



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 07:41 AM UTC

PDB ID : 4G5Q / pdb_00004g5q
Title : Structure of LGN GL4/Galphai1 complex
Authors : Jia, M.; Li, J.; Zhu, J.; Wen, W.; Zhang, M.; Wang, W.
Deposited on : 2012-07-18
Resolution : 2.90 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

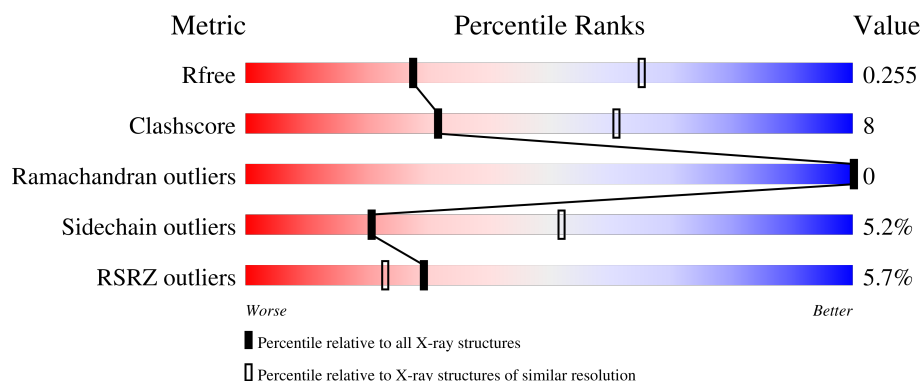
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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	2481 (2.90-2.90)
Clashscore	190562	2690 (2.90-2.90)
Ramachandran outliers	187476	2623 (2.90-2.90)
Sidechain outliers	187428	2625 (2.90-2.90)
RSRZ outliers	180081	2481 (2.90-2.90)

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	330	3% 82% 14% ..
1	B	330	5% 84% 10% ..
1	C	330	5% 78% 16% ..
1	D	330	7% 82% 13% ..
2	E	25	8% 52% 24% 8% 16%

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Mol	Chain	Length	Quality of chain
2	F	25	
2	G	25	
2	H	25	

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
5	CIT	B	403	-	X	-	-
5	CIT	C	402	-	X	-	-
5	CIT	D	402	-	X	-	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 11211 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.

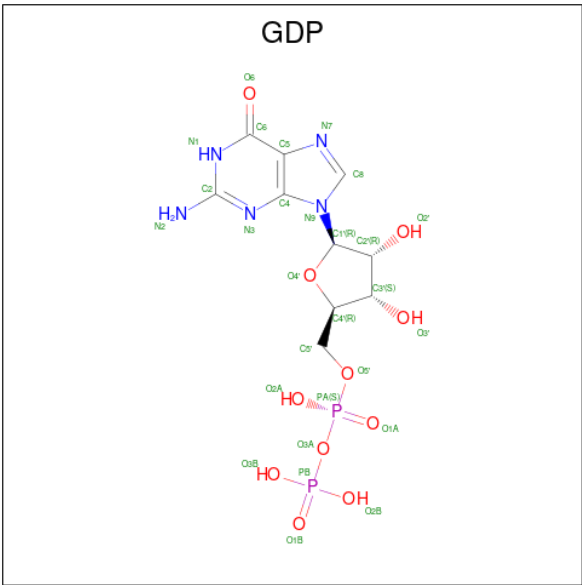
- Molecule 1 is a protein called Guanine nucleotide-binding protein G(i) subunit alpha-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	320	Total	C	N	O	S	0	1	0
			2545	1616	425	488	16			
1	B	316	Total	C	N	O	S	0	1	0
			2524	1607	419	482	16			
1	C	316	Total	C	N	O	S	0	0	0
			2539	1620	423	480	16			
1	D	324	Total	C	N	O	S	0	1	0
			2579	1642	431	490	16			

- Molecule 2 is a protein called G-protein-signaling modulator 2.

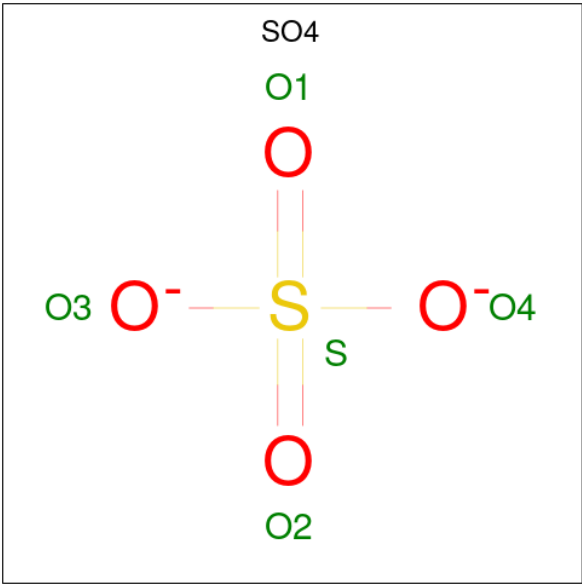
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	21	Total	C	N	O	S	0	0	0
			175	111	32	31	1			
2	F	22	Total	C	N	O	S	0	0	0
			184	117	34	32	1			
2	G	24	Total	C	N	O	S	0	0	0
			200	125	38	36	1			
2	H	22	Total	C	N	O	S	0	0	0
			181	116	34	30	1			

- Molecule 3 is GUANOSINE-5'-DIPHOSPHATE (CCD ID: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
3	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
3	C	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
3	D	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 4 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0

- Molecule 5 is CITRIC ACID (CCD ID: CIT) (formula: $C_6H_8O_7$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			13	6	7		
5	B	1	Total	C	O	0	0
			13	6	7		
5	C	1	Total	C	O	0	0
			13	6	7		
5	D	1	Total	C	O	0	0
			13	6	7		

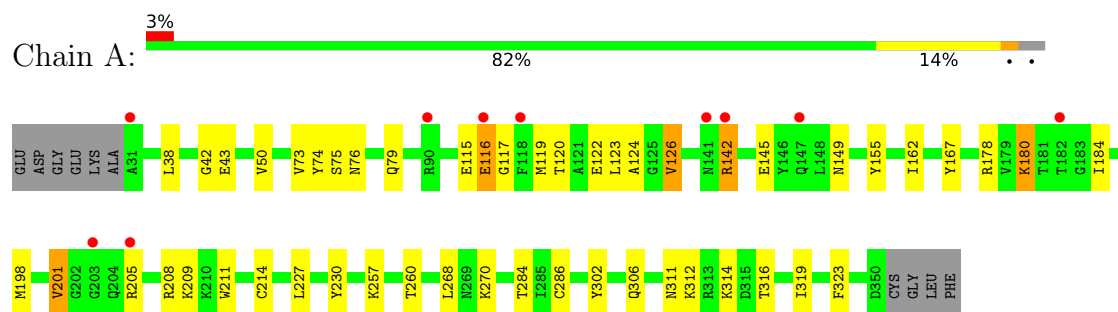
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	7	Total	O	0	0
			7	7		
6	B	8	Total	O	0	0
			8	8		
6	C	9	Total	O	0	0
			9	9		
6	D	7	Total	O	0	0
			7	7		
6	E	1	Total	O	0	0
			1	1		
6	F	1	Total	O	0	0
			1	1		
6	G	2	Total	O	0	0
			2	2		

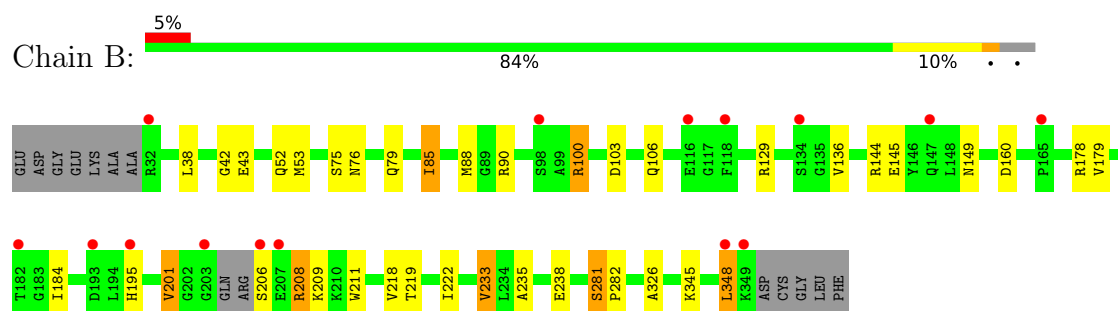
3 Residue-property plots [i](#)

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.

