



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 20, 2026 – 06:09 AM UTC

PDB ID : 5S4Q / pdb_00005s4q
Title : Tubulin-Z422344882-complex
Authors : Muehlethaler, T.; Gioia, D.; Protá, A.E.; Sharpe, M.E.; Cavalli, A.; Steinmetz, M.O.
Deposited on : 2020-11-08
Resolution : 2.59 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

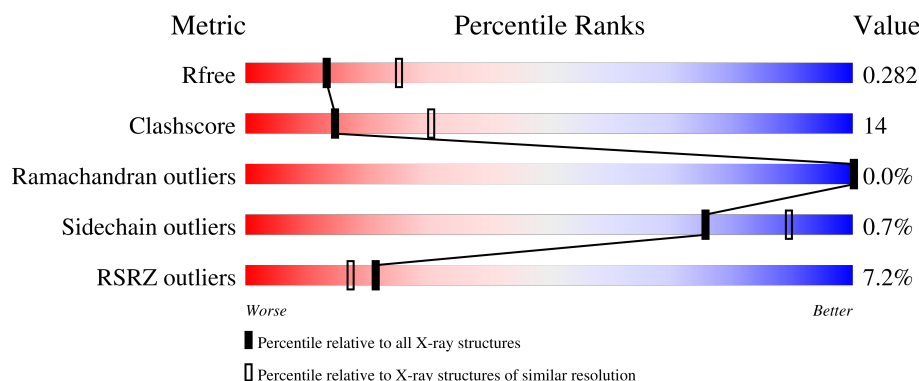
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.59 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	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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	451	5% 66% 30% .
1	C	451	2% 69% 28% .
2	B	445	3% 68% 28% .
2	D	445	7% 67% 30% .
3	E	143	12% 67% 19% 14%

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Mol	Chain	Length	Quality of chain
4	F	384	17% 70% 22% 8%

2 Entry composition

There are 12 unique types of molecules in this entry. The entry contains 18013 atoms, of which 11 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
1	A	438	Total	C	N	O	S	0	0	0
			3424	2167	582	653	22			
1	C	440	Total	C	N	O	S	0	1	0
			3443	2178	585	657	23			

- Molecule 2 is a protein called Tubulin beta-2B chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	425	Total	C	N	O	S	12	1	0
			3359	2109	577	646	27			
2	D	431	Total	C	N	O	S	5	0	0
			3368	2113	575	653	27			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	123	Total	C	N	O	S	0	0	0
			1014	625	183	201	5			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	3	MET	-	initiating methionine	UNP P63043
E	4	ALA	-	expression tag	UNP P63043

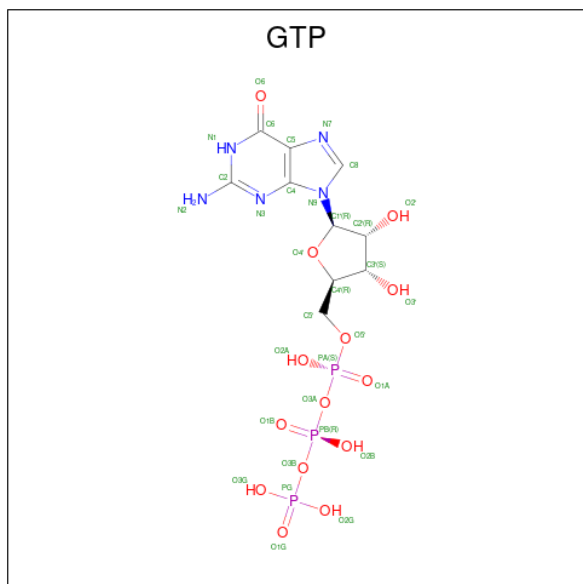
- Molecule 4 is a protein called Tubulin-Tyrosine Ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	F	352	Total	C	N	O	S	0	0	0
			2877	1843	495	525	14			

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 (CCD ID: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
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		

