



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 22, 2023 – 10:19 PM JST

PDB ID : 7XQX
Title : Crystal structure of T2R-TTL-27a complex
Authors : Lun, T.; Wu, C.Y.
Deposited on : 2022-05-09
Resolution : 3.36 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
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

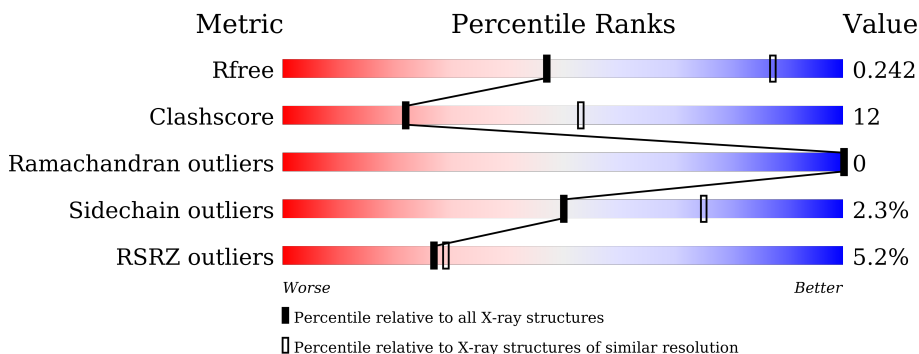
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.36 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1558 (3.42-3.30)
Clashscore	141614	1627 (3.42-3.30)
Ramachandran outliers	138981	1599 (3.42-3.30)
Sidechain outliers	138945	1598 (3.42-3.30)
RSRZ outliers	127900	1507 (3.42-3.30)

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	450	
1	C	450	
2	B	445	
2	D	445	
3	E	143	
4	F	384	

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
8	CL	A	504	-	-	-	X

2 Entry composition i

There are 11 unique types of molecules in this entry. The entry contains 17610 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 Tubulin alpha-1B chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	437	Total	C	N	O	S	0	3	0
			3423	2167	580	652	24			
1	C	440	Total	C	N	O	S	0	8	0
			3465	2193	585	663	24			

- Molecule 2 is a protein called Tubulin beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	424	Total	C	N	O	S	0	3	0
			3356	2111	572	647	26			
2	D	420	Total	C	N	O	S	0	0	0
			3295	2072	558	639	26			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	E	123	Total	C	N	O	S	0	2	0
			1026	633	186	202	5			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	3	MET	-	initiating methionine	UNP P63042
E	4	ALA	-	expression tag	UNP P63042

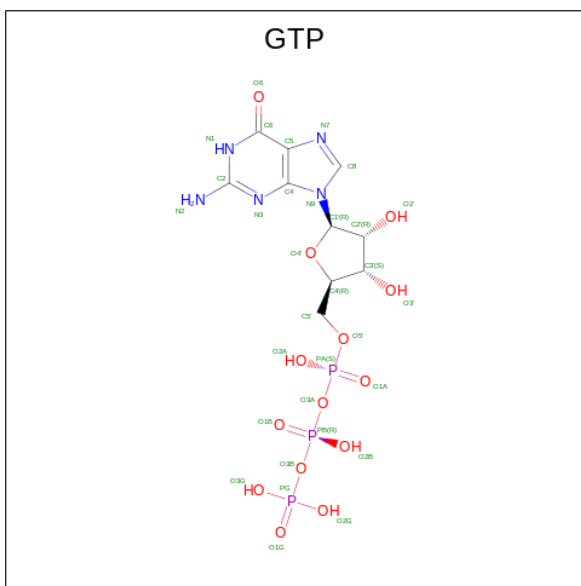
- Molecule 4 is a protein called TTL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	F	346	Total	C	N	O	S	0	4	0
			2851	1830	487	519	15			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	379	HIS	-	expression tag	UNP E1BQ43
F	380	HIS	-	expression tag	UNP E1BQ43
F	381	HIS	-	expression tag	UNP E1BQ43
F	382	HIS	-	expression tag	UNP E1BQ43
F	383	HIS	-	expression tag	UNP E1BQ43
F	384	HIS	-	expression tag	UNP E1BQ43

- Molecule 5 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).

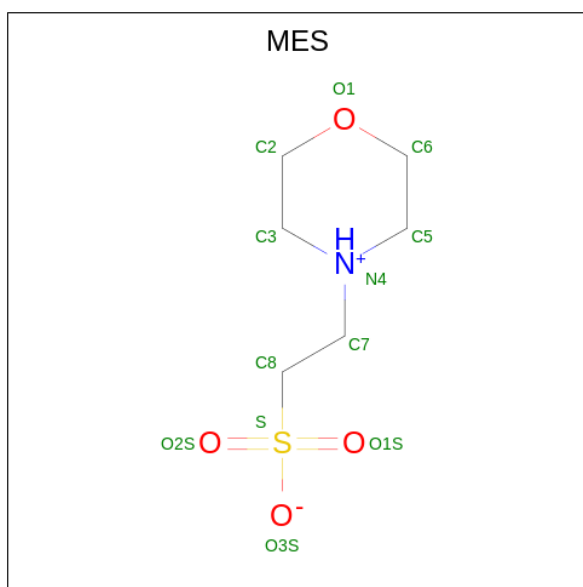


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
5	A	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
5	C	1	Total	C	N	O	P	0	0
			32	10	5	14	3		

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

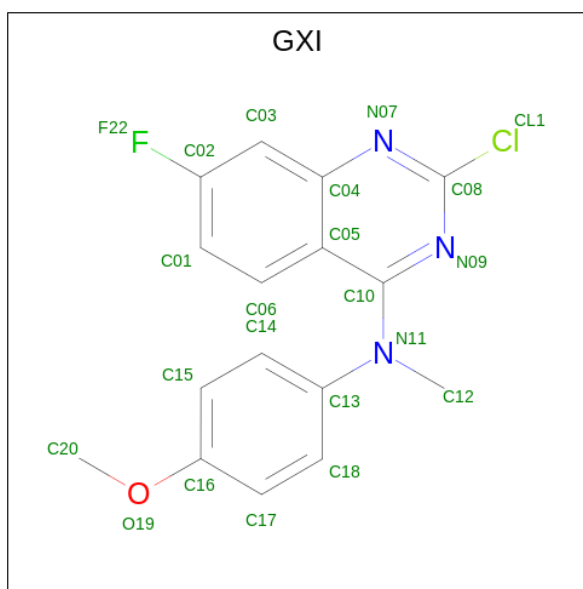
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
6	A	1	Total	Mg	0	0
			1	1		
6	B	1	Total	Mg	0	0
			1	1		
6	C	1	Total	Mg	0	0
			1	1		

- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	N	O	S			
10	B	1	Total	12	6	1	4	1	0	0
10	B	1	Total	12	6	1	4	1	0	0

- Molecule 11 is 2-chloranyl-7-fluoranyl-N-(4-methoxyphenyl)-N-methyl-quinazolin-4-amine (three-letter code: GXI) (formula: $C_{16}H_{13}ClFN_3O$) (labeled as "Ligand of Interest" by depositor).

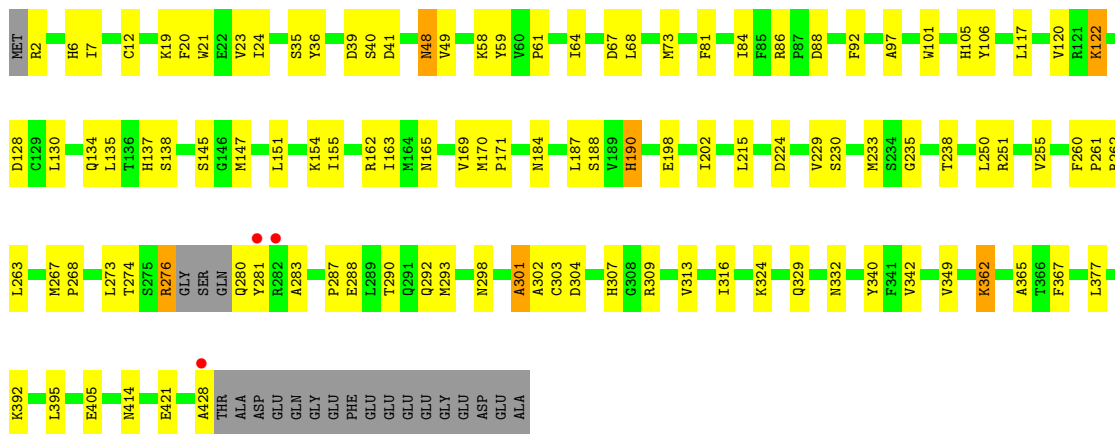


Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	
			Total	C	Cl	F	N	O			
11	B	1	Total	22	16	1	1	3	1	0	0

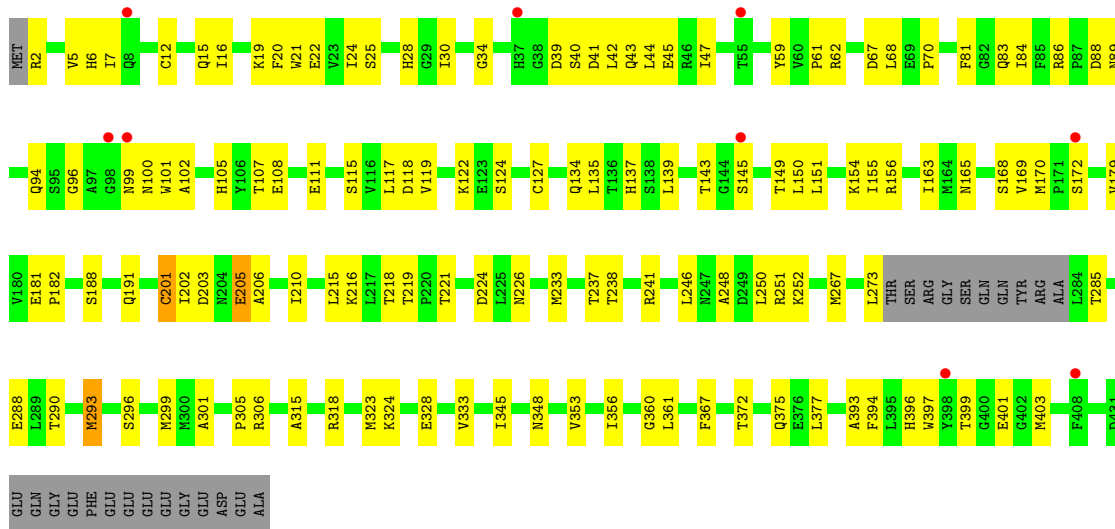
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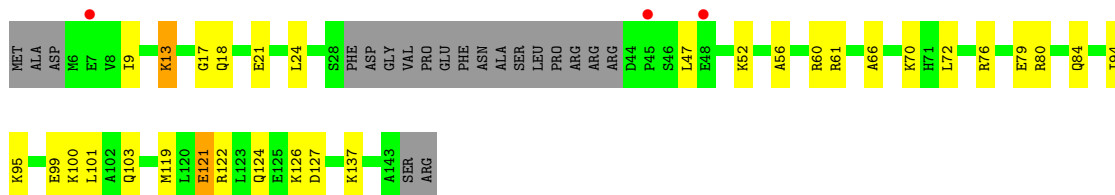
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Cl	F	N			O
11	D	1	22	16	1	1	3	1	0	0



• Molecule 2: Tubulin beta chain

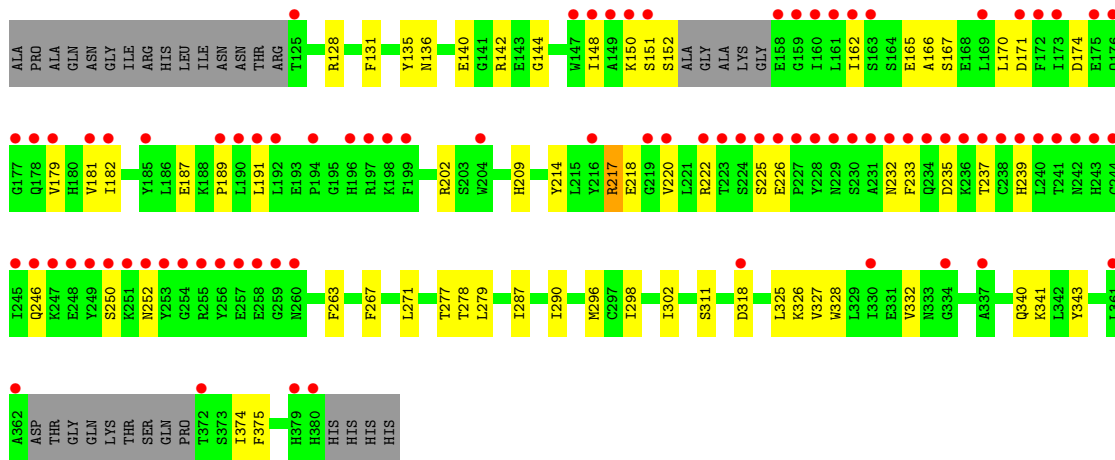


• Molecule 3: Stathmin-4



• Molecule 4: TTL





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	105.39Å 157.49Å 180.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	72.19 – 3.36 72.19 – 3.36	Depositor EDS
% Data completeness (in resolution range)	94.8 (72.19-3.36) 94.8 (72.19-3.36)	Depositor EDS
R_{merge}	0.40	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.29 (at 3.33Å)	Xtrriage
Refinement program	PHENIX 1.19_4092	Depositor
R, R_{free}	0.197 , 0.245 0.193 , 0.242	Depositor DCC
R_{free} test set	1999 reflections (4.85%)	wwPDB-VP
Wilson B-factor (Å ²)	69.8	Xtrriage
Anisotropy	0.345	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 54.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	17610	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.56% 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: CA, MG, GDP, GXI, CL, MES, GTP