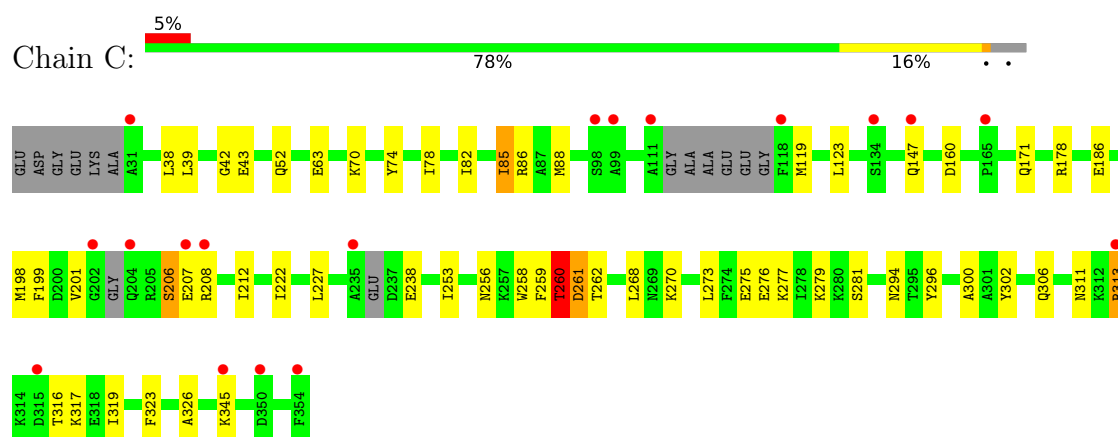
- Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1



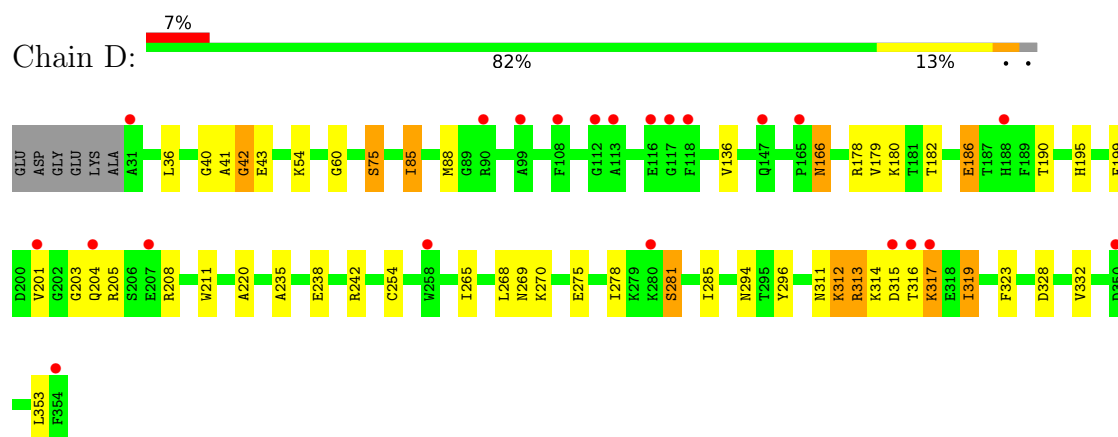
- Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1



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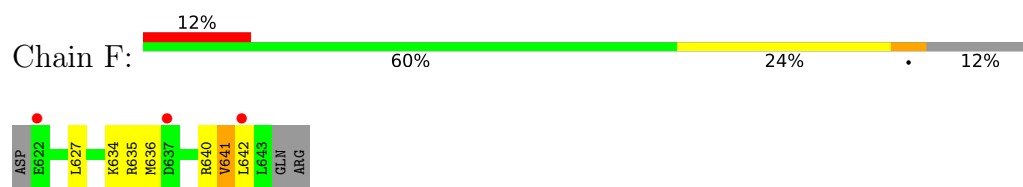
- Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1



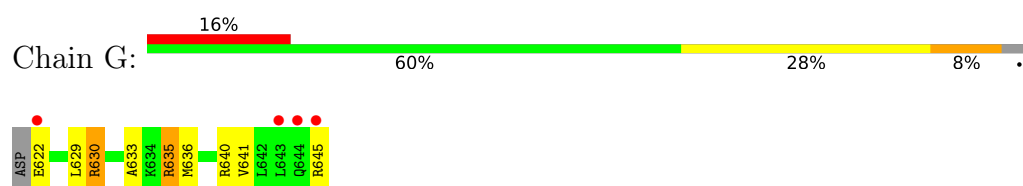
• Molecule 2: G-protein-signaling modulator 2



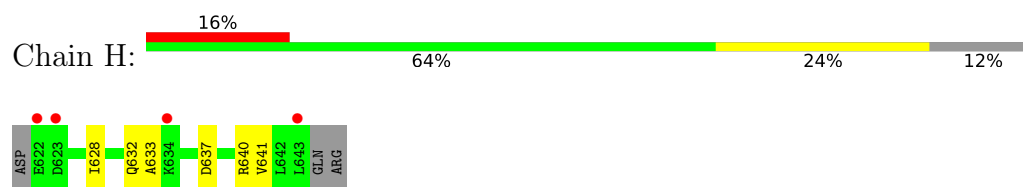
• Molecule 2: G-protein-signaling modulator 2



• Molecule 2: G-protein-signaling modulator 2



• Molecule 2: G-protein-signaling modulator 2



4 Data and refinement statistics

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α , β , γ	207.38Å 207.38Å 236.66Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.00 – 2.90 50.00 – 2.90	Depositor EDS
% Data completeness (in resolution range)	99.9 (50.00-2.90) 99.9 (50.00-2.90)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.47 (at 2.91Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, R_{free}	0.207 , 0.243 0.219 , 0.255	Depositor DCC
R_{free} test set	3387 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	60.3	Xtriage
Anisotropy	0.020	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 40.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	11211	wwPDB-VP
Average B, all atoms (Å ²)	65.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.15% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.69	0/2593	0.91	2/3499 (0.1%)
1	B	0.71	1/2572 (0.0%)	0.89	2/3468 (0.1%)
1	C	0.69	0/2583	0.90	1/3478 (0.0%)
1	D	0.69	1/2630 (0.0%)	0.87	3/3549 (0.1%)
2	E	0.66	0/176	1.11	1/234 (0.4%)
2	F	0.78	0/185	1.19	0/245
2	G	0.88	1/201 (0.5%)	1.17	1/267 (0.4%)
2	H	0.54	0/182	0.89	0/241
All	All	0.70	3/11122 (0.0%)	0.91	10/14981 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	635	ARG	CA-C	-6.96	1.49	1.53
1	D	195	HIS	CG-CD2	5.46	1.41	1.35
1	B	195	HIS	CG-CD2	5.02	1.41	1.35

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	635	ARG	N-CA-C	-9.59	100.92	108.78
1	D	42	GLY	N-CA-C	-6.29	104.02	112.14
1	B	281	SER	CA-C-N	5.97	125.93	119.78
1	B	281	SER	C-N-CA	5.97	125.93	119.78
1	A	124	ALA	N-CA-C	-5.62	105.16	111.28
1	C	260	THR	N-CA-C	-5.49	99.11	110.80
1	A	314	LYS	N-CA-C	5.34	117.86	111.71
2	E	624	PHE	N-CA-C	5.30	116.75	111.07
1	D	281	SER	CA-C-N	5.03	125.03	119.90
1	D	281	SER	C-N-CA	5.03	125.03	119.90