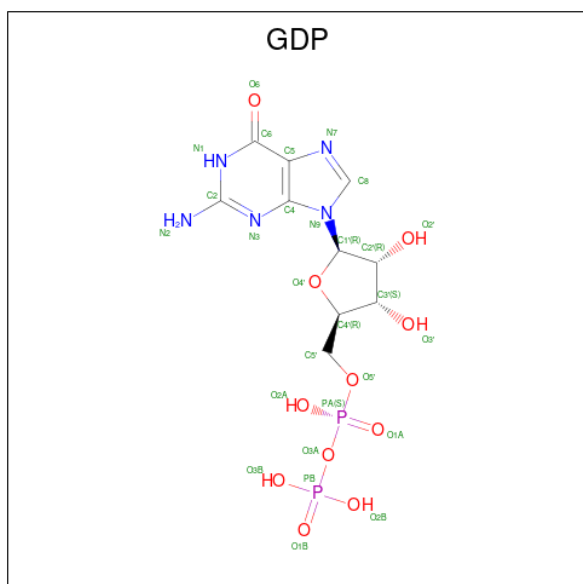
- Molecule 6 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	Mg	0	0
			1	1		
6	B	1	Total	Mg	0	0
			1	1		
6	D	2	Total	Mg	0	0
			2	2		
6	F	1	Total	Mg	0	0
			1	1		

- Molecule 7 is CALCIUM ION (CCD ID: CA) (formula: Ca).

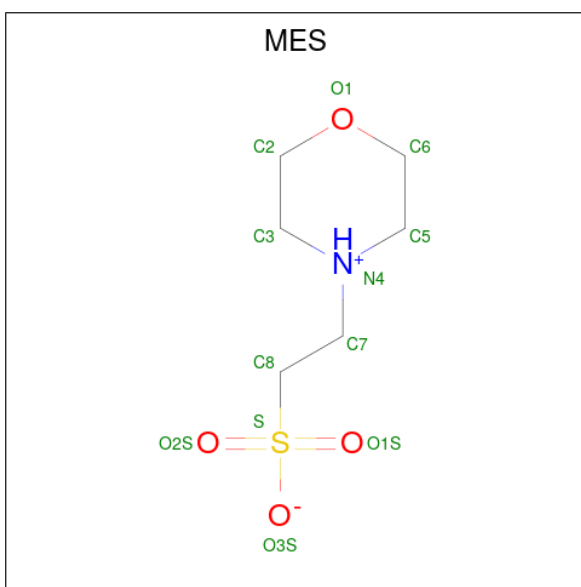
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	2	Total	Ca	0	0
			2	2		
7	B	1	Total	Ca	0	0
			1	1		
7	C	1	Total	Ca	0	0
			1	1		

- Molecule 8 is GUANOSINE-5'-DIPHOSPHATE (CCD ID: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂).



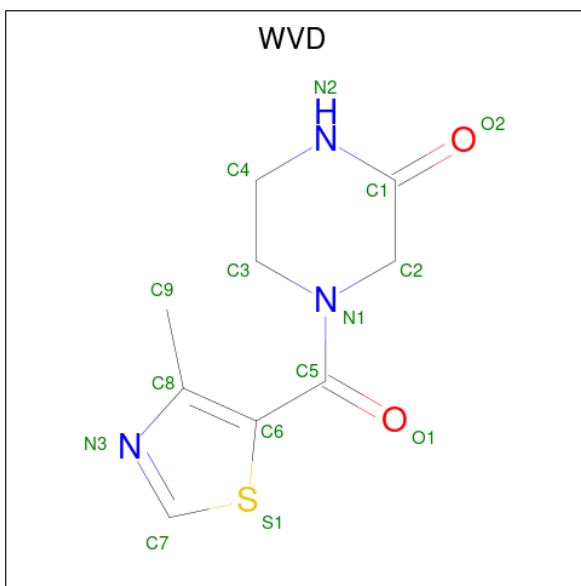
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
8	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
8	D	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 9 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (CCD ID: MES) (formula: C₆H₁₃NO₄S).



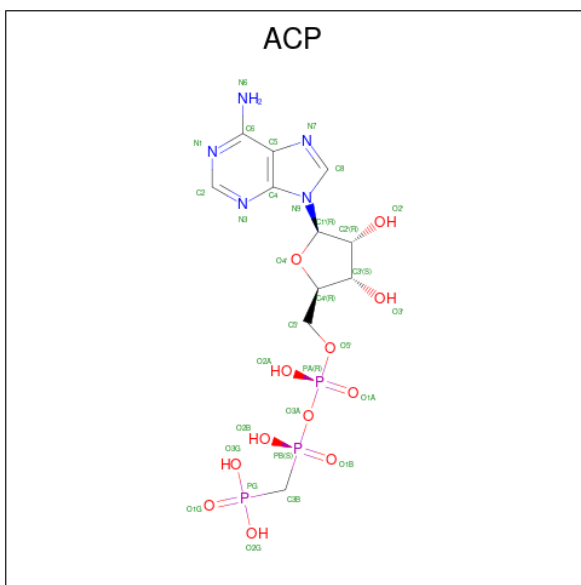
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	B	1	Total	C	N	O	S	0	0
			12	6	1	4	1		

