 791 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:265:VAL:HG12	1:A:266:GLU:CG	1.46	1.43
1:A:183:LYS:HD2	4:A:362:GDP:C5	1.67	1.29
1:A:279:MET:O	1:A:282:THR:HG22	1.34	1.26
2:B:54:GLY:CA	2:B:57:THR:HG23	1.70	1.22
1:A:183:LYS:HD2	4:A:362:GDP:C4	1.73	1.21

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	212/361 (59%)	189 (89%)	18 (8%)	5 (2%)	6	36
2	B	216/427 (51%)	190 (88%)	21 (10%)	5 (2%)	6	37
3	C	202/418 (48%)	172 (85%)	25 (12%)	5 (2%)	5	35
All	All	630/1206 (52%)	551 (88%)	64 (10%)	15 (2%)	6	36

5 of 15 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	18	PRO
2	B	181	PRO
1	A	158	HIS
2	B	41	PHE
3	C	59	PRO

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	186/320 (58%)	126 (68%)	60 (32%)	0	2
2	B	54/381 (14%)	36 (67%)	18 (33%)	0	2
3	C	58/380 (15%)	38 (66%)	20 (34%)	0	1
All	All	298/1081 (28%)	200 (67%)	98 (33%)	0	2

5 of 98 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	283	HIS
2	B	169	THR
1	A	293	ASP
2	B	151	CYS
2	B	251	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	283	HIS
1	A	285	GLN
1	A	298	ASN
1	A	295	HIS
1	A	206	HIS

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)

3 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
5	GTP	B	428	-	29,34,34	1.23	2 (6%)	35,54,54	1.37	5 (14%)
4	GDP	A	362	-	25,30,30	1.00	1 (4%)	30,47,47	1.15	3 (10%)
4	GDP	C	419	-	25,30,30	0.99	1 (4%)	30,47,47	1.14	3 (10%)

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
5	GTP	B	428	-	-	4/18/38/38	0/3/3/3
4	GDP	A	362	-	-	2/12/32/32	0/3/3/3
4	GDP	C	419	-	-	5/12/32/32	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	428	GTP	C5-C6	-4.12	1.39	1.47
4	A	362	GDP	C6-N1	-2.29	1.34	1.37
4	C	419	GDP	C6-N1	-2.23	1.34	1.37
5	B	428	GTP	C2-N3	2.20	1.38	1.33

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	B	428	GTP	C8-N7-C5	3.60	108.68	102.55
4	C	419	GDP	C8-N7-C5	2.91	107.50	102.55
4	A	362	GDP	C8-N7-C5	2.90	107.49	102.55
5	B	428	GTP	C5-C6-N1	2.89	119.59	114.07
5	B	428	GTP	C2-N1-C6	-2.87	119.86	125.11

There are no chirality outliers.