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	2545	0	2495	46	0
1	B	2524	0	2480	37	0
1	C	2539	0	2509	37	0
1	D	2579	0	2526	42	0
2	E	175	0	176	8	0
2	F	184	0	189	8	0
2	G	200	0	197	6	0
2	H	181	0	187	4	0
3	A	28	0	12	1	0
3	B	28	0	12	0	0
3	C	28	0	12	1	0
3	D	28	0	12	0	0
4	A	20	0	0	0	0
4	B	20	0	0	0	0
4	C	20	0	0	1	0
4	D	25	0	0	1	0
5	B	26	0	10	1	0
5	C	13	0	5	3	0
5	D	13	0	5	0	0
6	A	7	0	0	0	0
6	B	8	0	0	0	0
6	C	9	0	0	0	0
6	D	7	0	0	1	0
6	E	1	0	0	3	0
6	F	1	0	0	4	0
6	G	2	0	0	3	0
All	All	11211	0	10827	178	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 (178) 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:B:208:ARG:HB2	1:B:208:ARG:NH1	1.68	1.08
1:B:208:ARG:HB2	1:B:208:ARG:HH11	1.17	1.05
2:E:635:ARG:HB3	6:E:701:HOH:O	1.60	0.99
1:C:260:THR:HG22	1:C:261:ASP:OD1	1.60	0.99
1:C:313:ARG:HH22	1:C:317:LYS:HE2	1.35	0.90
1:B:208:ARG:NH1	1:B:208:ARG:CB	2.35	0.88
5:C:402:CIT:H41	5:C:402:CIT:O2	1.74	0.87
2:G:640:ARG:HD2	6:G:701:HOH:O	1.75	0.85
2:F:640:ARG:HD2	6:F:701:HOH:O	1.77	0.83
1:B:85:ILE:HA	1:B:88:MET:HE3	1.61	0.82
1:B:345:LYS:O	1:B:348:LEU:HD12	1.83	0.79
1:D:85:ILE:HA	1:D:88:MET:HE3	1.67	0.76
1:A:116:GLU:H	1:A:116:GLU:CD	1.94	0.74
1:A:142:ARG:HD2	1:A:145:GLU:OE2	1.86	0.74
1:A:205:ARG:HB2	2:E:629:LEU:HD11	1.68	0.74
1:D:201:VAL:HG13	1:D:211:TRP:NE1	2.03	0.74
1:B:184:ILE:HD11	1:B:211:TRP:HA	1.71	0.73
1:B:88:MET:HE1	1:B:136:VAL:HG22	1.71	0.72
1:D:294:ASN:HB2	6:D:507:HOH:O	1.89	0.71
1:A:116:GLU:CD	1:A:116:GLU:N	2.49	0.70
1:A:43:GLU:OE1	1:A:178:ARG:NH1	2.25	0.70
5:C:402:CIT:O2	5:C:402:CIT:C4	2.39	0.70
1:D:42:GLY:O	1:D:43:GLU:HB2	1.91	0.69
2:G:635:ARG:HB3	6:G:701:HOH:O	1.92	0.69
1:D:281:SER:HB3	1:D:285:ILE:HD12	1.73	0.69
1:B:76:ASN:HA	1:B:79:GLN:HE21	1.57	0.68
1:B:208:ARG:CB	1:B:208:ARG:CZ	2.71	0.68
1:D:315:ASP:O	1:D:316:THR:OG1	2.08	0.67
2:F:636:MET:N	6:F:701:HOH:O	2.08	0.66
1:D:75:SER:HB3	2:H:641:VAL:HG21	1.77	0.66
1:A:74:TYR:CD1	1:A:119:MET:HE3	2.31	0.66
1:C:38:LEU:HD11	1:C:198:MET:HE3	1.77	0.65
2:E:640:ARG:HD2	6:E:701:HOH:O	1.96	0.65
1:A:76:ASN:HA	1:A:79:GLN:HE21	1.61	0.64
1:B:100:ARG:NH1	1:B:103:ASP:OD2	2.30	0.64
1:D:314:LYS:CB	1:D:317:LYS:HZ2	2.11	0.63
2:F:635:ARG:HB3	2:F:640:ARG:HH11	1.64	0.63
1:B:208:ARG:CZ	1:B:208:ARG:HB3	2.29	0.63
1:B:144:ARG:O	1:B:233:VAL:HG12	1.99	0.62
2:F:635:ARG:CB	6:F:701:HOH:O	2.47	0.62
1:A:43:GLU:CD	1:A:178:ARG:HH12	2.07	0.62
2:G:635:ARG:CB	6:G:701:HOH:O	2.47	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:GLU:HG3	2:E:636:MET:HE3	1.83	0.61
1:B:75:SER:HB3	2:F:641:VAL:HG21	1.82	0.60
1:C:38:LEU:HD23	1:C:222:ILE:HB	1.83	0.60
1:C:43:GLU:OE1	1:C:178:ARG:NH1	2.35	0.60
2:F:635:ARG:HB3	6:F:701:HOH:O	2.02	0.60
1:B:345:LYS:HA	1:B:348:LEU:HD11	1.82	0.59
1:B:208:ARG:HG3	1:B:209:LYS:N	2.17	0.59
1:A:116:GLU:OE2	1:A:117:GLY:N	2.36	0.59
1:D:186:GLU:HG3	1:D:199:PHE:CE1	2.39	0.58
1:B:38:LEU:HD23	1:B:222:ILE:HB	1.85	0.58
1:D:88:MET:HE1	1:D:136:VAL:HG22	1.86	0.58
1:C:238:GLU:HA	1:C:238:GLU:OE1	2.03	0.57
1:A:149:ASN:OD1	1:A:178:ARG:HD2	2.03	0.57
1:C:52:GLN:NE2	1:C:326:ALA:O	2.37	0.57
1:C:206:SER:O	1:C:207:GLU:HB2	2.05	0.56
1:B:43:GLU:CD	1:B:178:ARG:HH12	2.13	0.56
1:C:85:ILE:HG13	1:C:88:MET:CE	2.36	0.56
1:C:294:ASN:HB2	4:C:406:SO4:O4	2.06	0.56
1:C:119:MET:HG3	1:C:123:LEU:HD23	1.88	0.55
1:B:145:GLU:HA	1:B:233:VAL:CG1	2.36	0.55
1:D:201:VAL:CG1	1:D:211:TRP:NE1	2.70	0.55
1:A:180:LYS:HE3	2:E:637:ASP:HB3	1.89	0.55
1:D:313:ARG:O	1:D:317:LYS:HB3	2.07	0.55
1:A:50:VAL:HG22	1:A:198:MET:HE3	1.89	0.54
1:C:313:ARG:NH2	1:C:317:LYS:HE2	2.16	0.54
2:H:628:ILE:O	2:H:632:GLN:HG3	2.07	0.54
1:A:50:VAL:HA	1:A:198:MET:HE1	1.89	0.54
1:B:76:ASN:HD22	1:B:79:GLN:HE22	1.55	0.53
1:B:76:ASN:HD22	1:B:79:GLN:NE2	2.06	0.53
1:A:260:THR:HG21	1:C:208:ARG:HH11	1.74	0.53
1:C:260:THR:CG2	1:C:261:ASP:OD1	2.48	0.53
1:D:275:GLU:HG3	1:D:296:TYR:CG	2.44	0.53
1:A:119:MET:O	1:A:120:THR:C	2.51	0.52
1:C:186:GLU:HG3	1:C:199:PHE:CE1	2.44	0.52
1:A:184:ILE:HD11	1:A:211:TRP:HA	1.91	0.52
1:D:268:LEU:HD12	1:D:323:PHE:CE2	2.43	0.52
1:B:345:LYS:HA	1:B:348:LEU:CD1	2.40	0.52
1:C:275:GLU:HG3	1:C:296:TYR:CG	2.45	0.52
1:D:311:ASN:HB2	1:D:319:ILE:CD1	2.40	0.51
1:A:205:ARG:HD3	1:A:208:ARG:HE	1.74	0.51
1:C:39:LEU:HD13	1:C:253:ILE:HD13	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:123:LEU:HD12	1:A:123:LEU:O	2.11	0.51
1:B:235:ALA:HB3	1:B:238:GLU:HG3	1.92	0.51
1:D:166:ASN:ND2	1:D:166:ASN:H	2.08	0.51
1:C:70:LYS:HE2	1:C:74:TYR:HE2	1.74	0.50
1:B:42:GLY:O	1:B:43:GLU:HB2	2.11	0.50
1:B:53:MET:HA	1:B:53:MET:HE2	1.94	0.50
1:A:260:THR:CG2	1:C:208:ARG:HH11	2.25	0.50
1:A:178:ARG:NH2	2:E:640:ARG:HG2	2.27	0.49
1:C:276:GLU:OE2	1:C:279:LYS:NZ	2.46	0.49
1:C:42:GLY:O	1:C:43:GLU:HB2	2.12	0.49
1:C:300:ALA:HB1	1:C:323:PHE:CE2	2.48	0.49
1:D:186:GLU:HG3	1:D:199:PHE:CD1	2.47	0.49
1:A:116:GLU:N	1:A:116:GLU:OE2	2.44	0.48
1:A:122:GLU:O	1:A:126:VAL:HG23	2.12	0.48
1:C:311:ASN:HB2	1:C:319:ILE:HD11	1.95	0.48
1:A:74:TYR:CE1	1:A:119:MET:HE3	2.49	0.48
1:A:116:GLU:OE2	1:A:116:GLU:CA	2.62	0.48
1:B:43:GLU:OE1	1:B:178:ARG:NH1	2.47	0.48
1:D:328:ASP:O	1:D:332:VAL:HG23	2.14	0.48
1:A:323:PHE:O	5:B:402:CIT:O5	2.32	0.47
1:A:162:ILE:HG22	1:A:167:TYR:CZ	2.49	0.47
1:C:273:LEU:O	1:C:277:LYS:HG3	2.15	0.47
1:D:315:ASP:C	1:D:316:THR:HG1	2.10	0.47
1:A:76:ASN:HD22	1:A:79:GLN:NE2	2.12	0.47
1:A:115:GLU:O	1:A:115:GLU:HG2	2.15	0.47
1:D:314:LYS:HA	1:D:315:ASP:HA	1.69	0.47
1:B:209:LYS:HB3	1:B:209:LYS:HE2	1.33	0.47
1:B:76:ASN:HA	1:B:79:GLN:NE2	2.27	0.47
1:D:201:VAL:CG1	1:D:211:TRP:CE2	2.97	0.47
1:A:42:GLY:O	1:A:43:GLU:HB2	2.15	0.46
1:D:182:THR:HA	1:D:204:GLN:OE1	2.15	0.46
1:A:74:TYR:CD1	1:A:119:MET:CE	2.98	0.46
2:F:635:ARG:HB3	2:F:640:ARG:NH1	2.27	0.46
1:D:182:THR:O	1:D:204:GLN:HB2	2.15	0.46
1:D:281:SER:HB3	1:D:285:ILE:CD1	2.41	0.46
1:D:314:LYS:CB	1:D:317:LYS:NZ	2.79	0.46
1:C:302:TYR:O	1:C:306:GLN:HG2	2.16	0.46
1:A:142:ARG:CD	1:A:145:GLU:OE2	2.62	0.46
1:A:227:LEU:HD21	1:A:268:LEU:HB3	1.98	0.46
1:D:205:ARG:HD3	1:D:208:ARG:CB	2.46	0.46
1:C:70:LYS:HE2	1:C:74:TYR:CE2	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:52:GLN:NE2	1:B:326:ALA:O	2.43	0.45
1:D:42:GLY:O	1:D:43:GLU:CB	2.63	0.45
1:D:203:GLY:HA3	2:H:633:ALA:HA	1.99	0.45
1:C:296:TYR:N	5:C:402:CIT:O1	2.49	0.45
1:B:201:VAL:HG13	1:B:211:TRP:HE1	1.81	0.45
2:G:622:GLU:OE1	2:G:630:ARG:NH1	2.48	0.45
1:A:311:ASN:HB2	1:A:319:ILE:HD11	1.98	0.45
1:B:75:SER:CB	2:F:641:VAL:HG21	2.46	0.45
1:D:201:VAL:CG1	1:D:201:VAL:O	2.61	0.45
1:C:39:LEU:CD1	1:C:253:ILE:HD13	2.46	0.45
1:A:73:VAL:HG13	1:A:155:TYR:CE1	2.52	0.44
1:C:259:PHE:HB3	1:C:262:THR:HB	1.99	0.44
1:D:43:GLU:OE2	1:D:178:ARG:NH1	2.48	0.44
1:C:256:ASN:OD1	1:C:258:TRP:HB2	2.17	0.44
1:D:254:CYS:SG	1:D:319:ILE:HD11	2.58	0.43
1:A:38:LEU:HD11	1:A:198:MET:HE3	1.99	0.43
1:A:230:TYR:O	1:A:286:CYS:HB2	2.17	0.43
1:C:39:LEU:HD13	1:C:253:ILE:CD1	2.48	0.43
1:D:315:ASP:HA	1:D:317:LYS:HZ3	1.84	0.43
1:A:50:VAL:HG22	1:A:198:MET:CE	2.49	0.43
1:D:311:ASN:HB2	1:D:319:ILE:HD12	2.00	0.43
2:H:637:ASP:HA	2:H:640:ARG:HG3	2.01	0.43
1:B:149:ASN:HB2	1:B:178:ARG:CZ	2.48	0.42
1:B:103:ASP:OD1	1:B:129:ARG:NH2	2.53	0.42
1:B:149:ASN:HB2	1:B:178:ARG:NE	2.35	0.42
1:A:43:GLU:CD	1:A:178:ARG:NH1	2.71	0.42
2:E:635:ARG:CB	6:E:701:HOH:O	2.38	0.42
2:G:629:LEU:O	2:G:633:ALA:HB2	2.20	0.42
1:A:201:VAL:HG23	1:A:214:CYS:SG	2.60	0.42
1:D:235:ALA:HB3	1:D:238:GLU:HG2	2.00	0.42
1:A:75:SER:HB3	2:E:641:VAL:HG21	2.01	0.42
1:C:227:LEU:HD21	1:C:268:LEU:HB3	2.00	0.42
1:B:145:GLU:HA	1:B:233:VAL:HG12	2.00	0.42
1:B:281:SER:HA	1:B:282:PRO:HD3	1.78	0.42
1:D:54:LYS:HE2	1:D:60:GLY:O	2.19	0.42
1:A:116:GLU:OE2	1:A:116:GLU:C	2.62	0.42
1:A:270:LYS:HG2	3:A:401:GDP:C6	2.55	0.41
1:A:302:TYR:O	1:A:306:GLN:HG2	2.20	0.41
1:A:119:MET:HE3	1:A:119:MET:HB2	1.73	0.41
1:B:88:MET:CE	1:B:136:VAL:HG22	2.46	0.41
1:C:147:GLN:HB3	2:G:636:MET:HE2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:36:LEU:CD2	1:D:220:ALA:HB3	2.50	0.41
1:A:50:VAL:HA	1:A:198:MET:CE	2.49	0.41
1:C:85:ILE:HA	1:C:88:MET:HE2	2.01	0.41
1:C:78:ILE:HG22	1:C:82:ILE:CD1	2.51	0.41
1:C:270:LYS:HG2	3:C:401:GDP:C6	2.55	0.41
1:D:269:ASN:CG	1:D:270:LYS:H	2.29	0.41
1:C:82:ILE:O	1:C:86:ARG:HG3	2.20	0.41
1:D:269:ASN:CG	1:D:270:LYS:N	2.79	0.41
1:D:40:GLY:O	1:D:41:ALA:C	2.63	0.41
1:B:145:GLU:HA	1:B:233:VAL:HG11	2.02	0.40
1:D:88:MET:HE3	1:D:88:MET:HB2	1.79	0.40
1:D:312:LYS:HE2	4:D:407:SO4:O1	2.20	0.40
1:D:313:ARG:O	1:D:317:LYS:CB	2.69	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	319/330 (97%)	301 (94%)	18 (6%)	0	100	100
1	B	313/330 (95%)	300 (96%)	13 (4%)	0	100	100
1	C	308/330 (93%)	294 (96%)	14 (4%)	0	100	100
1	D	323/330 (98%)	305 (94%)	18 (6%)	0	100	100
2	E	19/25 (76%)	16 (84%)	3 (16%)	0	100	100
2	F	20/25 (80%)	19 (95%)	1 (5%)	0	100	100
2	G	22/25 (88%)	19 (86%)	3 (14%)	0	100	100
2	H	20/25 (80%)	17 (85%)	3 (15%)	0	100	100
All	All	1344/1420 (95%)	1271 (95%)	73 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	272/285 (95%)	262 (96%)	10 (4%)	30	64
1	B	271/285 (95%)	258 (95%)	13 (5%)	23	55
1	C	275/285 (96%)	262 (95%)	13 (5%)	23	56
1	D	275/285 (96%)	260 (94%)	15 (6%)	19	50
2	E	19/24 (79%)	16 (84%)	3 (16%)	2	8
2	F	20/24 (83%)	16 (80%)	4 (20%)	1	4
2	G	21/24 (88%)	18 (86%)	3 (14%)	3	11
2	H	19/24 (79%)	19 (100%)	0	100	100
All	All	1172/1236 (95%)	1111 (95%)	61 (5%)	21	52