- Molecule 10 is 4-(4-methyl-1,3-thiazole-5-carbonyl)piperazin-2-one (CCD ID: WVD) (formula: $C_9H_{11}N_3O_2S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
10	B	1	Total	C	H	N	O	S	0	0
			26	9	11	3	2	1		

- Molecule 11 is PHOSPHOMETHYLPHOSPHONIC ACID ADENYLATE ESTER (CCD ID: ACP) (formula: $C_{11}H_{18}N_5O_{12}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
11	F	1	Total 31	C 11	N 5	O 12	P 3	0	0

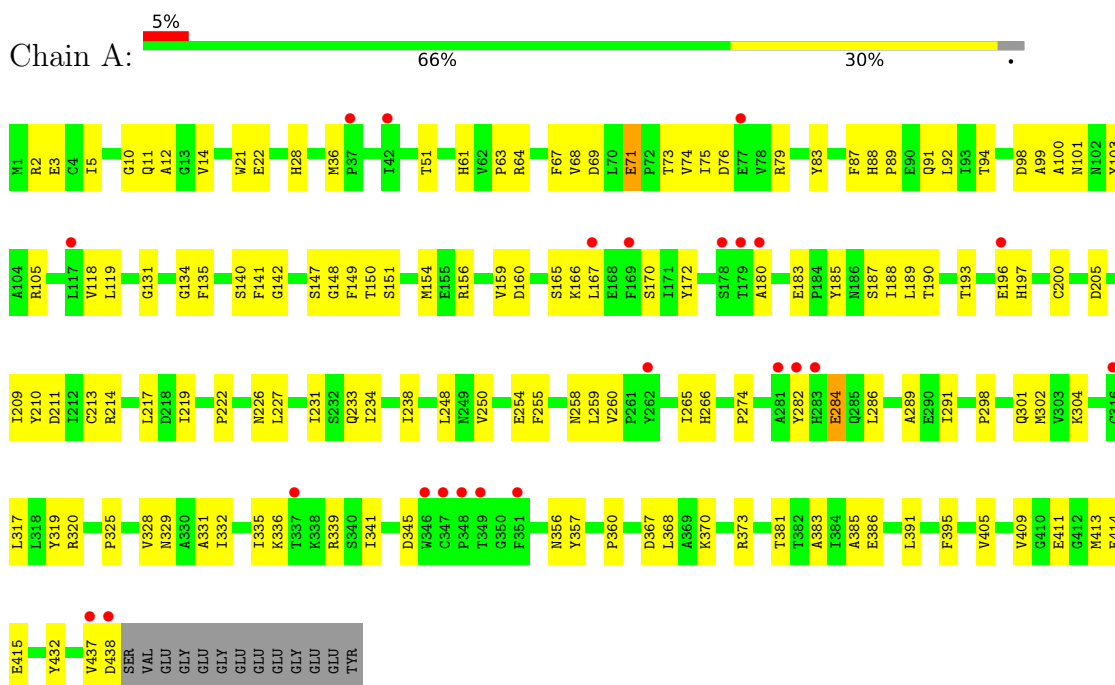
- Molecule 12 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	A	56	Total O 56 56	0	0
12	B	71	Total O 71 71	0	0
12	C	164	Total O 164 164	0	0
12	D	24	Total O 24 24	0	0
12	E	11	Total O 11 11	0	0
12	F	4	Total O 4 4	0	0