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	0.67	3/3510 (0.1%)	0.95	8/4766 (0.2%)
1	C	0.66	1/3564 (0.0%)	0.88	10/4839 (0.2%)
2	B	0.59	0/3436	0.82	2/4653 (0.0%)
2	D	0.54	1/3368 (0.0%)	0.76	1/4564 (0.0%)
3	E	0.59	0/1041	0.74	1/1382 (0.1%)
4	F	0.52	1/2927 (0.0%)	0.72	0/3955
All	All	0.60	6/17846 (0.0%)	0.83	22/24159 (0.1%)

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	C	0	2
2	B	0	1
2	D	0	1
4	F	0	1
All	All	0	5

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	359	PRO	CB-CG	-8.46	1.07	1.50
1	A	359	PRO	CG-CD	-8.18	1.23	1.50
1	A	359	PRO	N-CA	6.64	1.58	1.47
4	F	91	CYS	CB-SG	-5.99	1.72	1.81
2	D	201	CYS	CB-SG	-5.36	1.73	1.81
1	C	20	CYS	CB-SG	-5.21	1.73	1.81

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	359	PRO	N-CD-CG	-21.64	70.73	103.20
1	A	359	PRO	CA-CB-CG	-19.95	66.10	104.00
1	C	314	ALA	C-N-CA	12.58	153.16	121.70
1	A	359	PRO	CB-CG-CD	10.12	145.98	106.50
1	A	423	GLU	CA-CB-CG	8.61	132.33	113.40
1	A	359	PRO	CA-N-CD	-7.18	101.44	111.50
3	E	101	LEU	CB-CG-CD2	-6.41	100.10	111.00
1	C	98	ASP	CB-CG-OD1	5.98	123.68	118.30
2	B	301	ALA	N-CA-C	-5.82	95.28	111.00
1	C	195	LEU	CB-CG-CD2	-5.75	101.23	111.00
2	D	39	ASP	CB-CG-OD2	-5.71	113.17	118.30
1	C	285	GLN	N-CA-CB	5.52	120.54	110.60
1	A	345	ASP	CB-CG-OD2	-5.51	113.34	118.30
1	C	284	GLU	C-N-CA	-5.48	108.00	121.70
1	C	125	LEU	CB-CG-CD2	-5.43	101.77	111.00
1	C	315	CYS	CA-C-O	5.38	131.41	120.10
1	A	230	LEU	CB-CG-CD2	5.27	119.97	111.00
1	C	314	ALA	N-CA-C	-5.18	97.02	111.00
2	B	362	LYS	CD-CE-NZ	5.17	123.59	111.70
1	A	230	LEU	CB-CG-CD1	-5.15	102.24	111.00
1	C	98	ASP	CB-CG-OD2	-5.15	113.67	118.30
1	C	358	GLN	CA-CB-CG	5.11	124.65	113.40

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	260	PHE	Peptide
1	C	215	ARG	Sidechain
1	C	284	GLU	Peptide
2	D	306	ARG	Sidechain
4	F	73	ARG	Peptide

5.2 Too-close contacts [i](#)

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	3423	0	3333	107	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	3465	0	3382	56	2
2	B	3356	0	3237	83	0
2	D	3295	0	3166	96	0
3	E	1026	0	1042	22	1
4	F	2851	0	2826	56	0
5	A	32	0	12	2	0
5	C	32	0	12	0	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	C	1	0	0	0	0
7	A	1	0	0	0	0
7	C	1	0	0	0	0
8	A	1	0	0	0	0
9	B	28	0	12	0	0
9	D	28	0	11	3	0
10	B	24	0	24	2	0
11	B	22	0	0	1	0
11	D	22	0	0	2	0
All	All	17610	0	17057	409	2

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 12.