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	116	GLU
1	A	126	VAL
1	A	142	ARG
1	A	180	LYS
1	A	201	VAL
1	A	209	LYS
1	A	257	LYS
1	A	284	THR
1	A	312	LYS
1	A	316	THR
1	B	85	ILE
1	B	90	ARG
1	B	100	ARG
1	B	106	GLN
1	B	160	ASP
1	B	179	VAL

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Mol	Chain	Res	Type
1	B	201	VAL
1	B	206	SER
1	B	208	ARG
1	B	218	VAL
1	B	219	THR
1	B	233	VAL
1	B	348	LEU
1	C	63	GLU
1	C	85	ILE
1	C	160	ASP
1	C	171	GLN
1	C	201	VAL
1	C	206	SER
1	C	212	ILE
1	C	260	THR
1	C	261	ASP
1	C	281	SER
1	C	313	ARG
1	C	316	THR
1	C	345	LYS
1	D	75	SER
1	D	85	ILE
1	D	166	ASN
1	D	179	VAL
1	D	180	LYS
1	D	186	GLU
1	D	190	THR
1	D	242	ARG
1	D	265	ILE
1	D	278	ILE
1	D	312	LYS
1	D	313	ARG
1	D	317	LYS
1	D	319	ILE
1	D	353	LEU
2	E	629	LEU
2	E	641	VAL
2	E	642	LEU
2	F	627	LEU
2	F	634	LYS
2	F	641	VAL
2	F	642	LEU

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Mol	Chain	Res	Type
2	G	630	ARG
2	G	641	VAL
2	G	645	ARG

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	68	GLN
1	A	79	GLN
1	B	68	GLN
1	B	79	GLN
1	B	188	HIS
1	C	106	GLN
1	C	304	GLN
1	D	166	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