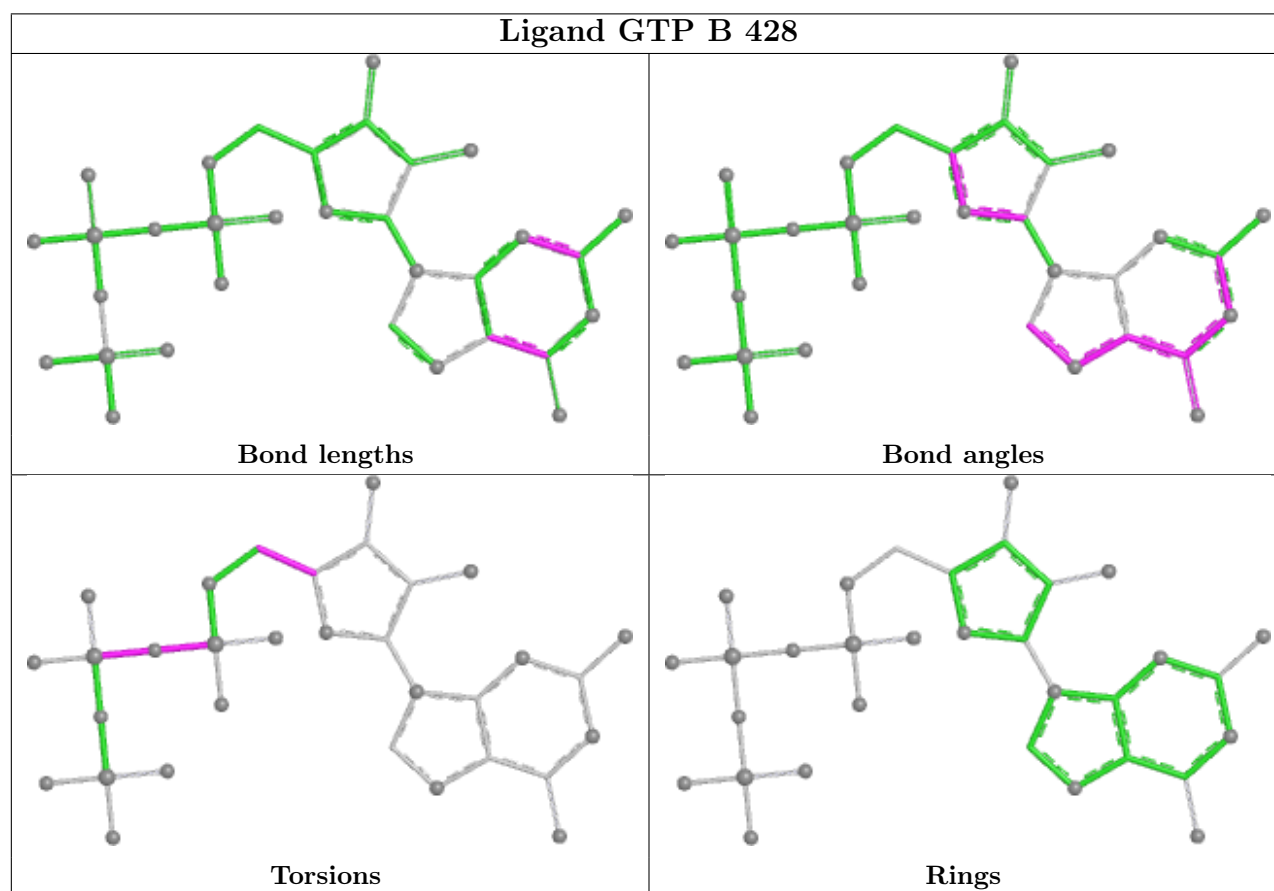5 of 11 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	419	GDP	C5'-O5'-PA-O3A
4	C	419	GDP	C5'-O5'-PA-O1A
4	A	362	GDP	O4'-C4'-C5'-O5'
4	A	362	GDP	C3'-C4'-C5'-O5'
5	B	428	GTP	O4'-C4'-C5'-O5'

There are no ring outliers.

3 monomers are involved in 47 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	428	GTP	18	0
4	A	362	GDP	14	0
4	C	419	GDP	15	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 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 GTP B 428