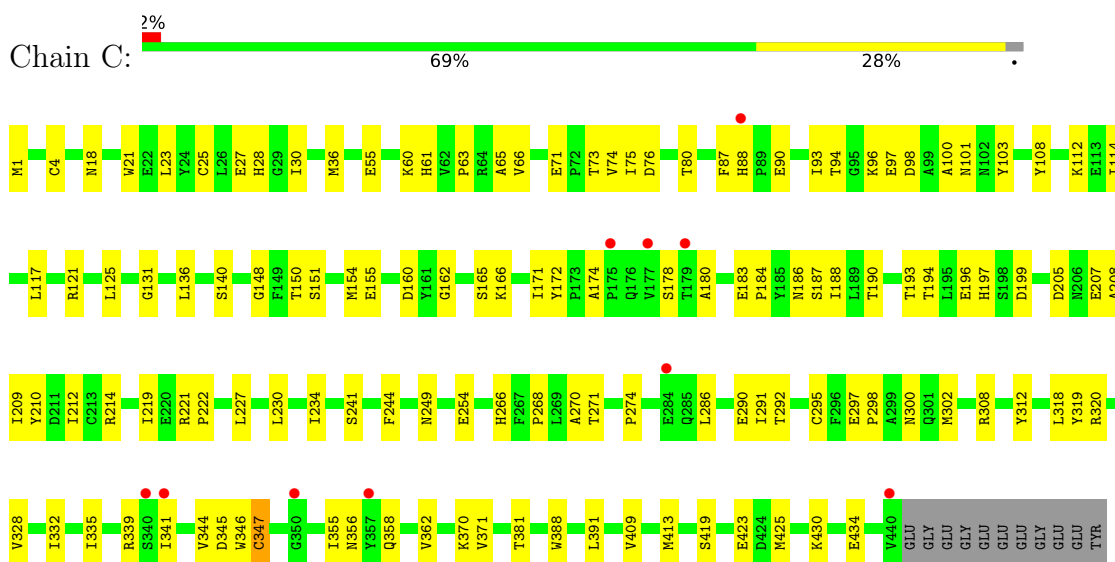
3 Residue-property plots [i](#)

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.