All (409) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2:ARG:HH21	2:B:128:ASP:HB3	1.02	1.18
2:B:2:ARG:HH21	2:B:128:ASP:CB	1.64	1.10
2:B:2:ARG:NH2	2:B:128:ASP:OD2	1.88	1.07
2:D:47:ILE:CD1	2:D:59:TYR:CE1	2.42	1.03
2:B:2:ARG:NH2	2:B:128:ASP:HB3	1.85	0.91
2:D:47:ILE:HD12	2:D:59:TYR:CE1	2.08	0.88
2:D:145:SER:HB2	2:D:188:SER:OG	1.73	0.87
1:A:282:TYR:OH	1:A:284:GLU:OE2	1.92	0.86
1:A:295:CYS:HB3	1:A:377:MET:HE3	1.60	0.83
2:B:238:THR:HG21	2:B:316:ILE:HG21	1.62	0.82
1:A:71:GLU:HG2	1:A:98:ASP:HB3	1.62	0.82
2:B:165:ASN:HD22	2:B:198:GLU:HG3	1.45	0.81
2:D:170:MET:HE3	2:D:377:LEU:HD11	1.62	0.80
4:F:263:PHE:CE2	4:F:341:LYS:HD3	2.17	0.80
2:B:2:ARG:NH2	2:B:128:ASP:CB	2.43	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:262:TYR:HE1	1:A:346:TRP:CZ2	2.03	0.76
2:B:267:MET:HG3	2:B:301:ALA:HB3	1.68	0.76
2:B:235:GLY:O	2:B:238:THR:HG22	1.85	0.75
2:D:226:ASN:ND2	9:D:501:GDP:O6	2.15	0.75
3:E:13:LYS:HB2	3:E:18:GLN:HB3	1.68	0.74
2:D:47:ILE:HD12	2:D:59:TYR:CD1	2.22	0.74
1:A:112:LYS:HG3	1:A:113:GLU:N	2.02	0.73
2:D:372:THR:O	2:D:375:GLN:HG2	1.89	0.72
2:D:47:ILE:HD11	2:D:59:TYR:CE1	2.22	0.72
1:C:71:GLU:HG2	1:C:98:ASP:HB3	1.72	0.71
2:D:206:ALA:O	2:D:210:ILE:HG13	1.88	0.71
1:C:88:HIS:HE1	1:C:90:GLU:HG3	1.53	0.70
2:D:246:LEU:HD12	2:D:248:ALA:HB2	1.73	0.70
2:B:262:ARG:NE	2:B:421[A]:GLU:OE1	2.22	0.69
1:A:90:GLU:HB2	1:A:121:ARG:HE	1.58	0.68
2:B:2:ARG:HH21	2:B:128:ASP:CG	1.95	0.68
4:F:148:ILE:HG13	4:F:162:ILE:HG12	1.75	0.68
4:F:135:TYR:OH	4:F:165:GLU:HA	1.93	0.68
1:A:282:TYR:CZ	1:A:284:GLU:OE2	2.46	0.68
4:F:71:LEU:O	4:F:77:LEU:HD12	1.94	0.68
2:B:165:ASN:ND2	2:B:198:GLU:HG3	2.08	0.67
2:D:5:VAL:HG12	2:D:62:ARG:HD3	1.76	0.67
2:D:145:SER:O	2:D:149:THR:HG23	1.94	0.67
4:F:225:SER:OG	4:F:252:ASN:OD1	2.13	0.67
1:A:108:TYR:CE2	1:A:413:MET:HG3	2.30	0.67
1:A:220:GLU:HG2	2:B:324:LYS:HD2	1.77	0.67
3:E:80:ARG:O	3:E:84:GLN:HG3	1.95	0.67
1:C:162:GLY:HA2	3:E:94:ILE:HD11	1.77	0.66
3:E:66:ALA:O	3:E:70:LYS:HG3	1.95	0.66
1:C:4[A]:CYS:SG	1:C:136:LEU:HG	2.36	0.66
2:B:2:ARG:NH2	2:B:128:ASP:CG	2.48	0.65
2:B:48:ASN:H	2:B:48:ASN:ND2	1.93	0.65
2:B:283:ALA:HB2	2:B:362:LYS:HE3	1.79	0.64
1:C:211[A]:ASP:OD2	1:C:304:LYS:NZ	2.29	0.64
4:F:263:PHE:HE2	4:F:341:LYS:HD3	1.59	0.64
1:A:88:HIS:N	1:A:91:GLN:OE1	2.27	0.63
2:B:280:GLN:HG2	2:B:281:TYR:H	1.64	0.63
1:C:48:SER:HB3	1:C:243:ARG:O	1.98	0.63
2:D:221:THR:HG22	2:D:224:ASP:OD2	1.97	0.63
2:D:296:SER:HB2	2:D:305:PRO:HD2	1.80	0.63
2:B:145:SER:HB2	2:B:188:SER:OG	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:323:VAL:HB	1:A:355:ILE:HD13	1.81	0.63
2:B:68:LEU:HD12	2:B:97:ALA:HB2	1.81	0.62
2:D:170:MET:HE1	2:D:201:CYS:HB3	1.80	0.62
4:F:22:LEU:HD23	4:F:27:TRP:O	1.99	0.62
2:B:35:SER:HB3	2:B:58:LYS:NZ	2.13	0.62
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.18	0.62
1:A:117:LEU:HD11	1:A:121:ARG:NH1	2.14	0.62
2:B:39:ASP:OD1	2:B:40:SER:N	2.31	0.62
2:B:48:ASN:H	2:B:48:ASN:HD22	1.45	0.62
4:F:13:VAL:O	4:F:17:VAL:HG23	1.99	0.62
2:D:156:ARG:HG3	2:D:156:ARG:HH11	1.63	0.61
2:D:285:THR:HG22	2:D:288:GLU:CD	2.21	0.61
1:C:244:PHE:CE1	1:C:358:GLN:HG3	2.36	0.61
2:D:290:THR:HG22	2:D:333:VAL:HG21	1.81	0.61
2:D:5:VAL:HG12	2:D:62:ARG:CD	2.30	0.61
2:D:117:LEU:HD11	2:D:154:LYS:HG2	1.83	0.61
2:B:21:TRP:CZ3	2:B:61:PRO:HB3	2.36	0.60
4:F:78:VAL:HG21	4:F:181:VAL:HG21	1.83	0.60
1:A:295:CYS:HB3	1:A:377:MET:CE	2.30	0.60
4:F:77:LEU:HD11	4:F:332:VAL:HG23	1.82	0.60
2:B:20:PHE:CZ	2:B:24:ILE:HD13	2.37	0.60
1:A:108:TYR:HE2	1:A:413:MET:HG3	1.66	0.60
2:B:287:PRO:O	2:B:290:THR:HG22	2.00	0.60
1:C:287:SER:OG	1:C:290:GLU:HG3	2.02	0.60
1:A:114:ILE:HG12	1:A:114:ILE:O	2.02	0.60
1:A:60:LYS:NZ	1:A:85:GLN:O	2.36	0.59
1:A:262:TYR:CE1	1:A:346:TRP:CZ2	2.89	0.59
1:A:336:LYS:HG3	3:E:24:LEU:CD1	2.32	0.59
1:C:249:ASN:OD1	1:C:356:ASN:ND2	2.34	0.59
2:D:20:PHE:O	2:D:24:ILE:HG12	2.01	0.59
2:B:229:VAL:O	2:B:233:MET:HG3	2.02	0.59
1:A:210:TYR:CE1	1:A:222:PRO:HD2	2.37	0.59
1:A:215:ARG:NH2	1:A:299:ALA:O	2.36	0.59
1:C:36:MET:HE3	1:C:61:HIS:CD2	2.38	0.59
2:D:172:SER:OG	2:D:205:GLU:OE1	2.18	0.59
1:A:166:LYS:HE2	1:A:197:HIS:O	2.03	0.59
2:B:313:VAL:HB	2:B:349:VAL:HG22	1.82	0.59
1:C:88:HIS:CE1	1:C:90:GLU:HG3	2.35	0.58
2:D:393:ALA:HB1	2:D:394:PHE:HD1	1.67	0.58
1:A:357:TYR:CE2	3:E:17:GLY:HA2	2.39	0.58
4:F:81:ILE:HA	4:F:87:LEU:HD12	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2:ARG:O	2:B:49:VAL:HG22	2.04	0.58
4:F:226:GLU:HG3	4:F:237:THR:HG22	1.86	0.57
1:A:328:VAL:O	1:A:332:ILE:HG13	2.05	0.57
4:F:3:THR:HB	4:F:30:LEU:HD11	1.86	0.57
2:D:15:GLN:NE2	9:D:501:GDP:O6	2.37	0.57
4:F:277:THR:HG22	4:F:278:THR:H	1.70	0.57
2:B:309:ARG:NH1	2:B:342:VAL:HG12	2.20	0.56
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.22	0.56
1:A:230:LEU:HD23	1:A:234:ILE:HD13	1.86	0.56
1:C:270:ALA:O	1:C:302:MET:HB2	2.07	0.55
1:C:63:PRO:HG2	1:C:87:PHE:CE1	2.42	0.55
1:A:3:GLU:OE1	1:A:129:CYS:HB3	2.06	0.55
2:D:191:GLN:HE22	3:E:126:LYS:CE	2.19	0.55
4:F:202:ARG:HB3	4:F:220[B]:VAL:HG12	1.87	0.55
1:A:55:GLU:HG2	1:A:61:HIS:CD2	2.42	0.55
2:D:100:ASN:ND2	2:D:397:TRP:HB3	2.22	0.55
2:B:134:GLN:HA	2:B:165:ASN:O	2.07	0.55
4:F:214:TYR:HB3	4:F:375:PHE:HB3	1.89	0.55
2:B:40:SER:OG	2:B:41:ASP:N	2.39	0.54
2:B:86:ARG:HH12	2:B:122:LYS:HE2	1.71	0.54
2:B:215:LEU:HD21	2:B:274:THR:O	2.07	0.54
2:B:238:THR:CG2	2:B:316:ILE:HG21	2.35	0.54
1:A:45:GLY:O	1:A:50:ASN:ND2	2.40	0.54
2:D:20:PHE:CD1	2:D:233:MET:HE2	2.43	0.54
2:B:293:MET:HE3	2:B:365:ALA:HB1	1.90	0.54
1:A:147:SER:HB2	1:A:190:THR:HB	1.90	0.54
3:E:9:ILE:HG13	3:E:21:GLU:HB3	1.90	0.54
1:A:385:ALA:HB2	1:A:432:TYR:CG	2.43	0.53
1:A:419:SER:O	1:A:423:GLU:HB2	2.08	0.53
2:B:163:ILE:HG21	2:B:250:LEU:HB3	1.90	0.53
2:B:392:LYS:HE3	2:B:405:GLU:OE2	2.07	0.53
4:F:144:GLY:HA3	4:F:187:GLU:OE1	2.08	0.53
2:B:35:SER:HB3	2:B:58:LYS:HZ1	1.71	0.53
2:D:107:THR:O	2:D:111:GLU:HG3	2.09	0.53
2:D:191:GLN:HE22	3:E:126:LYS:HE2	1.72	0.53
1:A:27:GLU:OE1	1:A:243:ARG:NH2	2.42	0.53
1:C:288:VAL:HG22	1:C:323:VAL:HG22	1.91	0.53
4:F:21:LEU:O	4:F:24:THR:HG23	2.09	0.52
1:A:143:GLY:HA3	5:A:501:GTP:O3A	2.08	0.52
2:B:263:LEU:HD21	2:B:421[B]:GLU:HB3	1.92	0.52
1:C:174:ALA:O	1:C:178:SER:HB3	2.08	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:217:ARG:NH1	4:F:374:ILE:HG22	2.24	0.52
1:C:218:ASP:OD2	1:C:280:LYS:NZ	2.42	0.52
2:B:304:ASP:HB3	2:B:307:HIS:ND1	2.24	0.52
1:C:328:VAL:O	1:C:332:ILE:HG13	2.09	0.52
4:F:189:PRO:HG2	4:F:191:LEU:HD21	1.92	0.52
2:D:156:ARG:HG3	2:D:156:ARG:NH1	2.24	0.52
3:E:119:MET:HA	3:E:122:ARG:NH1	2.25	0.52
1:A:103:TYR:CE2	1:A:148:GLY:HA2	2.45	0.52
2:B:329:GLN:HA	2:B:332:ASN:OD1	2.10	0.52
1:C:242:LEU:N	1:C:242:LEU:HD12	2.24	0.52
2:D:21:TRP:CZ3	2:D:61:PRO:HB3	2.45	0.52
3:E:56:ALA:HB1	3:E:60:ARG:HH12	1.75	0.52
4:F:225:SER:H	4:F:246:GLN:HE22	1.58	0.52
1:C:36:MET:HE3	1:C:61:HIS:NE2	2.25	0.51
2:B:169:VAL:HA	2:B:202:ILE:O	2.10	0.51
1:A:28:HIS:HE1	1:A:243:ARG:HB3	1.76	0.51
1:A:187:SER:HB3	1:A:391:LEU:HD21	1.92	0.51
2:D:105:HIS:ND1	2:D:150:LEU:HB2	2.26	0.51
2:D:181:GLU:HB2	2:D:182:PRO:HD3	1.91	0.51
1:A:285:GLN:HG3	1:A:372:GLN:NE2	2.26	0.51
2:B:117:LEU:HD11	2:B:154:LYS:HB3	1.91	0.51
2:D:170:MET:CE	2:D:377:LEU:HD11	2.38	0.51
4:F:101:TYR:CD2	4:F:179:VAL:HG22	2.45	0.51
2:D:393:ALA:HB1	2:D:394:PHE:CD1	2.46	0.51
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.46	0.51
1:C:254:GLU:HG2	1:C:352:LYS:HE2	1.94	0.50
2:D:151:LEU:O	2:D:155:ILE:HG13	2.11	0.50
4:F:131:PHE:CE2	4:F:182:ILE:HD11	2.47	0.50
1:A:28:HIS:CE1	1:A:243:ARG:HB3	2.46	0.50
1:A:344:VAL:HG21	1:A:346:TRP:CZ2	2.46	0.50
1:A:88:HIS:CE1	1:A:90:GLU:HG2	2.47	0.50
4:F:15:ALA:O	4:F:19:ARG:HG3	2.12	0.50
3:E:121:GLU:O	3:E:124:GLN:HG3	2.11	0.50
4:F:233:PHE:HE1	4:F:239:HIS:CE1	2.30	0.50
2:D:345:ILE:HG22	2:D:348:ASN:HB3	1.94	0.50
1:A:239:THR:OG1	1:A:243:ARG:NH1	2.45	0.50
2:D:102:ALA:HB2	2:D:403:MET:HE2	1.94	0.50
4:F:202:ARG:NE	4:F:318:ASP:OD1	2.37	0.50
2:B:2:ARG:HD3	2:B:48:ASN:OD1	2.12	0.49
2:B:276:ARG:HH11	2:B:276:ARG:HB2	1.77	0.49
2:D:210:ILE:HG23	2:D:273:LEU:HD13	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:92:THR:O	4:F:326:LYS:NZ	2.43	0.49
2:B:273:LEU:HD11	2:B:298:ASN:HA	1.94	0.49
4:F:246:GLN:O	4:F:250:SER:HB3	2.13	0.49
1:A:55:GLU:HG2	1:A:61:HIS:HD2	1.77	0.49
1:A:331:ALA:O	1:A:335:ILE:HG13	2.12	0.49
2:D:267:MET:SD	2:D:299:MET:HG3	2.53	0.49
1:C:187:SER:HB3	1:C:391:LEU:HD21	1.94	0.49
4:F:100:ILE:HD12	4:F:128:ARG:HB3	1.95	0.49
1:A:424:ASP:O	1:A:427:ALA:HB3	2.13	0.49
1:A:88:HIS:HE1	1:A:90:GLU:HG2	1.76	0.49
1:C:227:LEU:O	1:C:231:ILE:HG13	2.13	0.49
2:D:99:ASN:N	2:D:99:ASN:HD22	2.09	0.49
2:D:237:THR:O	2:D:241:ARG:HG3	2.13	0.49
3:E:95:LYS:O	3:E:99:GLU:HG3	2.13	0.49
4:F:103:THR:HG22	4:F:174:ASP:HB3	1.94	0.49
2:B:316:ILE:N	2:B:316:ILE:HD12	2.27	0.49
1:A:88:HIS:CE1	1:A:90:GLU:CG	2.96	0.49
2:D:215:LEU:O	2:D:216:LYS:HG2	2.12	0.49
1:A:167:LEU:HD13	1:A:252:LEU:HD22	1.94	0.49
1:A:159:VAL:HG12	1:A:160:ASP:OD1	2.13	0.48
2:B:147:MET:O	2:B:147:MET:HG2	2.12	0.48
2:D:203:ASP:HB2	2:D:301:ALA:HA	1.94	0.48
1:A:270:ALA:HB3	1:A:302:MET:CG	2.43	0.48
1:C:26:LEU:HD12	1:C:363:VAL:HG12	1.95	0.48