25 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	CIT	D	402	-	12,12,12	1.69	2 (16%)	17,17,17	4.98	9 (52%)
4	SO4	D	404	-	4,4,4	0.48	0	6,6,6	0.09	0
4	SO4	C	404	-	4,4,4	0.46	0	6,6,6	0.28	0
4	SO4	B	407	-	4,4,4	0.44	0	6,6,6	0.11	0
3	GDP	A	401	-	29,30,30	1.20	3 (10%)	45,47,47	1.95	10 (22%)
4	SO4	C	405	-	4,4,4	0.47	0	6,6,6	0.13	0
4	SO4	D	406	-	4,4,4	0.47	0	6,6,6	0.14	0
4	SO4	B	404	-	4,4,4	0.51	0	6,6,6	0.25	0
4	SO4	A	402	-	4,4,4	0.49	0	6,6,6	0.16	0
4	SO4	C	403	-	4,4,4	0.45	0	6,6,6	0.11	0
5	CIT	C	402	-	12,12,12	1.50	2 (16%)	17,17,17	6.34	7 (41%)
4	SO4	B	405	-	4,4,4	0.47	0	6,6,6	0.12	0
4	SO4	A	405	-	4,4,4	0.44	0	6,6,6	0.18	0
3	GDP	B	401	-	29,30,30	1.16	3 (10%)	45,47,47	1.83	6 (13%)
5	CIT	B	402	-	12,12,12	1.38	1 (8%)	17,17,17	6.44	9 (52%)
4	SO4	A	403	-	4,4,4	0.47	0	6,6,6	0.20	0
4	SO4	C	406	-	4,4,4	0.45	0	6,6,6	0.22	0
4	SO4	D	405	-	4,4,4	0.43	0	6,6,6	0.12	0
3	GDP	C	401	-	29,30,30	1.24	4 (13%)	45,47,47	1.77	7 (15%)
4	SO4	D	403	-	4,4,4	0.55	0	6,6,6	0.19	0
3	GDP	D	401	-	29,30,30	1.15	5 (17%)	45,47,47	1.94	10 (22%)
5	CIT	B	403	-	12,12,12	1.29	1 (8%)	17,17,17	5.02	9 (52%)
4	SO4	B	406	-	4,4,4	0.49	0	6,6,6	0.18	0
4	SO4	D	407	-	4,4,4	0.44	0	6,6,6	0.06	0
4	SO4	A	404	-	4,4,4	0.47	0	6,6,6	0.11	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
3	GDP	C	401	-	-	2/16/32/32	0/3/3/3
5	CIT	D	402	-	-	8/16/16/16	-
3	GDP	D	401	-	-	3/16/32/32	0/3/3/3
5	CIT	B	402	-	-	6/16/16/16	-
3	GDP	B	401	-	-	2/16/32/32	0/3/3/3
5	CIT	B	403	-	-	9/16/16/16	-
5	CIT	C	402	-	-	10/16/16/16	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GDP	A	401	-	-	4/16/32/32	0/3/3/3

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	402	CIT	C3-C6	3.44	1.57	1.53
5	B	402	CIT	C3-C6	-3.33	1.50	1.53
3	C	401	GDP	C5-C4	3.20	1.47	1.38
3	B	401	GDP	C5-C4	2.98	1.46	1.38
5	C	402	CIT	C4-C3	2.93	1.57	1.54
3	A	401	GDP	C5-C4	2.92	1.46	1.38
5	B	403	CIT	C3-C6	2.88	1.56	1.53
5	D	402	CIT	C2-C3	-2.77	1.50	1.54
5	C	402	CIT	O5-C6	2.76	1.30	1.22
3	C	401	GDP	PA-O3A	2.72	1.62	1.59
3	A	401	GDP	PA-O3A	2.72	1.62	1.59
3	D	401	GDP	C5-C4	2.60	1.45	1.38
3	B	401	GDP	C5-N7	-2.59	1.33	1.39
3	A	401	GDP	C5-N7	-2.34	1.34	1.39
3	D	401	GDP	C6-N1	-2.25	1.34	1.38
3	D	401	GDP	PA-O3A	2.21	1.61	1.59
3	C	401	GDP	C6-N1	-2.18	1.34	1.38
3	D	401	GDP	C5-N7	-2.09	1.34	1.39
3	C	401	GDP	C5-N7	-2.07	1.34	1.39
3	B	401	GDP	C4-N9	-2.05	1.32	1.38
3	D	401	GDP	C4-N9	-2.02	1.32	1.38

All (67) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	402	CIT	O7-C3-C6	-21.08	79.06	108.96
5	B	402	CIT	O7-C3-C6	-19.84	80.82	108.96
5	D	402	CIT	O7-C3-C6	-13.48	89.84	108.96
5	B	402	CIT	C2-C3-C6	-12.74	81.85	110.03
5	B	403	CIT	O7-C3-C6	-12.35	91.45	108.96
5	C	402	CIT	C2-C3-C6	-11.38	84.87	110.03
5	D	402	CIT	C2-C3-C6	-10.73	86.31	110.03
5	B	403	CIT	C2-C3-C6	-10.06	87.78	110.03
5	B	403	CIT	C4-C3-C6	-8.77	90.64	110.03
5	D	402	CIT	O7-C3-C2	8.40	128.54	109.38
5	B	402	CIT	O7-C3-C2	8.31	128.32	109.38
5	C	402	CIT	O7-C3-C2	6.70	124.65	109.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	401	GDP	C5-C4-N3	-6.44	118.14	128.39
3	B	401	GDP	C5-C4-N3	-5.97	118.89	128.39
3	D	401	GDP	C5-C4-N3	-5.92	118.97	128.39
3	D	401	GDP	C2-N3-C4	5.71	122.14	112.30
3	C	401	GDP	C5-C4-N3	-5.65	119.40	128.39
3	A	401	GDP	C2-N3-C4	5.44	121.67	112.30
3	B	401	GDP	C2-N3-C4	5.24	121.32	112.30
5	B	403	CIT	O7-C3-C4	5.15	121.13	109.38
5	B	403	CIT	O7-C3-C2	5.08	120.96	109.38
5	C	402	CIT	O7-C3-C4	5.06	120.92	109.38
5	B	402	CIT	O7-C3-C4	5.03	120.84	109.38
3	C	401	GDP	C2-N3-C4	4.82	120.61	112.30
3	A	401	GDP	N9-C4-N3	4.75	135.45	125.95
3	B	401	GDP	N9-C4-N3	4.47	134.89	125.95
3	D	401	GDP	N9-C4-N3	4.31	134.58	125.95
5	D	402	CIT	O6-C6-C3	4.26	121.31	113.14
5	B	403	CIT	O6-C6-C3	4.22	121.23	113.14
3	C	401	GDP	N9-C4-N3	4.19	134.34	125.95
3	D	401	GDP	O6-C6-C5	-3.59	117.05	126.53
5	B	402	CIT	O5-C6-C3	-3.39	115.52	122.09
5	B	403	CIT	C4-C3-C2	3.35	117.91	109.31
3	B	401	GDP	O6-C6-C5	-3.25	117.95	126.53
5	B	402	CIT	C4-C3-C6	-3.24	102.86	110.03
3	C	401	GDP	C6-C5-N7	3.22	136.15	130.29
3	D	401	GDP	C6-C5-N7	3.13	135.98	130.29
5	C	402	CIT	C4-C3-C6	-3.09	103.20	110.03
3	A	401	GDP	C6-C5-N7	2.95	135.66	130.29
5	C	402	CIT	O1-C1-C2	-2.87	114.82	122.95
3	D	401	GDP	O3'-C3'-C4'	-2.83	102.94	111.08
5	C	402	CIT	O2-C1-C2	2.83	123.31	114.35
3	A	401	GDP	O6-C6-C5	-2.78	119.19	126.53
3	A	401	GDP	O3A-PB-O1B	-2.77	96.45	111.04
5	B	402	CIT	O4-C5-C4	2.76	123.10	114.35
3	A	401	GDP	O4'-C1'-N9	-2.69	102.26	108.36
3	B	401	GDP	C6-C5-N7	2.64	135.10	130.29
3	C	401	GDP	O6-C6-C5	-2.60	119.68	126.53
5	D	402	CIT	O6-C6-O5	-2.58	115.59	123.86
5	B	403	CIT	O1-C1-C2	-2.57	115.67	122.95
5	D	402	CIT	O7-C3-C4	2.53	115.14	109.38
3	A	401	GDP	C4-C5-N7	-2.46	106.76	110.67
5	D	402	CIT	O4-C5-C4	2.45	122.09	114.35
3	D	401	GDP	C5-C6-N1	2.40	119.37	113.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	403	CIT	O6-C6-O5	-2.34	116.37	123.86
5	B	402	CIT	O6-C6-C3	2.32	117.59	113.14
3	D	401	GDP	N2-C2-N1	2.32	121.65	116.76
5	B	402	CIT	O1-C1-C2	-2.26	116.56	122.95
3	C	401	GDP	O3A-PB-O1B	-2.23	99.29	111.04
3	D	401	GDP	O3B-PB-O2B	2.19	116.00	107.80
3	D	401	GDP	C2-N1-C6	-2.14	121.22	125.11
3	C	401	GDP	C4-C5-N7	-2.14	107.29	110.67
5	D	402	CIT	O3-C5-C4	-2.13	116.93	122.95
5	D	402	CIT	C4-C3-C2	2.10	114.71	109.31
3	A	401	GDP	C2-N1-C6	-2.10	121.31	125.11
3	B	401	GDP	O3'-C3'-C4'	-2.03	105.26	111.08
3	A	401	GDP	C5-C6-N1	2.00	118.34	113.25