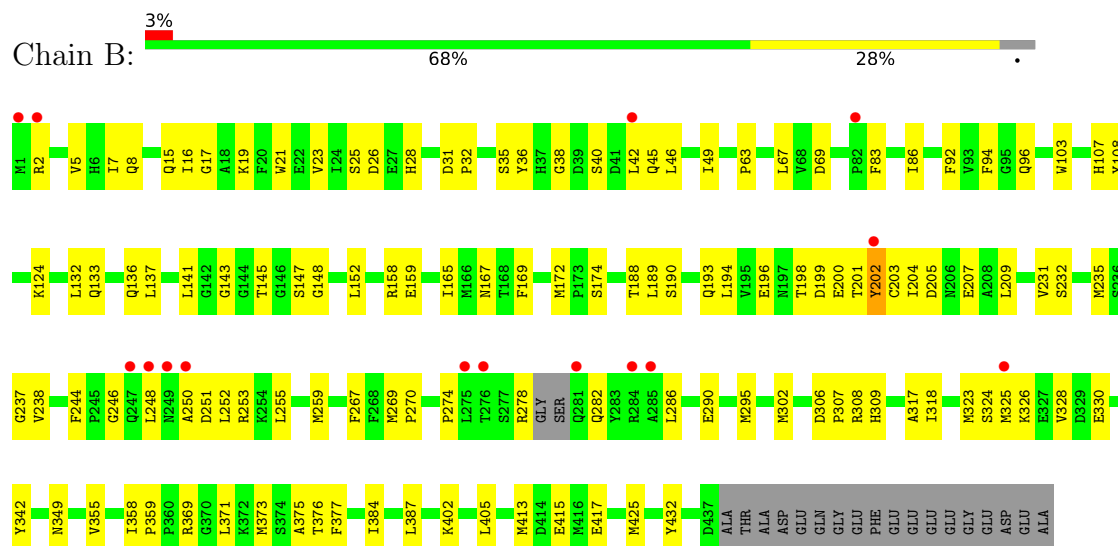
- Molecule 1: Tubulin alpha-1B chain



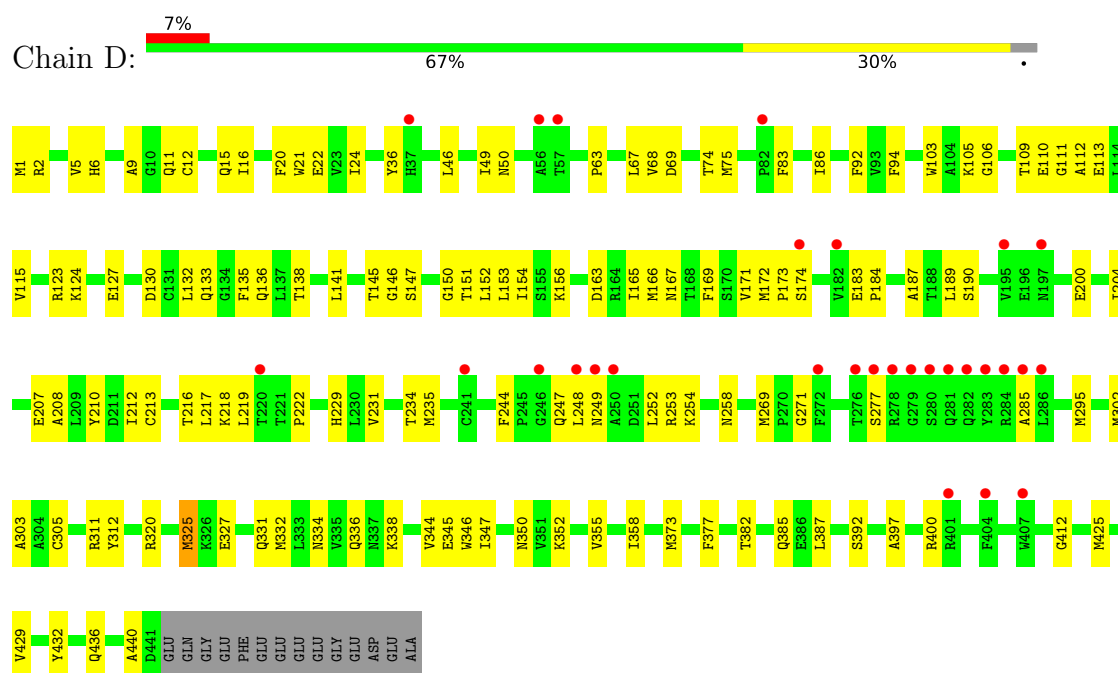
- Molecule 1: Tubulin alpha-1B chain



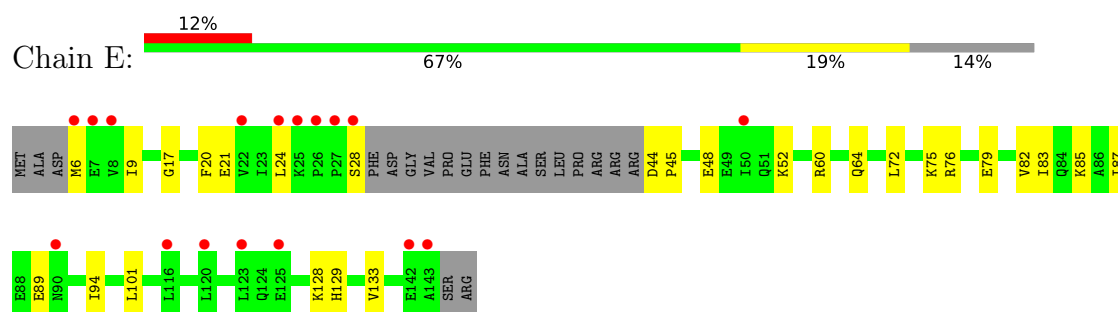
- Molecule 2: Tubulin beta-2B chain



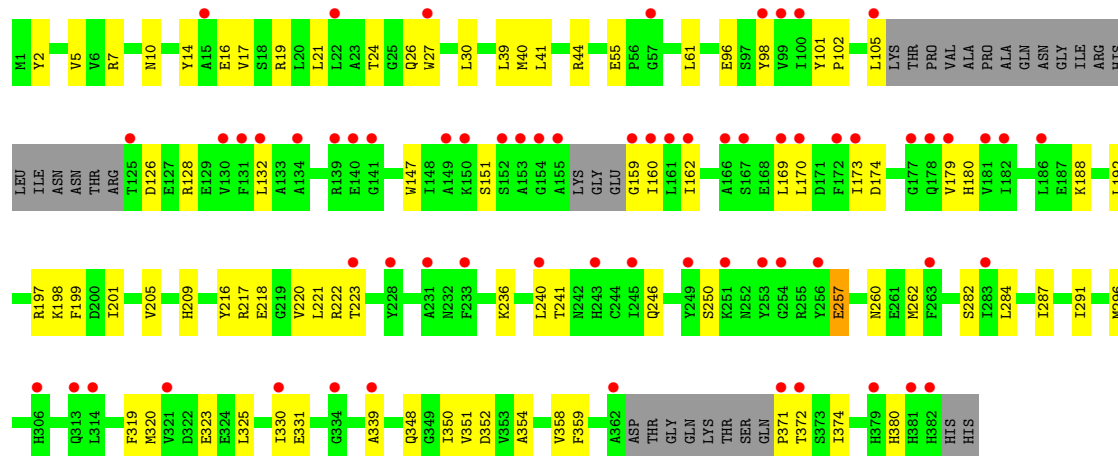
- Molecule 2: Tubulin beta-2B chain



- Molecule 3: Stathmin-4



- Molecule 4: Tubulin-Tyrosine Ligase



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	104.74Å 158.30Å 179.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	118.76 – 2.59 118.76 – 2.59	Depositor EDS
% Data completeness (in resolution range)	97.9 (118.76-2.59) 97.9 (118.76-2.59)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.68 (at 2.58Å)	Xtriage
Refinement program	PHENIX 1.18.2_3874	Depositor
R, R_{free}	0.226 , 0.281 0.229 , 0.282	Depositor DCC
R_{free} test set	2000 reflections (2.14%)	wwPDB-VP
Wilson B-factor (Å ²)	52.8	Xtriage
Anisotropy	0.344	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 43.1	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	18013	wwPDB-VP