1:A:9:VAL:HG22	1:A:68:VAL:CG1	2.44	0.48
1:A:262:TYR:HE1	1:A:346:TRP:CH2	2.31	0.48
2:D:118:ASP:O	2:D:122:LYS:HG2	2.14	0.48
4:F:277:THR:HG22	4:F:278:THR:N	2.29	0.48
1:A:4:CYS:SG	1:A:133:GLN:NE2	2.87	0.48
1:A:123:ARG:HG3	1:A:123:ARG:HH11	1.79	0.48
2:D:101:TRP:HD1	2:D:145:SER:OG	1.97	0.48
2:D:25:SER:HB3	2:D:30:ILE:HG22	1.95	0.47
4:F:79:LYS:O	4:F:83:THR:OG1	2.29	0.47
1:C:209:ILE:HD11	1:C:302:MET:SD	2.55	0.47
2:B:276:ARG:HB2	2:B:276:ARG:NH1	2.30	0.47
3:E:76:ARG:NH1	3:E:79:GLU:OE2	2.47	0.47
2:B:7:ILE:O	2:B:135:LEU:HA	2.14	0.47
2:D:226:ASN:ND2	9:D:501:GDP:C6	2.82	0.47
2:D:401:GLU:O	3:E:137:LYS:HB2	2.15	0.47
2:D:218:THR:HG23	2:D:219:THR:N	2.30	0.47
2:D:324:LYS:HE3	2:D:328:GLU:OE2	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:150:LYS:HG2	4:F:151:SER:N	2.30	0.47
4:F:57:GLY:O	4:F:58:LEU:HD23	2.14	0.47
1:A:48:SER:O	1:A:51:THR:HG23	2.14	0.47
1:C:36:MET:CE	1:C:61:HIS:CD2	2.98	0.47
2:D:81:PHE:O	2:D:84:ILE:HG22	2.15	0.47
4:F:287:ILE:HG13	4:F:327:VAL:HG11	1.97	0.47
1:A:174:ALA:O	1:A:178:SER:HB3	2.15	0.46
2:D:7:ILE:O	2:D:135:LEU:HD12	2.15	0.46
2:D:28:HIS:HA	2:D:43:GLN:HB3	1.97	0.46
2:D:43:GLN:O	2:D:47:ILE:HG23	2.14	0.46
1:A:90:GLU:CB	1:A:121:ARG:HH21	2.27	0.46
1:A:25:CYS:HB3	1:A:30:ILE:O	2.16	0.46
2:B:21:TRP:CE3	2:B:61:PRO:HB3	2.50	0.46
2:B:224:ASP:HA	2:B:276:ARG:HH12	1.81	0.46
2:D:163:ILE:HG21	2:D:250:LEU:HB3	1.97	0.46
2:D:47:ILE:CD1	2:D:59:TYR:CZ	2.97	0.46
2:D:315:ALA:O	11:D:502:GXI:F22	2.24	0.46
1:A:241:SER:HB2	1:A:248:LEU:O	2.15	0.46
1:A:325:PRO:O	1:A:328:VAL:HB	2.16	0.46
1:A:263:PRO:O	1:A:266:HIS:HD2	1.99	0.46
1:C:250:VAL:HG23	1:C:255:PHE:CE2	2.51	0.46
2:D:34:GLY:HA2	2:D:84:ILE:HD11	1.98	0.46
2:D:285:THR:HG23	2:D:288:GLU:H	1.81	0.46
4:F:325:LEU:HD23	4:F:325:LEU:HA	1.79	0.46
1:A:270:ALA:HB3	1:A:302:MET:HG2	1.97	0.46
1:C:36:MET:HG2	1:C:39:ASP:HB2	1.98	0.46
4:F:136:ASN:O	4:F:140:GLU:HG2	2.16	0.46
4:F:217:ARG:HG3	4:F:218:GLU:HG2	1.98	0.46
1:A:276:ILE:HD12	1:A:283:HIS:CE1	2.51	0.46
2:B:64:ILE:HD13	2:B:120:VAL:HG22	1.97	0.45
2:D:396:HIS:HA	2:D:399:THR:HG22	1.98	0.45
1:C:271:THR:HG21	1:C:295:CYS:O	2.16	0.45
1:C:190:THR:HG23	1:C:191:THR:N	2.31	0.45
1:C:234:ILE:HD13	1:C:302:MET:SD	2.56	0.45
1:A:98:ASP:HB2	5:A:501:GTP:O2G	2.16	0.45
1:A:401:LYS:NZ	2:B:428:ALA:HB1	2.31	0.45
2:B:340:TYR:CD2	10:B:504:MES:H61	2.51	0.45
11:B:505:GXI:C13	11:B:505:GXI:C06	2.95	0.45
1:A:346:TRP:CZ3	1:A:347:CYS:SG	3.09	0.45
1:C:154:MET:HG3	1:C:194:THR:HG23	1.99	0.45
1:A:115:ILE:HD13	1:A:152:LEU:HG	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:107:THR:HG22	2:D:108:GLU:N	2.32	0.45
4:F:209:HIS:HA	4:F:311:SER:O	2.17	0.45
2:B:162:ARG:O	10:B:503:MES:H52	2.17	0.45
1:C:344:VAL:HG23	1:C:347[B]:CYS:HB2	1.98	0.45
2:D:267:MET:HG3	2:D:301:ALA:HB3	1.99	0.44
1:A:185:TYR:OH	1:A:398:MET:HB3	2.18	0.44
1:A:344:VAL:HG23	1:A:347:CYS:HB2	1.98	0.44
2:D:318:ARG:HE	2:D:318:ARG:HB3	1.50	0.44
1:C:75:ILE:HD12	1:C:94:THR:HG23	2.00	0.44
2:B:73:MET:CE	2:B:92:PHE:HD2	2.30	0.44
2:B:23:VAL:HG21	2:B:230:SER:HB2	2.00	0.44
2:D:356:ILE:HG23	2:D:356:ILE:O	2.18	0.44
3:E:61:ARG:HG3	3:E:61:ARG:HH11	1.82	0.44
1:C:217:LEU:HD13	1:C:367:ASP:HB2	1.98	0.44
2:B:12:CYS:HB3	2:B:138:SER:HB3	2.00	0.44
2:B:151:LEU:O	2:B:155:ILE:HG13	2.18	0.44
4:F:93:TRP:HB2	4:F:290:ILE:HD11	2.00	0.44
1:A:70:LEU:HD23	1:A:70:LEU:HA	1.69	0.44
1:A:71:GLU:CG	1:A:98:ASP:HB3	2.40	0.44
1:A:103:TYR:CD2	1:A:148:GLY:HA2	2.53	0.44
2:D:117:LEU:HD11	2:D:154:LYS:CG	2.48	0.44
2:D:169:VAL:HA	2:D:202:ILE:O	2.17	0.43
1:C:72:PRO:HA	1:C:94:THR:HG21	2.00	0.43
1:A:154:MET:HG3	1:A:194:THR:HG23	2.00	0.43
1:A:217:LEU:CD1	1:A:275:VAL:HG12	2.48	0.43
2:B:302:ALA:C	2:B:303:CYS:SG	2.96	0.43
4:F:131:PHE:CD2	4:F:182:ILE:HD11	2.53	0.43
4:F:267:PHE:CE2	4:F:279:LEU:HD23	2.52	0.43
2:B:198:GLU:OE2	2:B:250:LEU:HD22	2.18	0.43
2:B:262:ARG:HH21	2:B:421[A]:GLU:CD	2.21	0.43
2:D:89:ASN:HA	2:D:119:VAL:HG11	1.99	0.43
1:A:280:LYS:HA	1:A:280:LYS:HD2	1.66	0.43
2:B:190:HIS:CE1	2:B:414:ASN:HD22	2.36	0.43
1:C:221:ARG:HG3	2:D:323:MET:HG2	2.00	0.43
4:F:166:ALA:O	4:F:170:LEU:HD12	2.19	0.43
1:A:357:TYR:CZ	3:E:17:GLY:HA2	2.54	0.43
1:C:219:ILE:HD13	1:C:226:ASN:ND2	2.33	0.43
1:A:209:ILE:HG22	1:A:227:LEU:HD23	2.01	0.43
1:C:277:SER:OG	1:C:280:LYS:HD3	2.19	0.43
2:D:21:TRP:CE3	2:D:61:PRO:HB3	2.52	0.43
2:D:22:GLU:HG2	2:D:81:PHE:CD1	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:323:MET:HE2	2:D:353:VAL:HG11	2.00	0.43
1:A:434:GLU:HG3	1:A:435:VAL:N	2.34	0.43
2:D:2:ARG:HD2	2:D:2:ARG:HA	1.73	0.43
1:A:12:ALA:CB	1:A:140:SER:HB3	2.48	0.43
2:B:293:MET:CE	2:B:365:ALA:HB1	2.48	0.43
2:D:20:PHE:CG	2:D:233:MET:HE2	2.54	0.43
1:A:24:TYR:O	1:A:28:HIS:HD2	2.02	0.43
1:A:211:ASP:HB3	1:A:215:ARG:NH1	2.34	0.43
1:A:313:MET:HE3	1:A:313:MET:HB2	1.91	0.43
4:F:326:LYS:NZ	4:F:328:TRP:CH2	2.85	0.43
1:A:262:TYR:CE1	1:A:346:TRP:CH2	3.07	0.42
1:C:266:HIS:CD2	1:C:266:HIS:O	2.72	0.42
2:D:293:MET:CG	2:D:367:PHE:HB2	2.49	0.42
1:C:3:GLU:HG2	1:C:64:ARG:CZ	2.50	0.42
4:F:226:GLU:HG3	4:F:237:THR:CG2	2.48	0.42
1:C:36:MET:HB3	1:C:61:HIS:CE1	2.54	0.42
1:C:68:VAL:HG11	1:C:118:VAL:HG21	2.00	0.42
2:D:238:THR:HG21	2:D:318:ARG:HD2	2.01	0.42
1:C:101:ASN:ND2	2:D:252:LYS:HE2	2.35	0.42
2:D:12:CYS:SG	2:D:16:ILE:HD12	2.59	0.42
1:A:75:ILE:O	1:A:79:ARG:HG3	2.19	0.42
1:A:234:ILE:O	1:A:238:ILE:HG13	2.20	0.42
2:D:210:ILE:CG2	2:D:273:LEU:HD13	2.50	0.42
2:D:221:THR:HG23	2:D:224:ASP:H	1.84	0.42
2:D:67:ASP:HA	2:D:143:THR:HG21	2.02	0.42
2:D:68:LEU:O	2:D:96:GLY:N	2.53	0.42
1:A:14:VAL:HG13	1:A:67:PHE:HD2	1.85	0.42
1:A:30:ILE:HD13	1:A:53:PHE:CE2	2.54	0.42
1:A:34:GLY:O	1:A:60:LYS:HA	2.19	0.42
1:A:406:HIS:CG	2:B:261:PRO:HG3	2.55	0.42
2:B:290:THR:HG21	2:B:329:GLN:HB3	2.02	0.42
1:C:123:ARG:HD3	1:C:123:ARG:HA	1.66	0.42
1:A:34:GLY:O	1:A:61:HIS:N	2.41	0.42
1:C:84:ARG:HG2	1:C:84:ARG:HH11	1.84	0.42
1:C:84:ARG:HG2	1:C:84:ARG:NH1	2.34	0.42
1:C:204:VAL:HG13	1:C:302:MET:HG3	2.02	0.42
2:D:40:SER:OG	2:D:42:LEU:HD13	2.20	0.42
4:F:91:CYS:SG	4:F:93:TRP:CE2	3.13	0.42
4:F:374:ILE:HD11	4:F:375:PHE:CZ	2.54	0.42
1:A:117:LEU:O	1:A:121:ARG:HG2	2.20	0.42
1:A:415:GLU:O	1:A:418:PHE:HB2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:44:LEU:CD2	2:D:47:ILE:HD13	2.50	0.42
2:D:41:ASP:OD1	2:D:41:ASP:N	2.52	0.41
2:D:81:PHE:C	2:D:83:GLN:H	2.22	0.41
3:E:100:LYS:HD3	3:E:100:LYS:HA	1.77	0.41
1:A:254:GLU:HG2	1:A:258:ASN:ND2	2.34	0.41
2:B:36:TYR:HB2	2:B:59:TYR:HE2	1.85	0.41
2:B:105:HIS:HD2	2:B:106:TYR:CE1	2.38	0.41
2:B:280:GLN:CG	2:B:281:TYR:H	2.29	0.41
2:B:395:LEU:HD23	2:B:395:LEU:HA	1.81	0.41
4:F:89:GLU:H	4:F:89:GLU:CD	2.24	0.41
1:A:141:PHE:HB3	1:A:187:SER:OG	2.20	0.41
1:A:289:ALA:HA	1:A:331:ALA:HB2	2.02	0.41
2:B:19:LYS:O	2:B:23:VAL:HG23	2.20	0.41
1:A:289:ALA:HA	1:A:331:ALA:CB	2.51	0.41
1:C:203:MET:HE1	1:C:388:TRP:CZ2	2.54	0.41
1:A:11:GLN:HG3	1:A:74:VAL:HG21	2.03	0.41
1:A:265:ILE:O	1:A:265:ILE:HG22	2.20	0.41
2:B:170:MET:HE2	2:B:377:LEU:HD21	2.03	0.41
2:B:280:GLN:HG2	2:B:281:TYR:N	2.34	0.41
1:C:12:ALA:HB3	1:C:140:SER:HB3	2.03	0.41
2:D:134:GLN:HA	2:D:165:ASN:O	2.20	0.41
2:D:360:GLY:C	2:D:361:LEU:HD23	2.41	0.41
4:F:233:PHE:CE1	4:F:239:HIS:CE1	3.08	0.41
2:B:101:TRP:CE3	2:B:187:LEU:HD13	2.55	0.41
1:C:242:LEU:HD11	1:C:252:LEU:HB3	2.02	0.41
1:C:361:THR:HG22	1:C:362:VAL:N	2.36	0.41
2:D:139:LEU:HA	2:D:145:SER:HB3	2.01	0.41
1:A:47:ASP:O	1:A:50:ASN:HB2	2.20	0.41
1:C:1:MET:SD	1:C:1:MET:C	2.98	0.41
3:E:47:LEU:O	3:E:47:LEU:HD12	2.21	0.41
1:A:23:LEU:HD12	1:A:23:LEU:HA	1.63	0.41
1:A:90:GLU:HA	1:A:121:ARG:HH21	1.86	0.41
1:A:336:LYS:HG3	3:E:24:LEU:HD11	2.00	0.41
2:B:251:ARG:O	2:B:255:VAL:HG23	2.20	0.41
1:C:225:THR:O	1:C:229:ARG:HG3	2.21	0.41
2:D:179:VAL:HG21	2:D:394:PHE:CE2	2.55	0.41
4:F:340:GLN:HA	4:F:343:TYR:CD1	2.56	0.41
2:B:81:PHE:O	2:B:84:ILE:HG22	2.20	0.41
2:B:101:TRP:HB2	2:B:184:ASN:OD1	2.21	0.41
2:B:170:MET:HE3	2:B:171:PRO:HD2	2.03	0.41
2:D:102:ALA:HB2	2:D:403:MET:CE	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:26:LEU:HD23	1:A:26:LEU:HA	1.82	0.40
1:A:119:LEU:HD23	1:A:119:LEU:HA	1.80	0.40
1:C:187:SER:O	1:C:190:THR:HG22	2.21	0.40
1:A:69:ASP:O	1:A:94:THR:HA	2.21	0.40
2:B:67:ASP:O	2:B:92:PHE:HA	2.21	0.40
2:B:268:PRO:HA	2:B:367:PHE:O	2.22	0.40
4:F:202:ARG:HB3	4:F:220[B]:VAL:CG1	2.51	0.40
1:A:12:ALA:HB3	1:A:140:SER:HB3	2.03	0.40
2:B:288:GLU:O	2:B:292:GLN:HG3	2.20	0.40
1:C:209:ILE:HG22	1:C:227:LEU:HD22	2.02	0.40
2:D:81:PHE:O	2:D:83:GLN:N	2.54	0.40
2:D:139:LEU:HD21	2:D:168:SER:HB3	2.03	0.40
4:F:22:LEU:HD23	4:F:22:LEU:HA	1.81	0.40
4:F:298:ILE:HD12	4:F:302:ILE:HD13	2.03	0.40
1:A:192:HIS:CG	1:A:421:ALA:HA	2.57	0.40
1:A:311:LYS:HE3	1:A:436:GLY:O	2.22	0.40
2:D:70:PRO:HG3	2:D:94:GLN:OE1	2.21	0.40
11:D:502:GXI:C06	11:D:502:GXI:C13	3.00	0.40
4:F:167:SER:O	4:F:171:ASP:HB2	2.21	0.40
1:A:271:THR:HG23	1:A:301:GLN:HA	2.03	0.40
2:D:124:SER:O	2:D:127:CYS:HB2	2.21	0.40
3:E:72:LEU:O	3:E:76:ARG:HG2	2.21	0.40
4:F:235:ASP:OD1	4:F:235:ASP:O	2.40	0.40
4:F:271:LEU:HD23	4:F:271:LEU:HA	1.81	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:322:ASP:OD1	1:C:338:LYS:NZ[3_555]	2.12	0.08
1:C:127:ASP:O	3:E:13:LYS:NZ[2_564]	2.15	0.05