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	401	GDP	PA-O3A-PB-O2B
3	A	401	GDP	PA-O3A-PB-O3B
3	B	401	GDP	PA-O3A-PB-O2B
3	B	401	GDP	PA-O3A-PB-O3B
3	D	401	GDP	PA-O3A-PB-O2B
3	D	401	GDP	PA-O3A-PB-O3B
5	B	403	CIT	C1-C2-C3-O7
5	C	402	CIT	C1-C2-C3-O7
5	C	402	CIT	C1-C2-C3-C4
5	C	402	CIT	O7-C3-C6-O5
5	C	402	CIT	O7-C3-C6-O6
5	C	402	CIT	C4-C3-C6-O5
5	C	402	CIT	C4-C3-C6-O6
5	D	402	CIT	C1-C2-C3-O7
5	D	402	CIT	C2-C3-C6-O5
5	B	402	CIT	C1-C2-C3-C6
5	C	402	CIT	O7-C3-C4-C5
5	D	402	CIT	C2-C3-C4-C5
5	B	402	CIT	C2-C3-C4-C5
5	B	403	CIT	O7-C3-C4-C5
5	D	402	CIT	C1-C2-C3-C6
5	D	402	CIT	O7-C3-C6-O5
5	D	402	CIT	C2-C3-C6-O6
3	C	401	GDP	PA-O3A-PB-O2B

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Mol	Chain	Res	Type	Atoms
3	C	401	GDP	PA-O3A-PB-O3B
5	D	402	CIT	C4-C3-C6-O6
3	A	401	GDP	C5'-O5'-PA-O1A
5	C	402	CIT	C6-C3-C4-C5
5	C	402	CIT	O2-C1-C2-C3
5	D	402	CIT	C4-C3-C6-O5
5	B	402	CIT	C1-C2-C3-O7
5	C	402	CIT	O1-C1-C2-C3
5	B	403	CIT	C2-C3-C6-O5
5	B	403	CIT	C4-C3-C6-O5
3	A	401	GDP	PA-O3A-PB-O1B
5	B	403	CIT	C2-C3-C6-O6
5	B	403	CIT	C4-C3-C6-O6
5	B	403	CIT	O2-C1-C2-C3
3	D	401	GDP	PA-O3A-PB-O1B
5	B	402	CIT	C3-C4-C5-O3
5	B	403	CIT	O1-C1-C2-C3
5	B	402	CIT	C3-C4-C5-O4
5	B	402	CIT	O1-C1-C2-C3
5	B	403	CIT	C1-C2-C3-C6

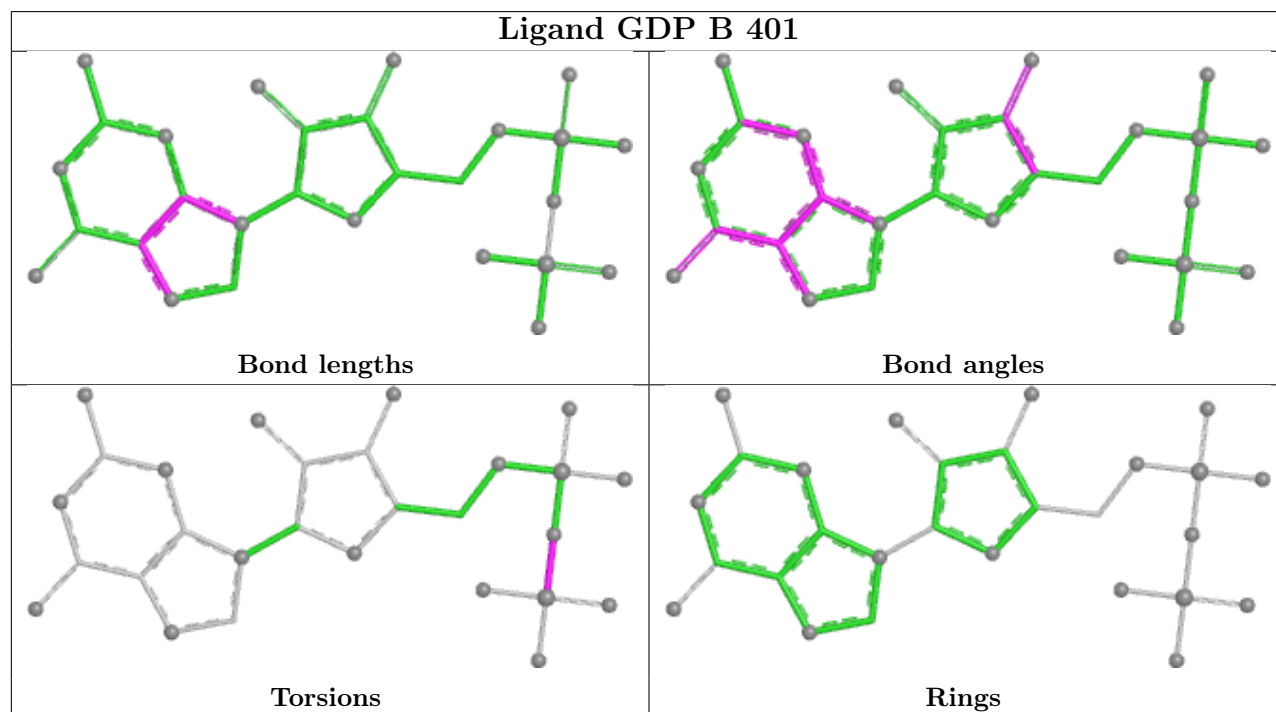
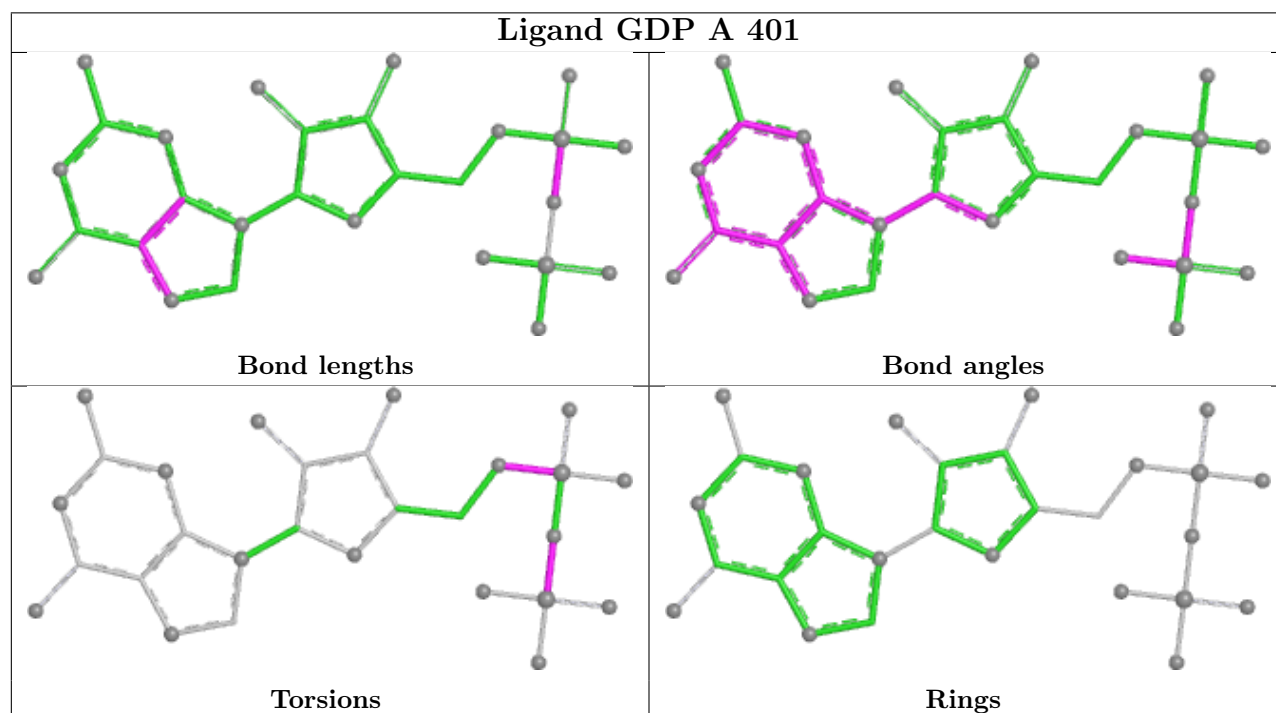
There are no ring outliers.