Average B, all atoms (Å ²)	63.0	wwPDB-VP

Xtriage'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: MG, GTP, ACP, GDP, MES, CA, WVD

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	0.12	0/3502	0.30	0/4754
1	C	0.13	0/3521	0.31	0/4780
2	B	0.12	0/3433	0.29	0/4647
2	D	0.11	0/3442	0.27	0/4664
3	E	0.11	0/1022	0.24	0/1356
4	F	0.10	0/2944	0.28	0/3978
All	All	0.12	0/17864	0.29	0/24179

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	3424	0	3335	101	0
1	C	3443	0	3352	97	0
2	B	3359	0	3235	105	0
2	D	3368	0	3236	103	0
3	E	1014	0	1029	21	0
4	F	2877	0	2839	71	0
5	A	32	0	12	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	32	0	12	1	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	D	2	0	0	0	0
6	F	1	0	0	0	0
7	A	2	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
8	B	28	0	12	2	0
8	D	28	0	12	3	0
9	B	12	0	12	1	0
10	B	15	11	0	3	0
11	F	31	0	14	3	0
12	A	56	0	0	7	0
12	B	71	0	0	5	0
12	C	164	0	0	7	0
12	D	24	0	0	2	0
12	E	11	0	0	1	0
12	F	4	0	0	0	0
All	All	18002	11	17100	482	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 14.