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	438/450 (97%)	417 (95%)	21 (5%)	0	100	100
1	C	445/450 (99%)	430 (97%)	15 (3%)	0	100	100
2	B	423/445 (95%)	410 (97%)	13 (3%)	0	100	100
2	D	416/445 (94%)	394 (95%)	22 (5%)	0	100	100
3	E	121/143 (85%)	119 (98%)	2 (2%)	0	100	100
4	F	342/384 (89%)	323 (94%)	19 (6%)	0	100	100
All	All	2185/2317 (94%)	2093 (96%)	92 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	370/378 (98%)	362 (98%)	8 (2%)	52	76
1	C	378/378 (100%)	369 (98%)	9 (2%)	49	74
2	B	369/383 (96%)	362 (98%)	7 (2%)	57	79
2	D	362/383 (94%)	353 (98%)	9 (2%)	47	73
3	E	112/127 (88%)	107 (96%)	5 (4%)	27	59
4	F	314/342 (92%)	304 (97%)	10 (3%)	39	68
All	All	1905/1991 (96%)	1857 (98%)	48 (2%)	50	73

All (48) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	36	MET
1	A	47	ASP
1	A	113	GLU
1	A	120[A]	ASP

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Mol	Chain	Res	Type
1	A	120[B]	ASP
1	A	221	ARG
1	A	342	GLN
1	A	401	LYS
2	B	48	ASN
2	B	88	ASP
2	B	122	LYS
2	B	130	LEU
2	B	137	HIS
2	B	190	HIS
2	B	276	ARG
1	C	151[A]	SER
1	C	151[B]	SER
1	C	165[A]	SER
1	C	165[B]	SER
1	C	221	ARG
1	C	251	ASP
1	C	315	CYS
1	C	347[A]	CYS
1	C	347[B]	CYS
2	D	19	LYS
2	D	45	GLU
2	D	86	ARG
2	D	88	ASP
2	D	115	SER
2	D	137	HIS
2	D	205	GLU
2	D	251	ARG
2	D	293	MET
3	E	13	LYS
3	E	52	LYS
3	E	103	GLN
3	E	121	GLU
3	E	127	ASP
4	F	24	THR
4	F	45	ASN
4	F	89	GLU
4	F	142	ARG
4	F	152	SER
4	F	217	ARG
4	F	222	ARG
4	F	232	ASN

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Mol	Chain	Res	Type
4	F	296[A]	MET
4	F	296[B]	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	266	HIS
2	B	11	GLN
2	B	48	ASN
2	B	165	ASN
1	C	380	ASN
2	D	423	GLN
4	F	246	GLN

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](#)

Of 14 ligands modelled in this entry, 6 are monoatomic - leaving 8 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
9	GDP	B	501	6	24,30,30	1.12	2 (8%)	30,47,47	1.10	2 (6%)
10	MES	B	504	2	12,12,12	2.10	2 (16%)	14,16,16	2.10	5 (35%)
10	MES	B	503	-	12,12,12	2.27	2 (16%)	14,16,16	2.30	6 (42%)
5	GTP	A	501	6	26,34,34	1.15	2 (7%)	32,54,54	1.46	5 (15%)
11	GXI	D	502	-	24,24,24	1.57	4 (16%)	32,34,34	2.05	5 (15%)
11	GXI	B	505	-	24,24,24	1.46	4 (16%)	32,34,34	1.81	7 (21%)
9	GDP	D	501	-	24,30,30	0.88	1 (4%)	30,47,47	2.31	8 (26%)
5	GTP	C	501	6	26,34,34	1.11	2 (7%)	32,54,54	1.49	6 (18%)

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
9	GDP	B	501	6	-	4/12/32/32	0/3/3/3
10	MES	B	504	2	-	2/6/14/14	0/1/1/1
10	MES	B	503	-	-	5/6/14/14	0/1/1/1
5	GTP	A	501	6	-	6/18/38/38	0/3/3/3
11	GXI	D	502	-	-	0/10/10/10	0/3/3/3
11	GXI	B	505	-	-	1/10/10/10	0/3/3/3
9	GDP	D	501	-	-	3/12/32/32	0/3/3/3
5	GTP	C	501	6	-	6/18/38/38	0/3/3/3

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	B	503	MES	C8-S	-7.19	1.67	1.77
10	B	504	MES	C8-S	-5.94	1.69	1.77
11	D	502	GXI	C08-N07	4.30	1.33	1.30
5	A	501	GTP	C5-C6	-3.68	1.39	1.47
10	B	504	MES	O2S-S	3.28	1.54	1.45
5	C	501	GTP	C5-C6	-3.15	1.41	1.47
9	B	501	GDP	C2'-C1'	-2.88	1.49	1.53
11	B	505	GXI	C10-N11	2.75	1.45	1.39
9	B	501	GDP	C6-N1	-2.68	1.33	1.37
11	D	502	GXI	C05-C04	-2.66	1.38	1.42
11	B	505	GXI	C13-N11	2.48	1.48	1.42
11	B	505	GXI	C08-N07	2.43	1.32	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	501	GTP	C2-N3	2.38	1.38	1.33
11	B	505	GXI	C05-C04	-2.33	1.38	1.42
11	D	502	GXI	C13-N11	2.32	1.47	1.42
9	D	501	GDP	C2-N3	2.16	1.38	1.33
10	B	503	MES	O1S-S	2.13	1.51	1.45
11	D	502	GXI	C03-C02	2.10	1.39	1.36
5	A	501	GTP	C5-C4	-2.01	1.38	1.43

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	D	502	GXI	N07-C08-N09	-8.36	122.20	130.62
9	D	501	GDP	C2-N1-C6	-6.39	113.33	125.10
11	B	505	GXI	N07-C08-N09	-6.10	124.48	130.62
9	D	501	GDP	O6-C6-C5	-5.67	113.29	124.37
9	D	501	GDP	C5-C6-N1	5.07	122.91	113.95
10	B	503	MES	C5-N4-C3	4.82	119.67	108.83
10	B	504	MES	C5-N4-C3	4.64	119.28	108.83
11	D	502	GXI	C05-C04-N07	-4.03	118.53	122.81
11	D	502	GXI	CL1-C08-N09	4.00	120.86	115.15
5	A	501	GTP	PA-O3A-PB	-3.93	119.34	132.83
11	B	505	GXI	CL1-C08-N09	3.66	120.39	115.15
5	C	501	GTP	PB-O3B-PG	-3.65	120.32	132.83
5	A	501	GTP	PB-O3B-PG	-3.46	120.96	132.83
10	B	503	MES	O2S-S-C8	-3.45	102.75	106.92
10	B	503	MES	C2-C3-N4	-3.38	104.98	110.10
5	C	501	GTP	C8-N7-C5	3.36	109.39	102.99
9	D	501	GDP	O4'-C1'-C2'	-3.28	102.13	106.93
9	D	501	GDP	N2-C2-N3	-3.16	113.59	119.74
10	B	504	MES	C7-N4-C3	3.14	119.26	111.23
5	A	501	GTP	C8-N7-C5	3.11	108.92	102.99
11	B	505	GXI	C14-C13-N11	3.02	124.67	120.46
11	B	505	GXI	C18-C13-N11	-2.98	116.29	120.46
5	C	501	GTP	C2-N1-C6	-2.98	119.60	125.10
5	C	501	GTP	PA-O3A-PB	-2.90	122.86	132.83
5	C	501	GTP	C5-C6-N1	2.83	118.95	113.95
9	B	501	GDP	PA-O3A-PB	-2.83	123.12	132.83
10	B	504	MES	O2S-S-C8	2.79	110.28	106.92
11	B	505	GXI	C08-N09-C10	2.78	119.28	111.04
10	B	503	MES	O3S-S-C8	2.76	110.24	105.77
9	B	501	GDP	C5-C6-N1	2.76	118.82	113.95
9	D	501	GDP	O6-C6-N1	2.67	123.80	120.65

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	D	501	GDP	C8-N7-C5	2.66	108.05	102.99
10	B	503	MES	C7-N4-C3	2.64	117.99	111.23
10	B	503	MES	C7-N4-C5	2.64	117.99	111.23
5	C	501	GTP	O6-C6-N1	-2.63	117.54	120.65
9	D	501	GDP	PA-O3A-PB	-2.63	123.81	132.83
5	A	501	GTP	C2-N1-C6	-2.56	120.38	125.10
11	B	505	GXI	C05-C04-N07	-2.50	120.16	122.81
11	D	502	GXI	C08-N09-C10	2.44	118.28	111.04
10	B	504	MES	C7-N4-C5	2.33	117.19	111.23
5	A	501	GTP	N2-C2-N1	2.25	121.51	116.71
10	B	504	MES	O1S-S-C8	2.16	109.51	106.92
11	D	502	GXI	C01-C02-C03	-2.05	120.96	123.23
11	B	505	GXI	C01-C02-C03	-2.01	121.01	123.23

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	PB-O3B-PG-O3G
5	C	501	GTP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O1A
9	B	501	GDP	C5'-O5'-PA-O2A
9	D	501	GDP	C5'-O5'-PA-O1A
9	D	501	GDP	C5'-O5'-PA-O2A
10	B	503	MES	C8-C7-N4-C3
10	B	503	MES	C8-C7-N4-C5
10	B	503	MES	C7-C8-S-O2S
10	B	503	MES	C7-C8-S-O3S
10	B	504	MES	C8-C7-N4-C3
10	B	504	MES	C8-C7-N4-C5
5	A	501	GTP	PB-O3B-PG-O1G
5	A	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O3A
9	B	501	GDP	C5'-O5'-PA-O3A
5	A	501	GTP	C5'-O5'-PA-O2A
5	C	501	GTP	C5'-O5'-PA-O2A
10	B	503	MES	C7-C8-S-O1S
9	B	501	GDP	PB-O3A-PA-O2A
5	A	501	GTP	PB-O3B-PG-O2G
5	A	501	GTP	PB-O3B-PG-O3G
9	D	501	GDP	C5'-O5'-PA-O3A