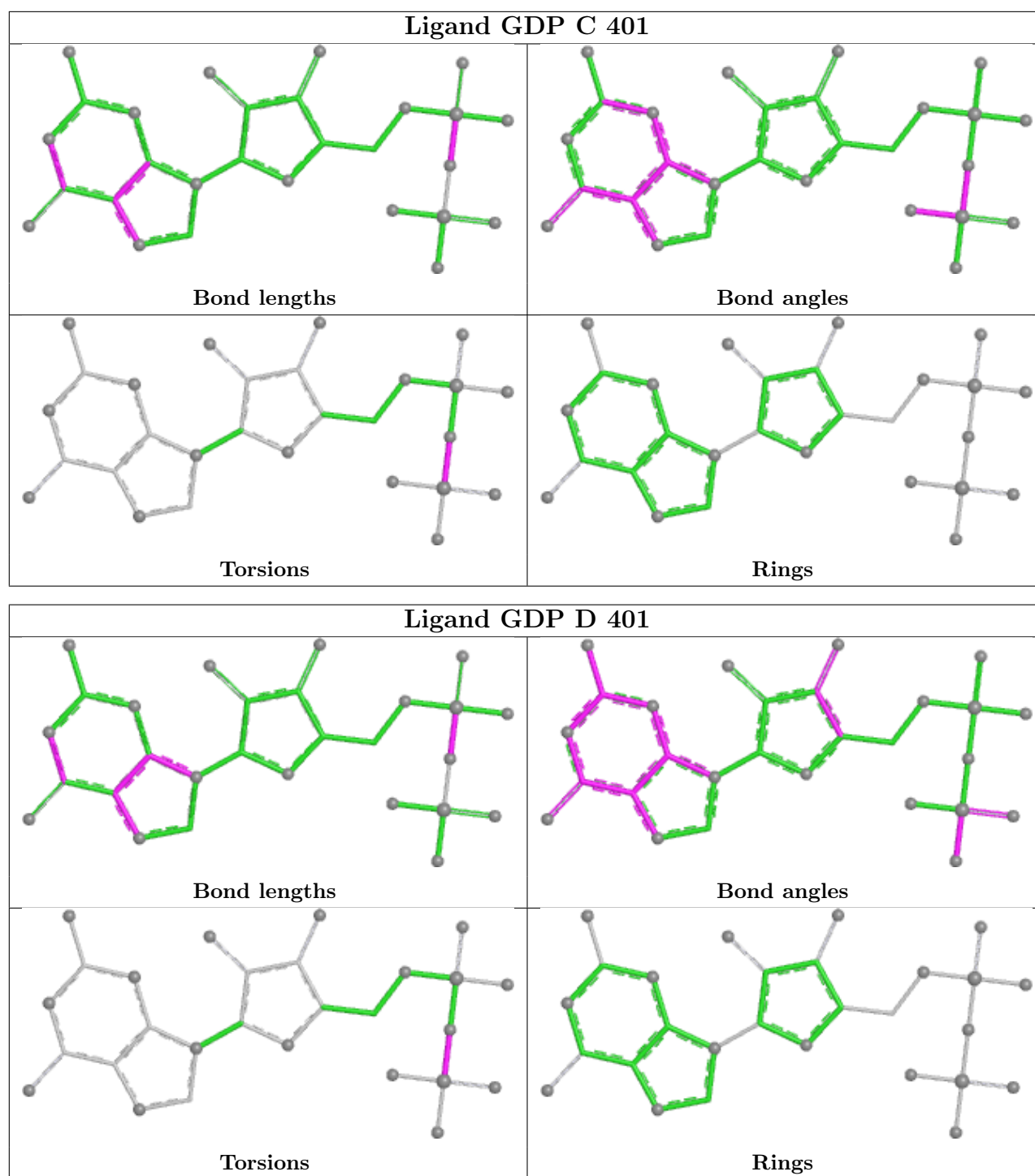
6 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	401	GDP	1	0
5	C	402	CIT	3	0
5	B	402	CIT	1	0
4	C	406	SO4	1	0
3	C	401	GDP	1	0
4	D	407	SO4	1	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	320/330 (96%)	0.05	10 (3%)	51 42	30, 60, 100, 125	1 (0%)
1	B	316/330 (95%)	-0.00	15 (4%)	36 28	29, 57, 91, 125	1 (0%)
1	C	316/330 (95%)	0.18	18 (5%)	29 23	36, 62, 110, 145	0
1	D	324/330 (98%)	0.26	22 (6%)	23 18	34, 61, 103, 143	1 (0%)
2	E	21/25 (84%)	0.61	2 (9%)	14 11	59, 69, 85, 87	0
2	F	22/25 (88%)	0.66	3 (13%)	7 5	50, 63, 84, 90	0
2	G	24/25 (96%)	0.76	4 (16%)	4 3	52, 64, 109, 127	0
2	H	22/25 (88%)	1.06	4 (18%)	3 3	64, 79, 109, 128	0
All	All	1365/1420 (96%)	0.16	78 (5%)	29 23	29, 61, 104, 145	3 (0%)

All (78) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	203	GLY	10.7
1	D	118	PHE	8.0
1	C	204	GLN	7.6
1	D	204	GLN	7.5
1	D	316	THR	7.3
1	C	147	GLN	6.6
1	D	350	ASP	6.0
1	B	118	PHE	6.0
2	G	622	GLU	5.5
1	A	147	GLN	5.4
1	D	116	GLU	5.3
1	C	350	ASP	5.1
1	D	147	GLN	5.0
1	D	188[A]	HIS	5.0
1	C	118	PHE	4.9
1	B	207	GLU	4.9

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Mol	Chain	Res	Type	RSRZ
1	A	141	ASN	4.8
2	H	623	ASP	4.7
1	A	31	ALA	4.7
1	B	98	SER	4.3
1	C	202	GLY	4.2
1	D	201	VAL	4.2
1	D	117	GLY	4.2
1	D	315	ASP	3.9
1	D	113	ALA	3.9
2	E	643	LEU	3.9
1	B	206	SER	3.7
1	C	354	PHE	3.7
1	D	354	PHE	3.7
1	C	313	ARG	3.7
1	B	348	LEU	3.6
1	C	345	LYS	3.6
1	A	205	ARG	3.6
1	C	31	ALA	3.2
2	G	644	GLN	3.2
1	A	182	THR	3.1
2	F	637	ASP	3.1
1	C	235	ALA	3.0
1	A	116	GLU	3.0
1	B	32	ARG	3.0
2	E	630	ARG	2.9
2	G	643	LEU	2.9
1	D	207	GLU	2.9
1	B	147	GLN	2.9
1	B	195	HIS	2.7
2	G	645	ARG	2.7
1	D	99	ALA	2.7
1	C	165	PRO	2.7
1	C	134	SER	2.7
1	D	165	PRO	2.6
1	D	258	TRP	2.6
2	H	643	LEU	2.5
1	B	193	ASP	2.4
1	C	315	ASP	2.4
1	C	111	ALA	2.4
2	F	622	GLU	2.4
1	D	31	ALA	2.4
1	B	349	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	90	ARG	2.3
1	C	98	SER	2.3
1	C	207	GLU	2.3
2	H	634	LYS	2.3
2	F	642	LEU	2.2
1	A	203	GLY	2.2
1	D	317	LYS	2.2
1	D	112	GLY	2.2
1	A	118	PHE	2.2
1	B	116	GLU	2.2
1	B	182	THR	2.1
1	A	142	ARG	2.1
1	B	165	PRO	2.1
1	D	108	PHE	2.1
1	B	134	SER	2.0
1	D	280	LYS	2.0
1	A	90	ARG	2.0
1	C	208	ARG	2.0
1	C	99	ALA	2.0
2	H	622	GLU	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(Å ²)	Q<0.9
4	SO4	B	407	5/5	0.60	0.10	134,138,141,142	0
4	SO4	D	406	5/5	0.60	0.14	119,124,132,132	0
4	SO4	C	406	5/5	0.62	0.13	126,130,130,133	0