All (482) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:221:ARG:HG3	2:D:325:MET:HG2	1.46	0.97
2:D:1:MET:HE2	2:D:50:ASN:HB2	1.56	0.88
1:A:71:GLU:OE2	1:A:73:THR:OG1	1.93	0.86
2:B:274:PRO:HB3	2:B:286:LEU:HD22	1.59	0.85
4:F:102:PRO:HG2	4:F:105:LEU:HD13	1.59	0.83
1:A:335:ILE:HG23	1:A:339:ARG:HG3	1.61	0.83
2:B:83:PHE:O	2:B:86:ILE:HG22	1.82	0.79
2:B:2:ARG:O	2:B:133:GLN:NE2	2.16	0.77
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.65	0.77
2:D:208:ALA:O	2:D:212:ILE:HG13	1.85	0.77
1:A:336:LYS:HG3	3:E:24:LEU:HD13	1.67	0.76
2:D:136:GLN:HA	2:D:167:ASN:O	1.85	0.76
2:B:325:MET:HE2	2:B:355:VAL:HG11	1.69	0.75
4:F:236:LYS:HB3	4:F:240:LEU:HD13	1.67	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:10:ASN:HB2	4:F:44:ARG:HH22	1.51	0.75
1:C:209:ILE:HD11	1:C:302:MET:HE3	1.68	0.74
2:D:248:LEU:HD21	2:D:352:LYS:HB3	1.69	0.73
2:D:347:ILE:HG22	2:D:350:ASN:HB3	1.70	0.73
2:D:217:LEU:HA	2:D:277:SER:HB3	1.70	0.72
2:B:188:THR:HG23	2:B:425:MET:HE2	1.70	0.72
1:C:4[A]:CYS:SG	1:C:136:LEU:HG	2.29	0.72
2:D:83:PHE:O	2:D:86:ILE:HG22	1.90	0.72
3:E:48:GLU:HG2	3:E:52:LYS:HE3	1.71	0.71
2:D:332:MET:O	2:D:336:GLN:HG3	1.91	0.71
4:F:320:MET:HG3	4:F:330:ILE:HD11	1.71	0.71
1:C:76:ASP:O	1:C:80:THR:HG22	1.91	0.70
1:C:298:PRO:HG2	1:C:308:ARG:NH2	2.06	0.70
2:D:295:MET:HE2	2:D:377:PHE:HB2	1.73	0.70
1:C:93:ILE:HD11	1:C:121:ARG:HG3	1.74	0.70
2:D:432:TYR:OH	12:D:601:HOH:O	2.10	0.70
4:F:16:GLU:OE2	4:F:19:ARG:NH2	2.25	0.69
4:F:132:LEU:HD21	4:F:170:LEU:HD11	1.74	0.69
5:C:501:GTP:O1B	12:C:601:HOH:O	2.10	0.69
1:C:151:SER:HB2	1:C:193:THR:CG2	2.23	0.69
2:B:202:TYR:CZ	2:B:270:PRO:HB3	2.28	0.69
3:E:85:LYS:O	3:E:89:GLU:HG3	1.92	0.69
4:F:128:ARG:NH2	4:F:174:ASP:OD1	2.26	0.68
1:A:28:HIS:O	1:A:36:MET:HE3	1.93	0.68
2:B:415:GLU:OE1	12:B:601:HOH:O	2.11	0.67
1:C:209:ILE:HD11	1:C:302:MET:CE	2.23	0.67
1:C:234:ILE:HG12	1:C:302:MET:HE2	1.75	0.67
1:A:88:HIS:HB2	1:A:89:PRO:HD2	1.77	0.67
2:D:147:SER:HB2	2:D:190:SER:OG	1.93	0.67
2:D:334:ASN:HD21	2:D:338:LYS:HE3	1.57	0.67
2:D:154:ILE:HG23	2:D:166:MET:HG2	1.77	0.66
2:B:147:SER:HG	2:B:190:SER:HG	1.41	0.66
2:D:69:ASP:O	2:D:94:PHE:HA	1.95	0.66
2:D:397:ALA:HA	2:D:400:ARG:NH1	2.10	0.66
2:D:210:TYR:CE1	2:D:222:PRO:HG2	2.30	0.66
4:F:188:LYS:HD3	4:F:323:GLU:OE2	1.97	0.65
1:A:166:LYS:HE2	1:A:197:HIS:O	1.97	0.65
2:B:193:GLN:HB3	12:B:613:HOH:O	1.96	0.65
4:F:7:ARG:HD2	4:F:40:MET:HE2	1.79	0.65
1:A:210:TYR:CE1	1:A:222:PRO:HD2	2.32	0.65
1:A:211:ASP:OD2	1:A:304:LYS:NZ	2.17	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:101:TYR:N	4:F:126:ASP:OD1	2.21	0.65
4:F:331:GLU:OE2	11:F:401:ACP:O3G	2.15	0.65
1:A:36:MET:HB3	1:A:61:HIS:CE1	2.32	0.64