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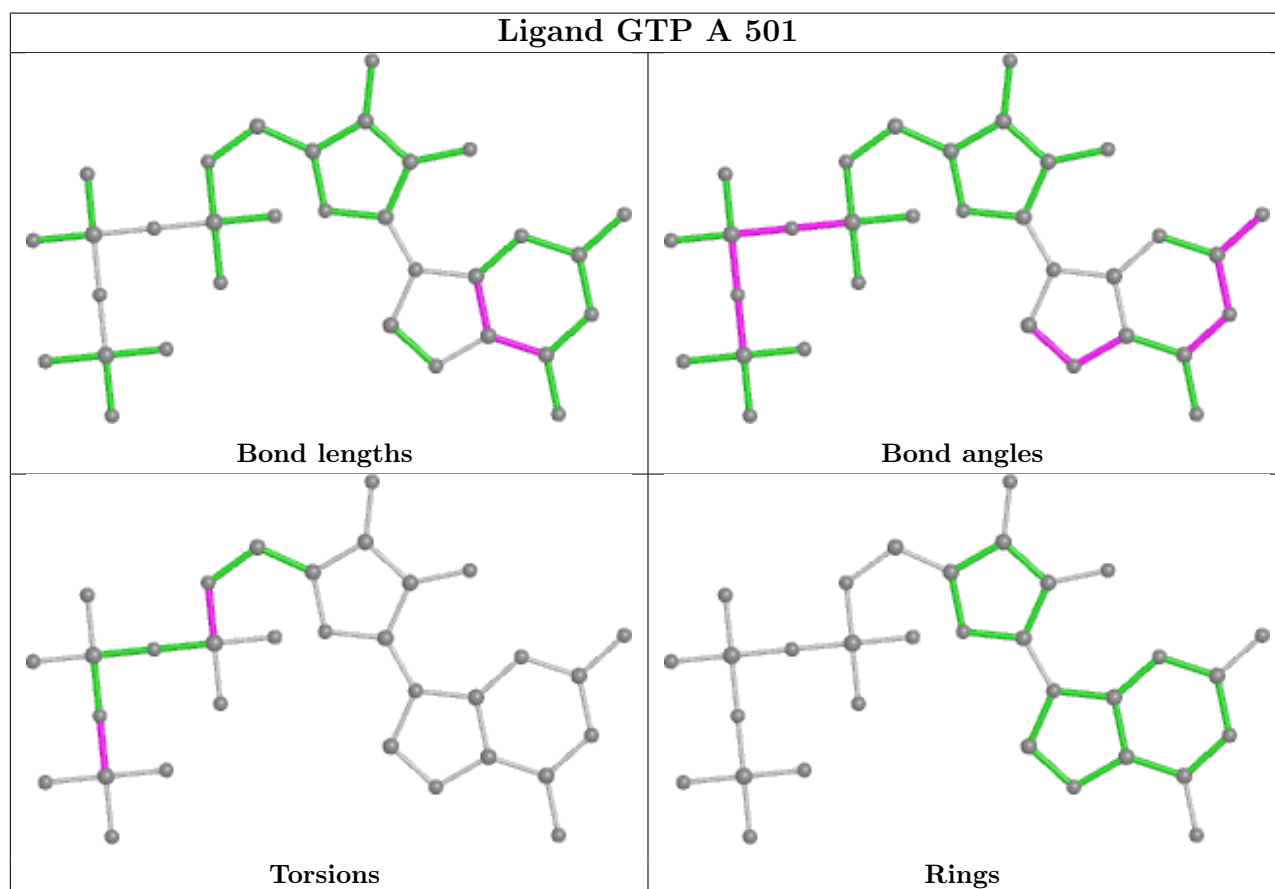
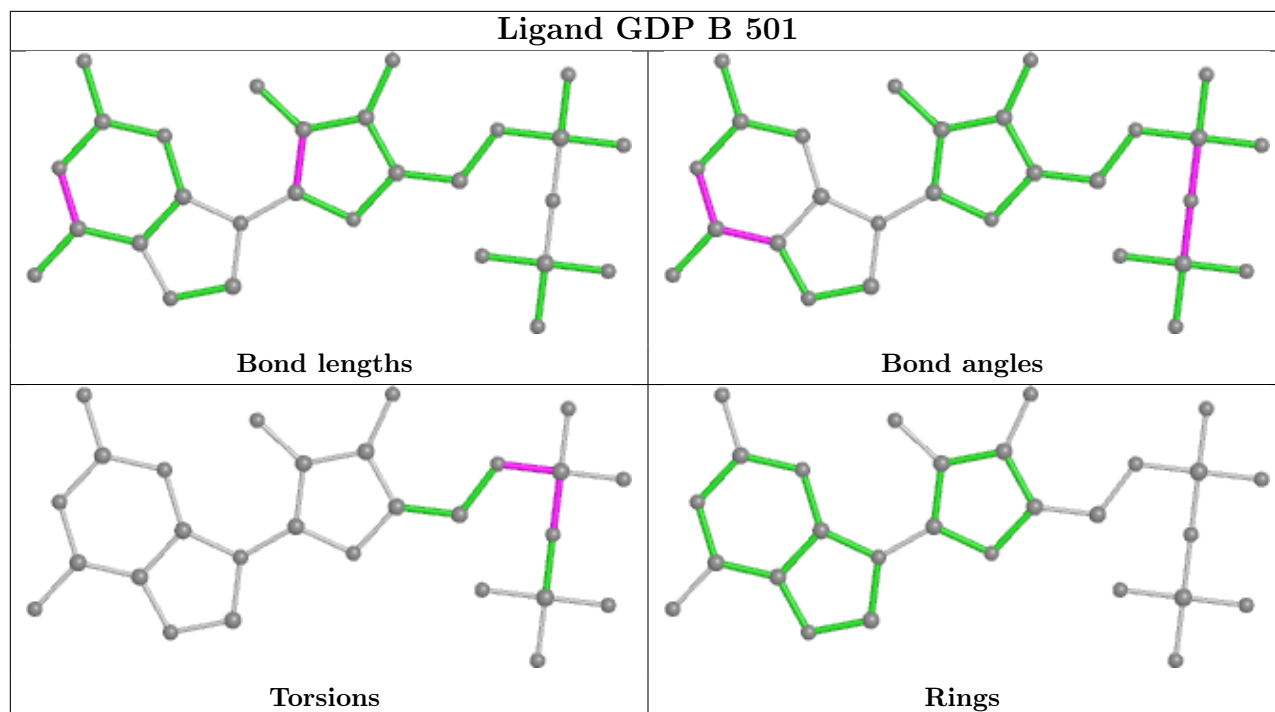
Mol	Chain	Res	Type	Atoms
5	C	501	GTP	PB-O3A-PA-O1A
5	C	501	GTP	PB-O3A-PA-O2A
11	B	505	GXI	C17-C16-O19-C20

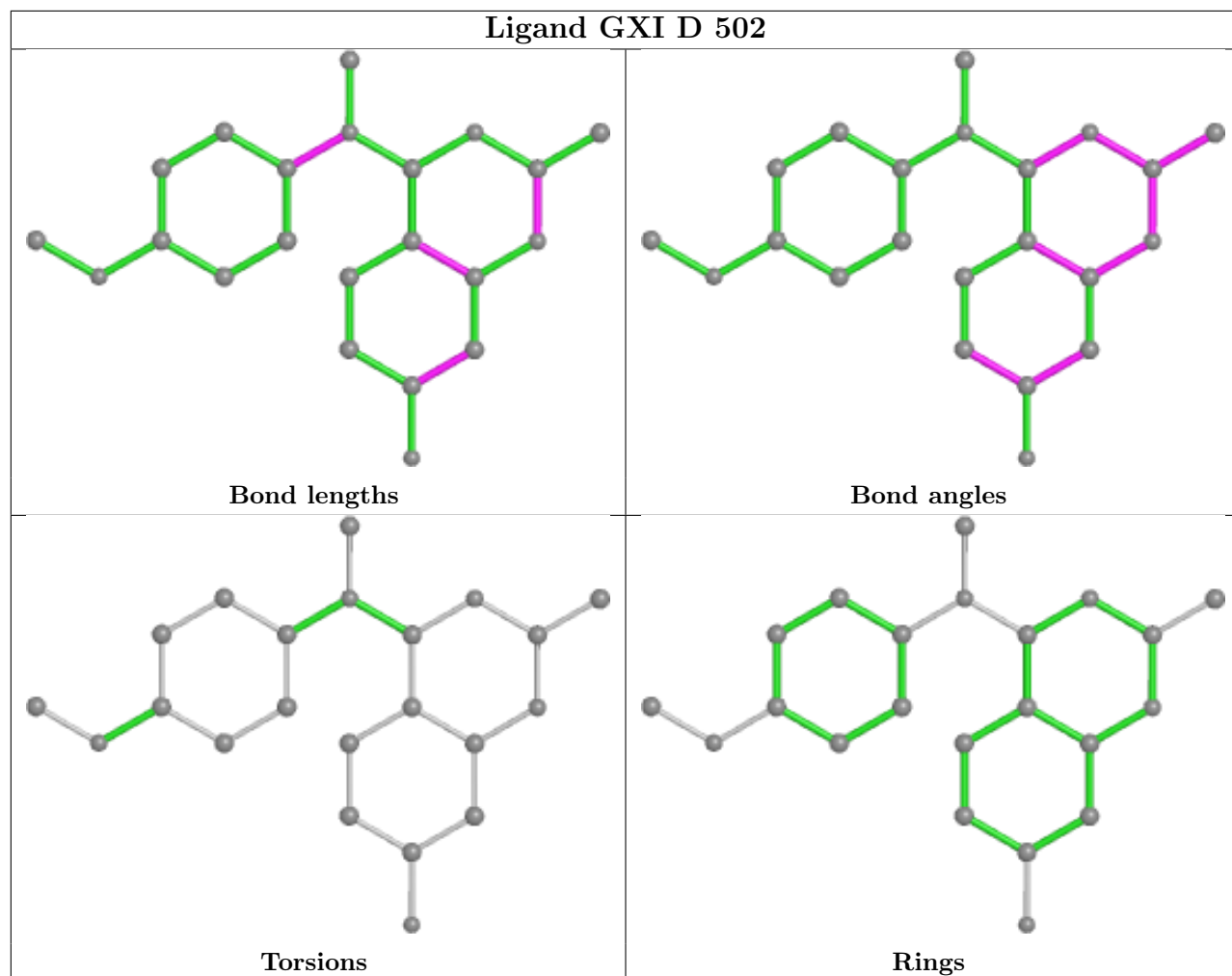
There are no ring outliers.

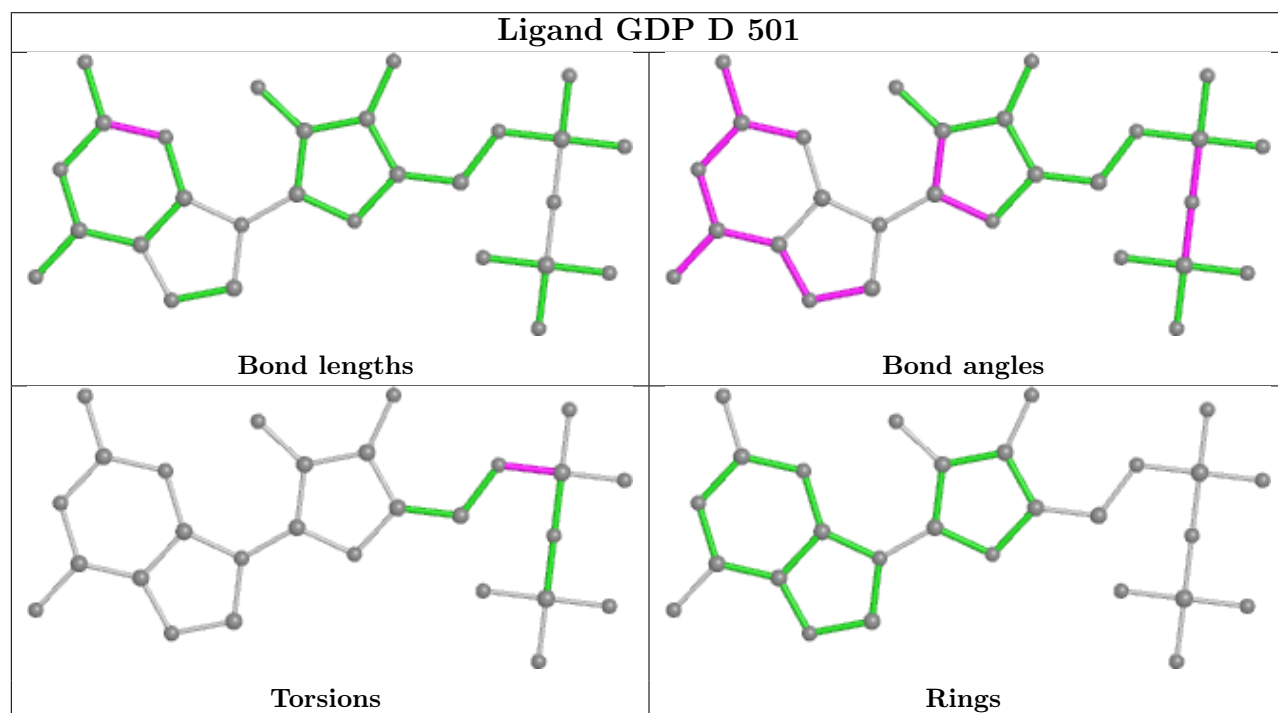
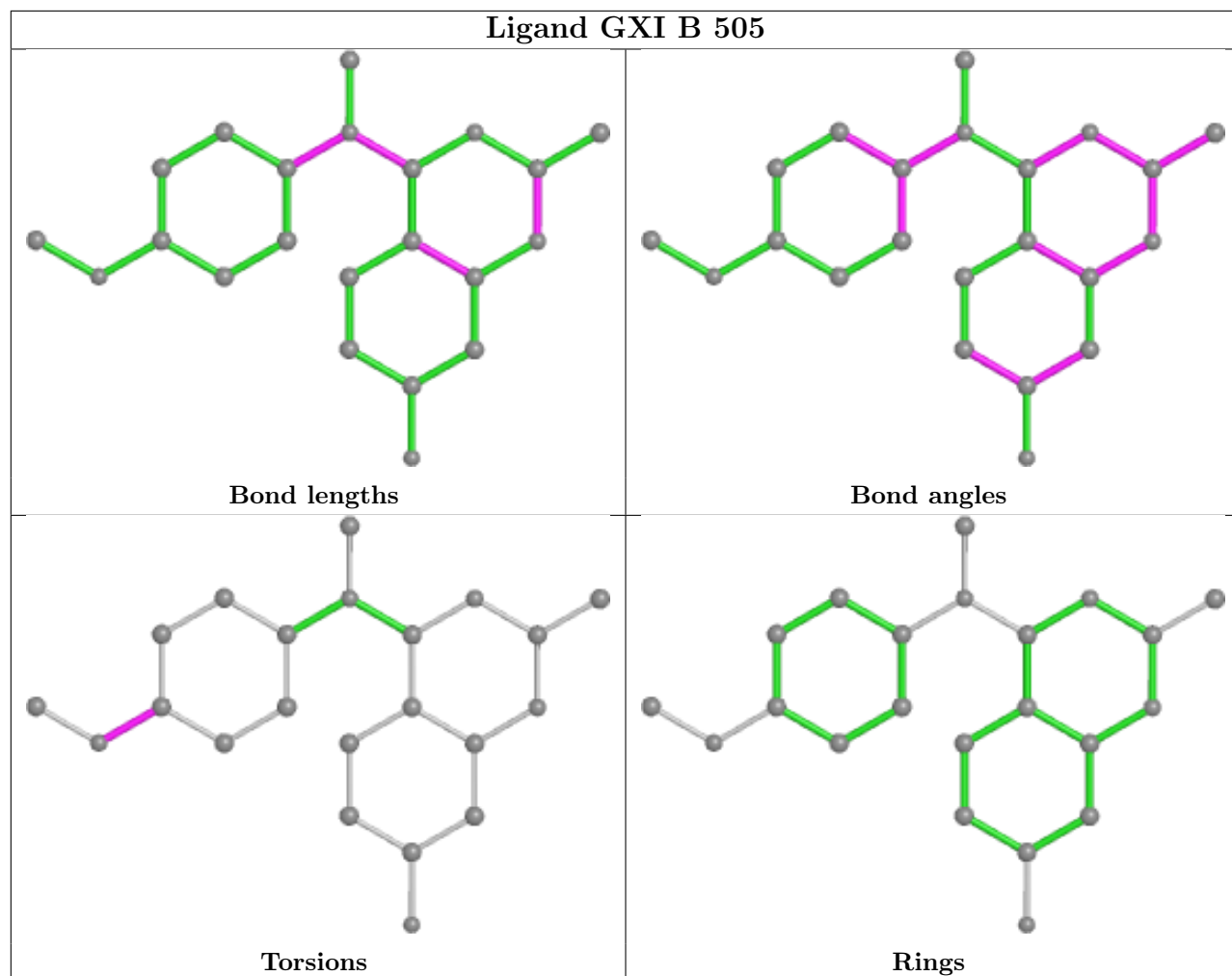
6 monomers are involved in 10 short contacts:

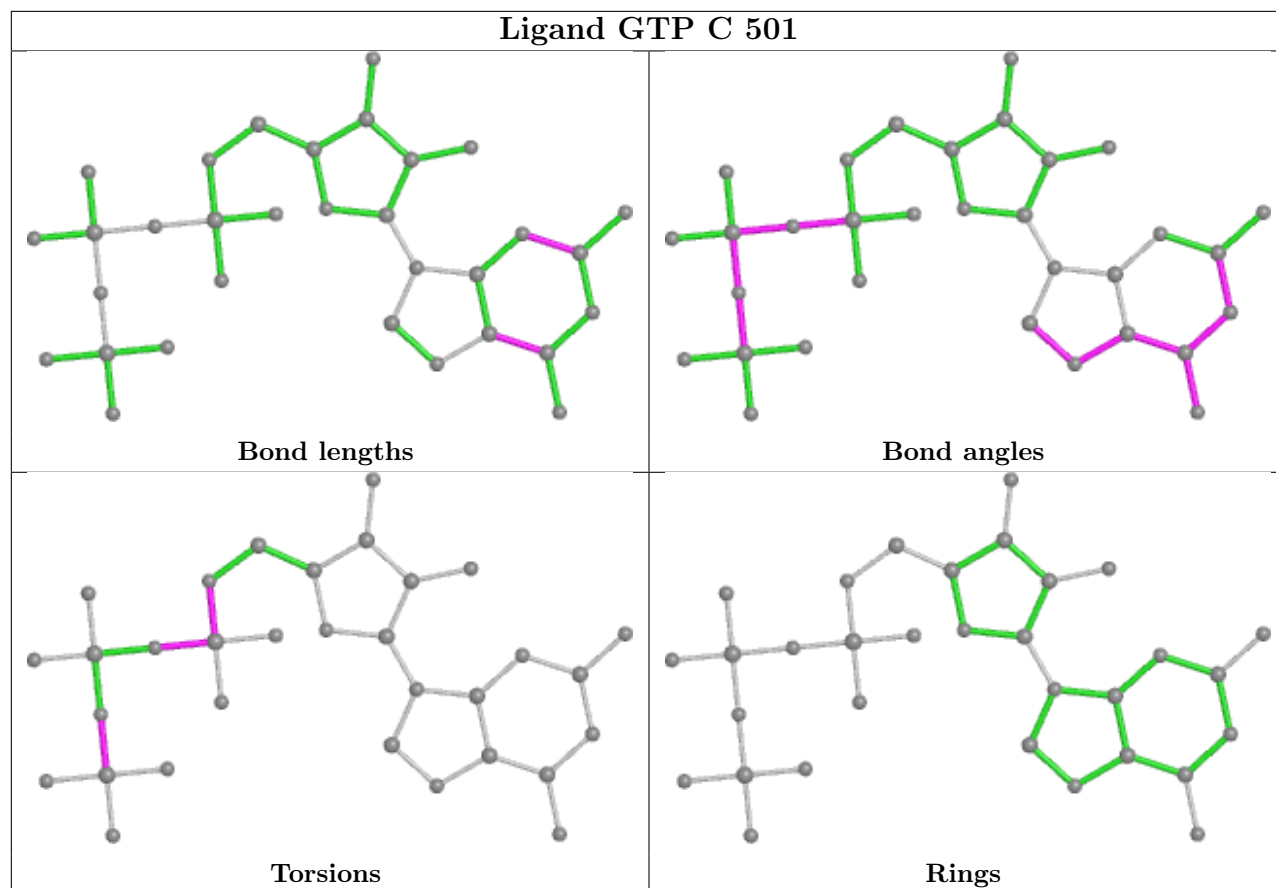
Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	B	504	MES	1	0
10	B	503	MES	1	0
5	A	501	GTP	2	0
11	D	502	GXI	2	0
11	B	505	GXI	1	0
9	D	501	GDP	3	0

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	437/450 (97%)	0.13	4 (0%) 84 87	36, 55, 79, 95	0
1	C	440/450 (97%)	-0.16	0 100 100	24, 42, 65, 82	0
2	B	424/445 (95%)	-0.05	3 (0%) 87 91	28, 50, 83, 112	1 (0%)
2	D	420/445 (94%)	0.33	9 (2%) 63 67	27, 70, 98, 118	1 (0%)
3	E	123/143 (86%)	0.16	3 (2%) 59 61	37, 67, 101, 126	0
4	F	346/384 (90%)	1.42	95 (27%) 0 0	44, 78, 140, 155	0
All	All	2190/2317 (94%)	0.28	114 (5%) 27 29	24, 58, 106, 155	2 (0%)

All (114) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	250	SER	9.8
4	F	239	HIS	9.2
4	F	240	LEU	8.2
4	F	251	LYS	8.0
4	F	244	CYS	7.9
4	F	233	PHE	7.7
4	F	234	GLN	7.1
4	F	232	ASN	6.9
4	F	235	ASP	6.9
4	F	242	ASN	6.8
4	F	249	TYR	6.8
4	F	241	THR	6.7
4	F	252	ASN	6.2
4	F	248	GLU	5.9
4	F	149	ALA	5.6
4	F	230	SER	5.5
4	F	169	LEU	5.4
4	F	237	THR	5.3
4	F	161	LEU	5.3

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Mol	Chain	Res	Type	RSRZ
4	F	231	ALA	5.2
4	F	229	ASN	5.2
4	F	224	SER	4.8
4	F	238	CYS	4.8
4	F	243	HIS	4.8
4	F	236	LYS	4.7
4	F	225	SER	4.2
4	F	178	GLN	4.2
4	F	255[A]	ARG	4.2
4	F	194	PRO	4.1
4	F	245	ILE	4.1
4	F	162	ILE	4.1
4	F	253	TYR	3.9
4	F	256	TYR	3.9
4	F	159	GLY	3.7
4	F	246	GLN	3.7
4	F	227	PRO	3.6
2	B	282	ARG	3.6
4	F	148	ILE	3.5
4	F	27	TRP	3.5
4	F	182	ILE	3.4
4	F	102	PRO	3.4
4	F	199	PHE	3.4
4	F	150	LYS	3.4
4	F	198	LYS	3.4
4	F	160	ILE	3.3
4	F	177	GLY	3.3
1	A	86	LEU	3.3
4	F	104	ASN	3.2
4	F	6	VAL	3.2
4	F	257	GLU	3.2
2	B	428	ALA	3.2
4	F	223	THR	3.1
4	F	163	SER	3.1
4	F	103	THR	3.1
4	F	197	ARG	3.1
4	F	176	GLN	3.1
4	F	228	TYR	3.0
4	F	258	GLU	3.0
4	F	247	LYS	3.0
4	F	259	GLY	2.9
4	F	226	GLU	2.9

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Mol	Chain	Res	Type	RSRZ
2	D	99	ASN	2.9
4	F	216	TYR	2.9
3	E	45	PRO	2.9
2	D	55	THR	2.9
1	A	46	ASP	2.9
3	E	7	GLU	2.8
4	F	158	GLU	2.8
4	F	181	VAL	2.8
2	B	281	TYR	2.8
4	F	185	TYR	2.7
4	F	220[A]	VAL	2.7
4	F	101	TYR	2.7
4	F	179	VAL	2.6
2	D	98	GLY	2.6
4	F	173	ILE	2.6
4	F	204	TRP	2.5
4	F	147	TRP	2.5
4	F	380	HIS	2.5
4	F	175	GLU	2.5
4	F	362	ALA	2.4
1	A	1	MET	2.4
4	F	361	LEU	2.4
4	F	337	ALA	2.4
4	F	171	ASP	2.4
2	D	172	SER	2.4
4	F	13	VAL	2.4
4	F	151	SER	2.4
4	F	172	PHE	2.4
3	E	48	GLU	2.4
4	F	190	LEU	2.3
2	D	408	PHE	2.3
4	F	254	GLY	2.2
4	F	260	ASN	2.2
4	F	100	ILE	2.2
4	F	330	ILE	2.2
4	F	222	ARG	2.2
4	F	189	PRO	2.1
4	F	334	GLY	2.1
2	D	8	GLN	2.1
4	F	192	LEU	2.1
4	F	125	THR	2.1
4	F	219	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
2	D	37	HIS	2.1
4	F	191	LEU	2.1
2	D	145	SER	2.1
4	F	196	HIS	2.1
4	F	379	HIS	2.1
1	A	87	PHE	2.1
2	D	398	TYR	2.0
4	F	318	ASP	2.0
4	F	20	LEU	2.0
4	F	372	THR	2.0
4	F	11	SER	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

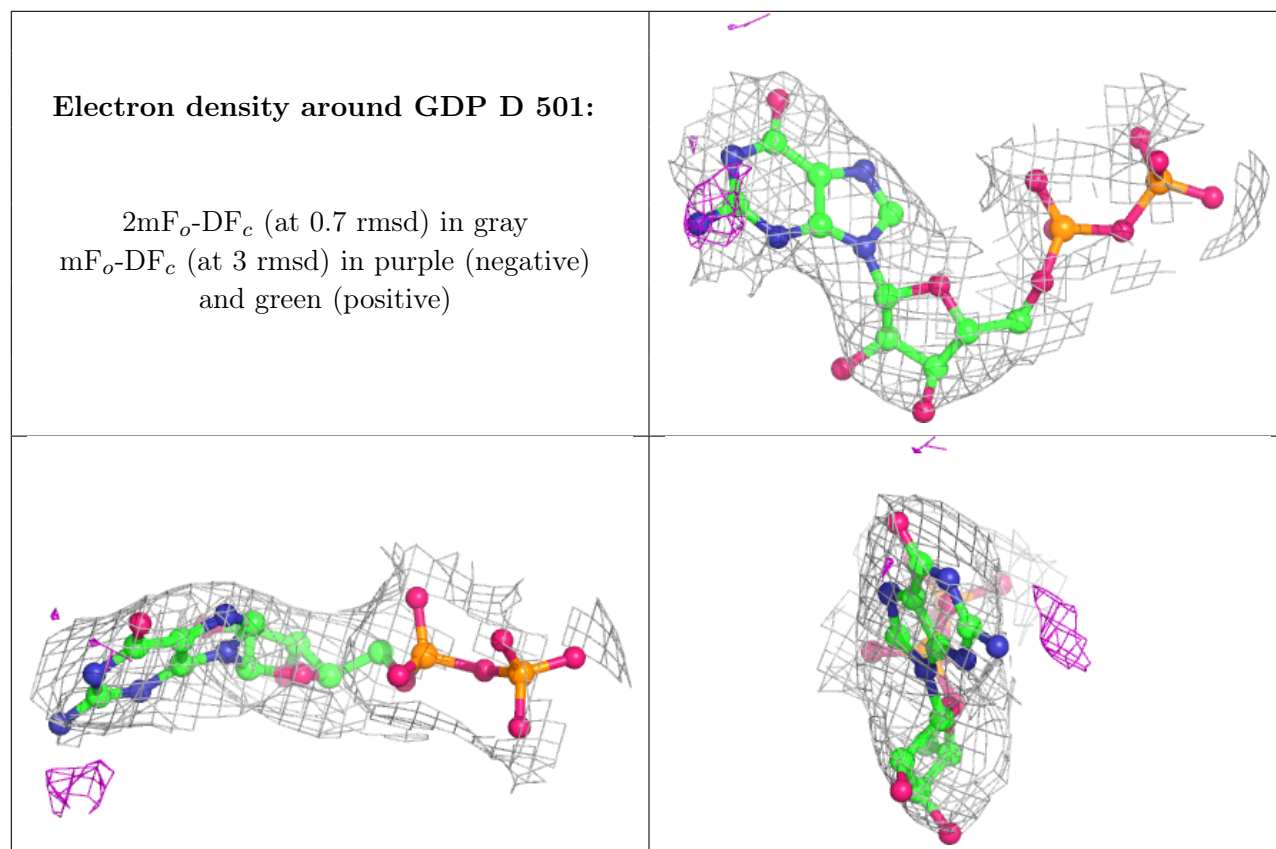
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
8	CL	A	504	1/1	0.80	0.47	87,87,87,87	0
10	MES	B	504	12/12	0.91	0.29	72,75,87,110	0
9	GDP	D	501	28/28	0.93	0.23	54,67,76,87	0
10	MES	B	503	12/12	0.94	0.21	50,55,69,90	0
6	MG	C	502	1/1	0.94	0.33	33,33,33,33	0
11	GXI	D	502	22/22	0.95	0.35	51,70,88,99	0
6	MG	B	502	1/1	0.96	0.37	29,29,29,29	0
5	GTP	A	501	32/32	0.97	0.19	31,44,54,61	0
5	GTP	C	501	32/32	0.97	0.20	29,37,45,48	0
6	MG	A	502	1/1	0.97	0.31	32,32,32,32	0
11	GXI	B	505	22/22	0.97	0.28	36,46,55,59	0
9	GDP	B	501	28/28	0.97	0.18	27,37,43,44	0