Bond lengths   Bond angles

Torsions   Rings

Ligand GDP A 362

Bond lengths

Bond angles

Torsions

Rings

Ligand GDP C 419

Bond lengths

Bond angles

Torsions

Rings
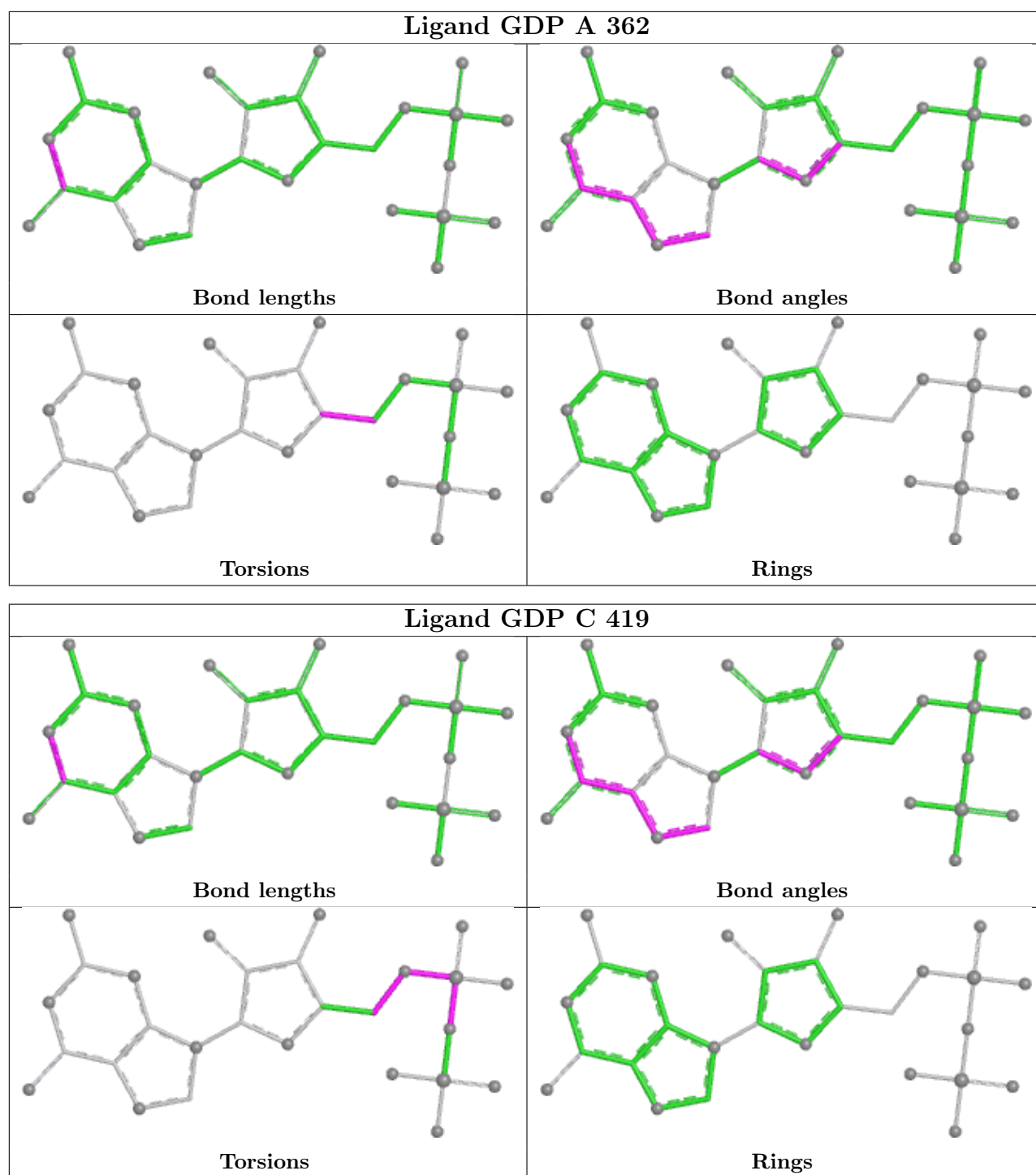
5.7 Other polymers ⓘ

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	232/361 (64%)	-0.36	0	100	100	2, 81, 122, 148	0
2	B	246/427 (57%)	-0.59	0	100	100	3, 60, 134, 139	0
3	C	224/418 (53%)	-0.56	1 (0%)	92	87	26, 80, 134, 156	0
All	All	702/1206 (58%)	-0.50	1 (0%)	95	94	2, 73, 130, 156	0

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	134	MET	2.0

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

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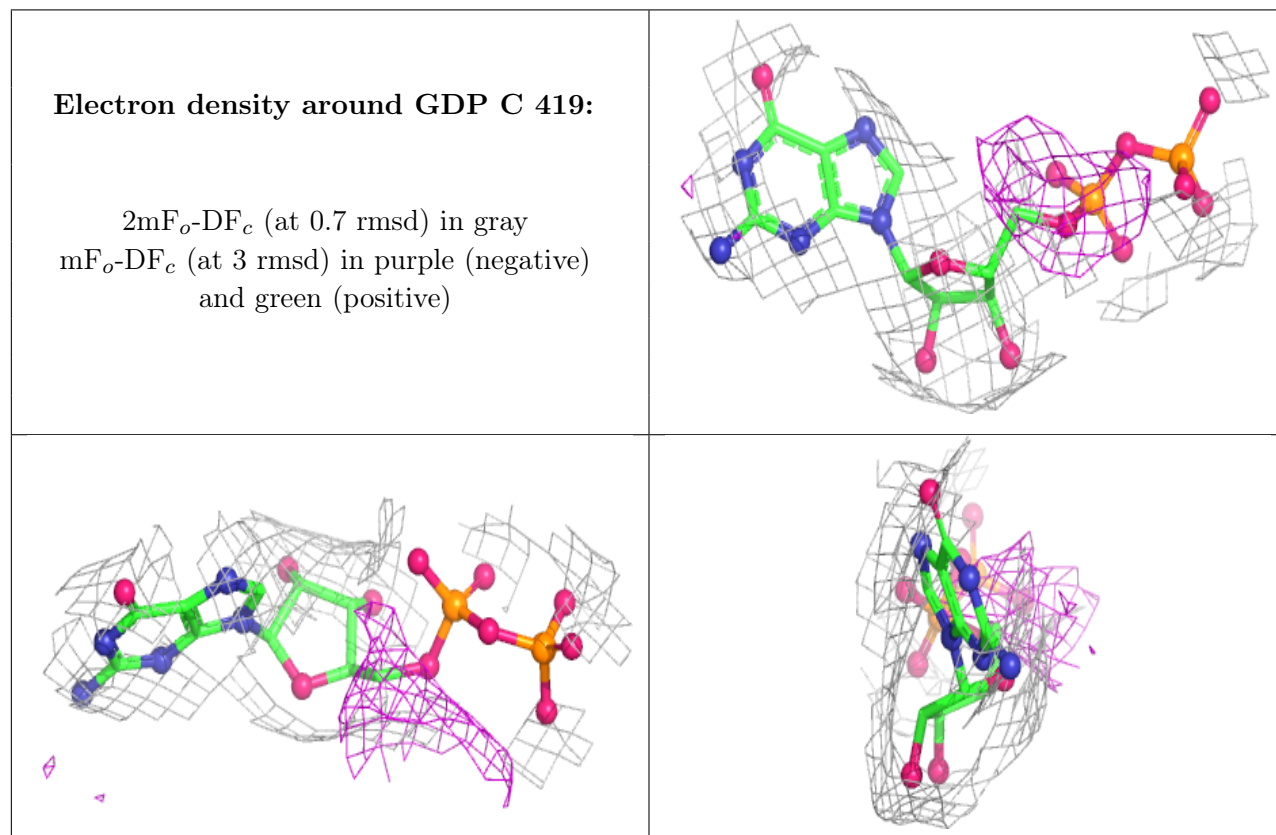
6.3 Carbohydrates ⓘ