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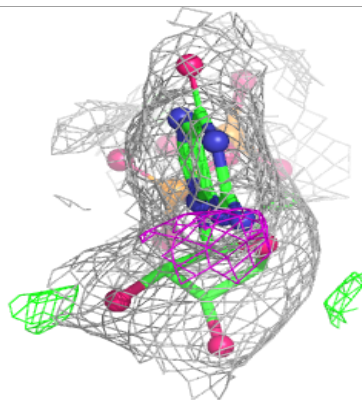
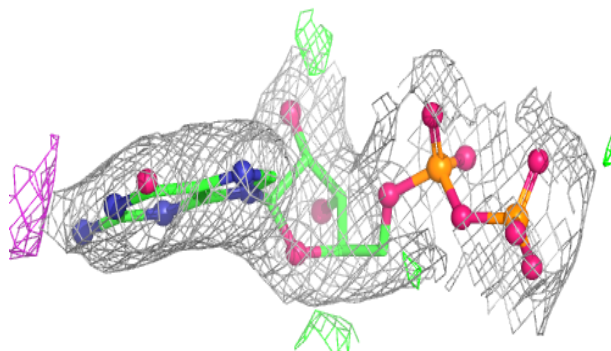
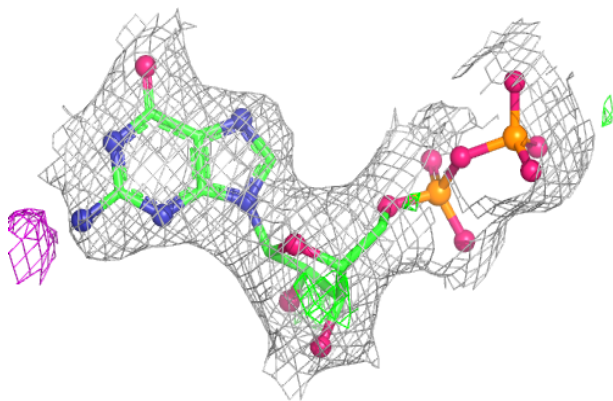
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	SO4	B	405	5/5	0.62	0.18	116,120,127,130	0
4	SO4	C	405	5/5	0.68	0.12	128,133,138,141	0
4	SO4	D	405	5/5	0.69	0.09	153,158,160,161	0
4	SO4	B	406	5/5	0.69	0.14	130,135,139,146	0
4	SO4	D	407	5/5	0.70	0.10	131,133,135,136	0
4	SO4	A	405	5/5	0.76	0.21	107,112,115,124	0
4	SO4	A	402	5/5	0.80	0.12	110,115,123,126	0
4	SO4	C	404	5/5	0.81	0.17	115,120,123,123	0
4	SO4	A	403	5/5	0.83	0.11	110,111,115,115	0
4	SO4	D	404	5/5	0.84	0.10	122,131,137,138	0
4	SO4	B	404	5/5	0.85	0.14	97,110,116,117	0
4	SO4	D	403	5/5	0.86	0.14	91,96,100,101	0
4	SO4	A	404	5/5	0.87	0.16	107,108,116,120	0
5	CIT	C	402	13/13	0.87	0.18	47,60,72,76	0
4	SO4	C	403	5/5	0.89	0.11	103,108,113,113	0
5	CIT	B	402	13/13	0.93	0.11	56,59,67,72	0
5	CIT	D	402	13/13	0.95	0.08	42,47,53,57	0
5	CIT	B	403	13/13	0.96	0.08	56,58,64,67	0
3	GDP	A	401	28/28	0.97	0.07	48,54,58,59	0
3	GDP	B	401	28/28	0.98	0.06	37,42,47,48	0
3	GDP	C	401	28/28	0.98	0.06	44,49,51,52	0
3	GDP	D	401	28/28	0.98	0.05	38,43,47,48	0

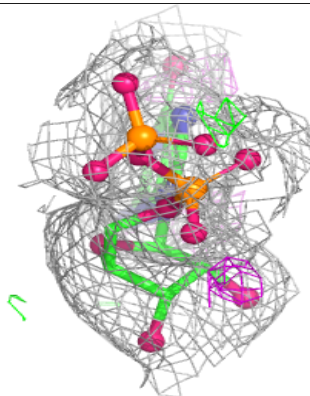
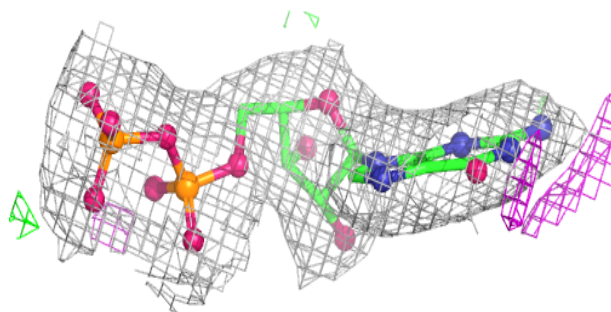
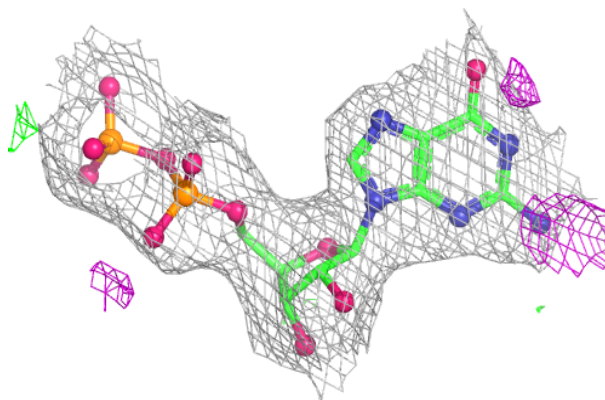
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around GDP A 401:

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

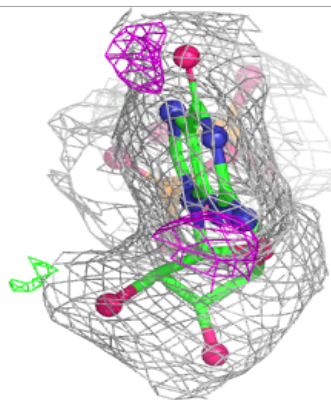
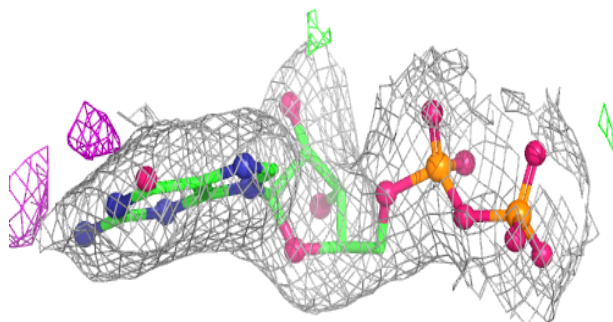
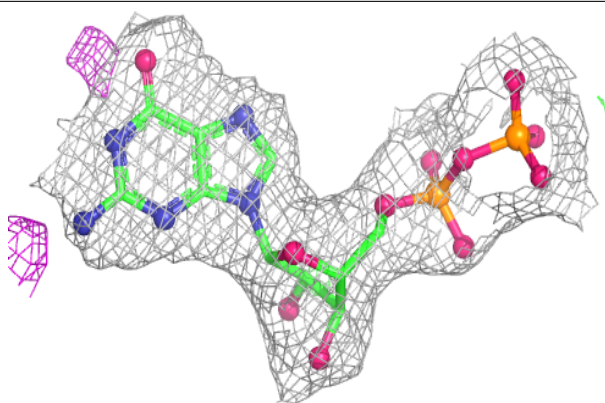
**Electron density around GDP B 401:**

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

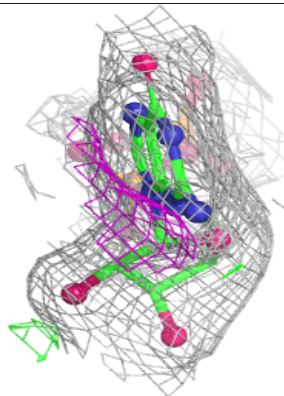
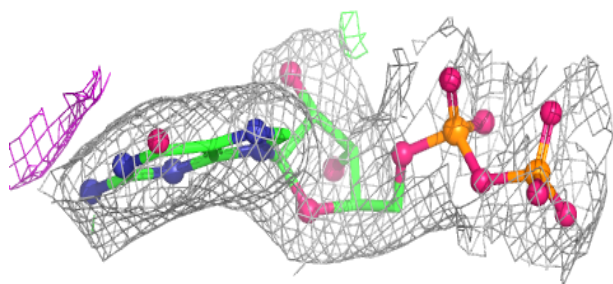
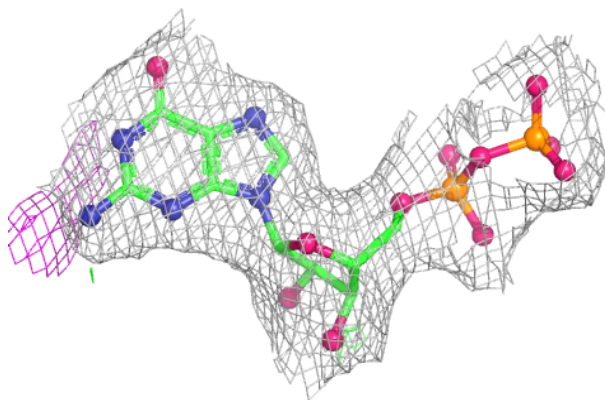


Electron density around GDP C 401:

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

**Electron density around GDP D 401:**

$2mF_o-DF_c$ (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.