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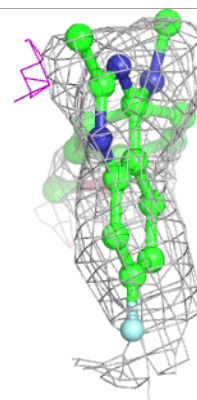
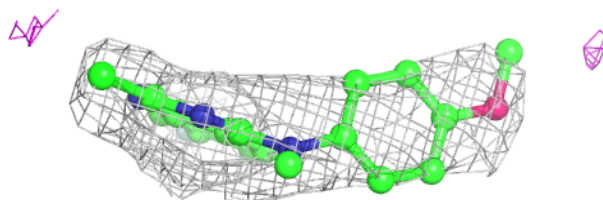
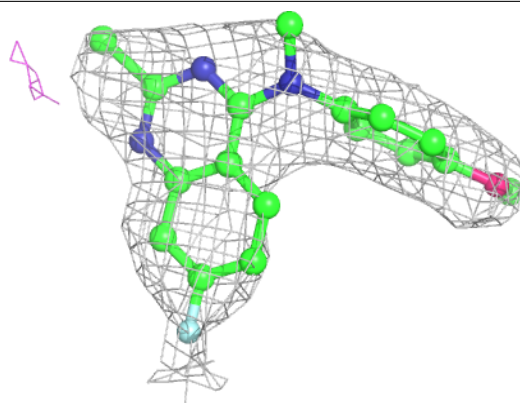
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
7	CA	C	503	1/1	0.98	0.07	47,47,47,47	0
7	CA	A	503	1/1	0.98	0.06	100,100,100,100	0

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.

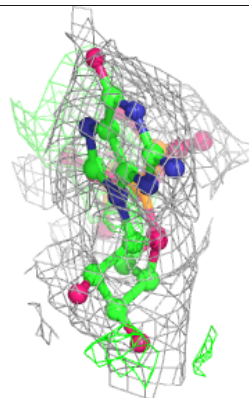
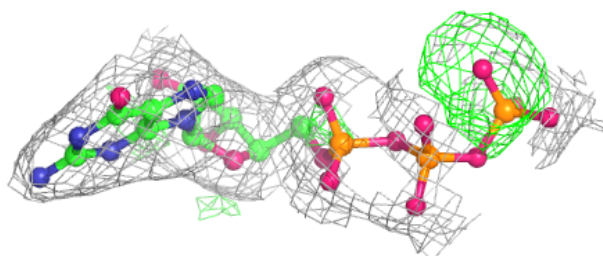
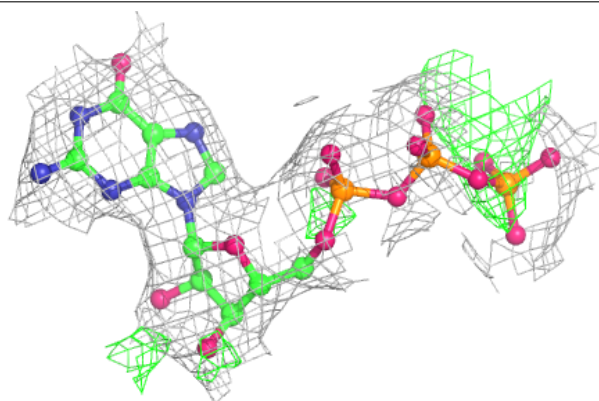


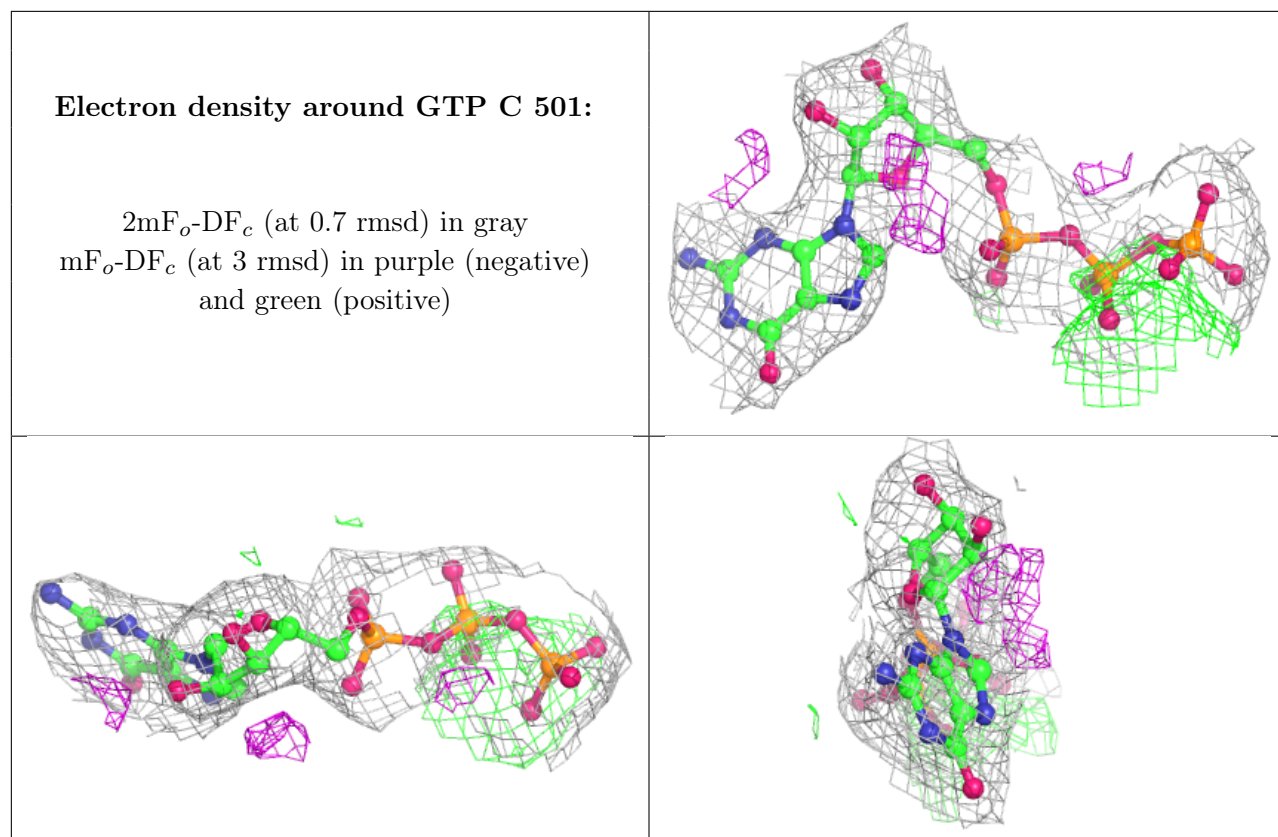
Electron density around GXI D 502:

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

**Electron density around GTP A 501:**

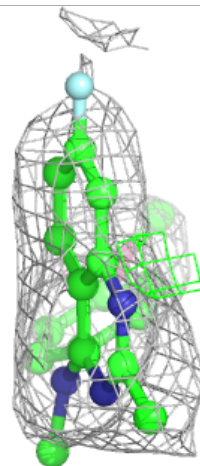
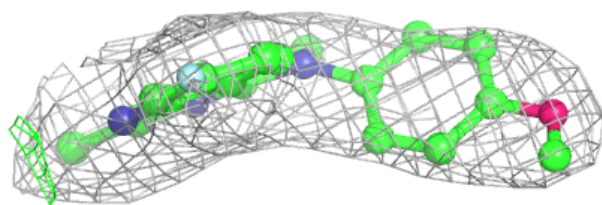
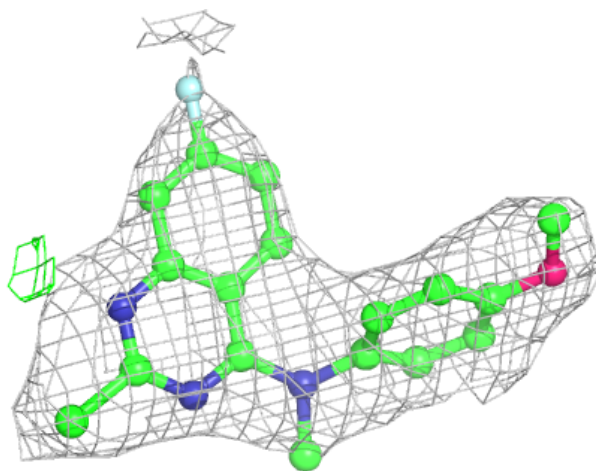
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

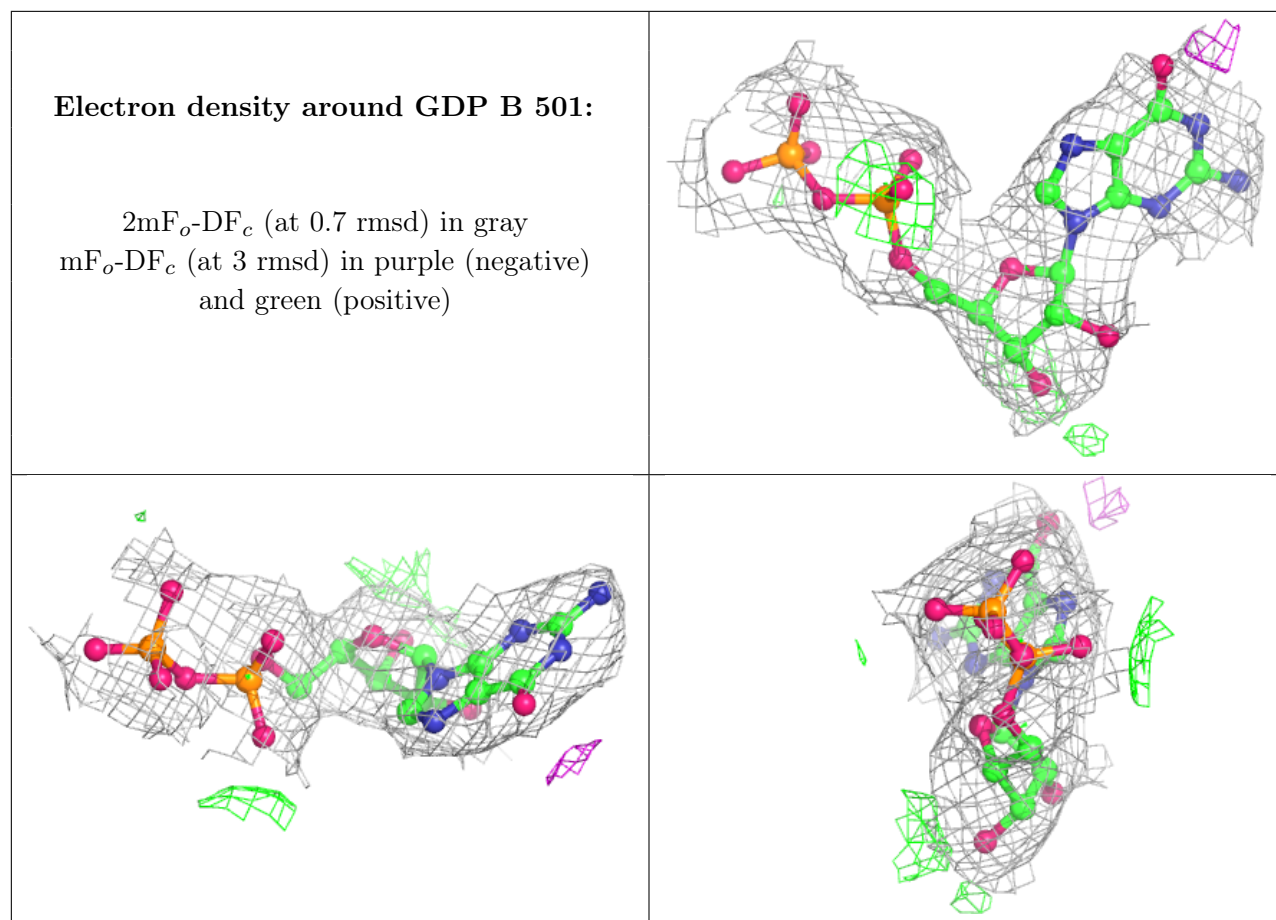




Electron density around GXI B 505:

$2mF_o-DF_c$ (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.