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	GDP	C	419	28/28	0.84	0.19	83,89,97,100	0
4	GDP	A	362	28/28	0.88	0.21	53,75,81,81	0
5	GTP	B	428	32/32	0.89	0.19	35,56,65,67	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.
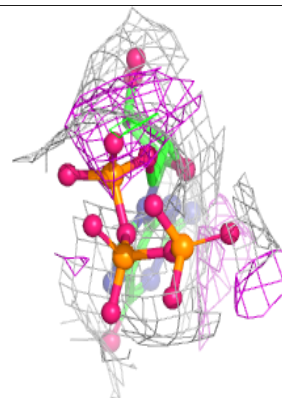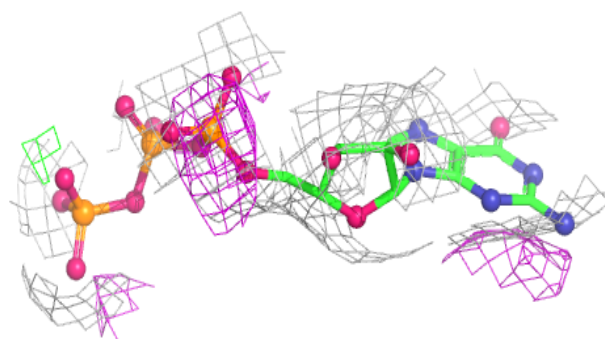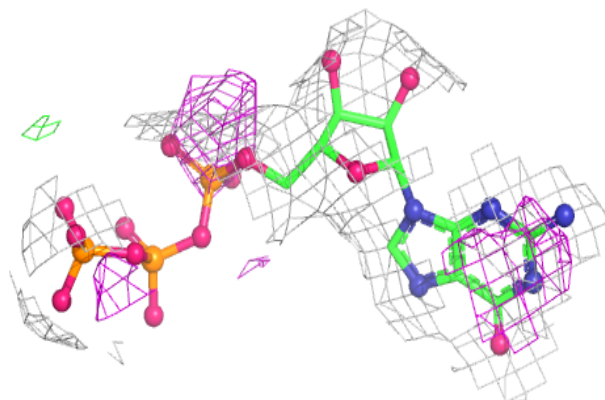
Electron density around GDP C 419:

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

Electron density around GDP A 362:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
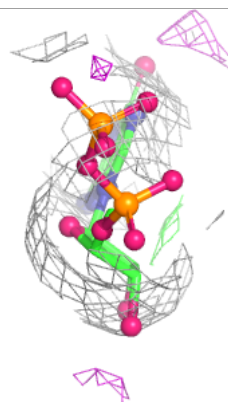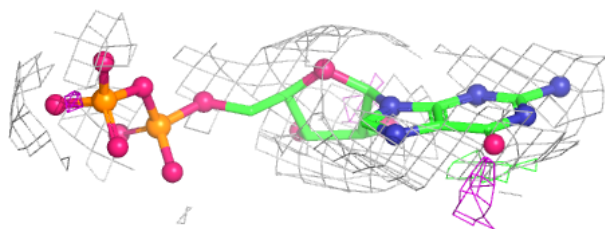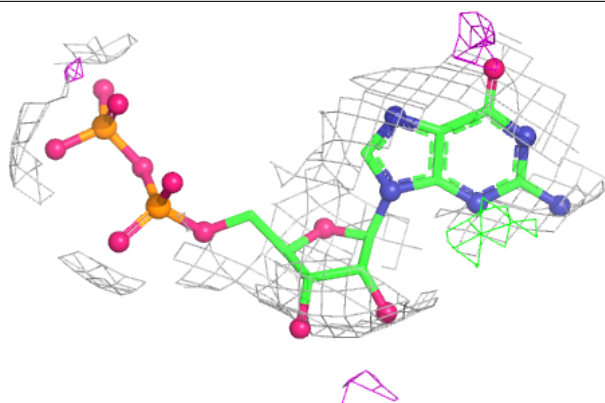
Electron density around GTP B 428:

$2mF_o\text{-}DF_c$ (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.