1:C:75:ILE:HD12	1:C:94:THR:HG22	1.79	0.64
1:C:165:SER:HA	1:C:199:ASP:OD2	1.97	0.64
2:B:306:ASP:HB3	2:B:309:HIS:ND1	2.12	0.64
2:D:172:MET:HG3	2:D:387:LEU:HD11	1.79	0.64
4:F:241:THR:OG1	11:F:401:ACP:O3'	2.02	0.64
1:A:141:PHE:HB3	1:A:187:SER:OG	1.98	0.64
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.17	0.63
2:D:152:LEU:O	2:D:156:LYS:HG2	1.99	0.63
1:A:291:ILE:HD13	1:A:373:ARG:HG3	1.80	0.63
2:B:15:GLN:NE2	8:B:501:GDP:O6	2.32	0.63
1:C:160:ASP:OD1	12:C:602:HOH:O	2.15	0.63
2:D:11:GLN:O	2:D:15:GLN:HG2	1.99	0.63
4:F:371:PRO:HA	4:F:372:THR:O	1.98	0.63
1:C:187:SER:HB3	1:C:391:LEU:HD21	1.81	0.63
3:E:85:LYS:NZ	12:E:201:HOH:O	2.32	0.63
1:C:93:ILE:HG22	1:C:114:ILE:HD11	1.80	0.62
2:D:327:GLU:O	2:D:331:GLN:HG2	1.99	0.62
2:D:145:THR:HB	8:D:502:GDP:O2B	1.98	0.62
4:F:197:ARG:NH1	4:F:257:GLU:OE2	2.22	0.62
1:A:22:GLU:HG3	1:A:83:TYR:HE2	1.65	0.62
3:E:48:GLU:CG	3:E:52:LYS:HE3	2.29	0.62
1:C:28:HIS:O	1:C:36:MET:HE3	2.00	0.61
2:D:115:VAL:HG23	2:D:153:LEU:HD23	1.82	0.61
2:B:69:ASP:O	2:B:94:PHE:HA	2.00	0.61
1:A:226:ASN:ND2	1:A:367:ASP:OD2	2.31	0.61
4:F:159:GLY:C	4:F:160:ILE:HD12	2.26	0.61
2:B:136:GLN:HA	2:B:167:ASN:O	2.00	0.60
1:C:162:GLY:HA2	3:E:94:ILE:HD11	1.83	0.60
2:B:21:TRP:CZ3	2:B:63:PRO:HB3	2.36	0.60
4:F:222:ARG:O	4:F:241:THR:HB	2.00	0.60
1:C:312:TYR:CD2	1:C:341:ILE:HG23	2.37	0.60
2:B:202:TYR:CE2	2:B:238:VAL:HG11	2.37	0.60
1:A:103:TYR:CE2	1:A:148:GLY:HA2	2.37	0.60
2:D:171:VAL:HA	2:D:204:ILE:O	2.02	0.60
1:A:356:ASN:HB2	12:A:625:HOH:O	1.99	0.60
2:D:311:ARG:NH1	2:D:436:GLN:O	2.33	0.60
2:B:26:ASP:OD1	2:B:369:ARG:NH2	2.34	0.60
2:B:432:TYR:OH	12:B:602:HOH:O	2.16	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:22:GLU:HG3	1:A:83:TYR:CE2	2.37	0.59
1:A:141:PHE:O	1:A:147:SER:HB3	2.02	0.59
1:C:320:ARG:HA	1:C:356:ASN:O	2.02	0.59
4:F:371:PRO:HA	4:F:372:THR:C	2.26	0.59
1:A:142:GLY:HA3	1:A:183:GLU:OE2	2.03	0.59
1:A:284:GLU:CD	1:A:284:GLU:H	2.10	0.59
1:C:271:THR:HG21	1:C:295:CYS:O	2.03	0.59
2:D:312:TYR:O	2:D:344:VAL:HG22	2.02	0.59
2:B:274:PRO:HB3	2:B:286:LEU:CD2	2.30	0.59
2:D:163:ASP:O	2:D:253:ARG:NH2	2.36	0.59
1:C:172:TYR:HB3	1:C:205:ASP:HA	1.84	0.58
1:C:362:VAL:HG22	1:C:370:LYS:HD3	1.85	0.58
4:F:371:PRO:CA	4:F:372:THR:HB	2.33	0.58
4:F:147:TRP:HB2	4:F:169:LEU:HD11	1.85	0.58
3:E:72:LEU:O	3:E:76:ARG:HG2	2.04	0.58
2:D:21:TRP:CZ3	2:D:63:PRO:HB3	2.39	0.58
3:E:75:LYS:NZ	3:E:79:GLU:OE2	2.37	0.58
2:B:270:PRO:HG2	2:B:302:MET:HB2	1.86	0.58
1:A:414:GLU:HB3	12:A:642:HOH:O	2.03	0.57
2:D:218:LYS:O	2:D:219:LEU:HD23	2.04	0.57
2:D:269:MET:HG3	2:D:303:ALA:HB3	1.85	0.57
4:F:371:PRO:HA	4:F:372:THR:HB	1.84	0.57
4:F:320:MET:CG	4:F:330:ILE:HD11	2.34	0.57
2:B:38:GLY:HA3	2:B:45:GLN:OE1	2.04	0.57
1:C:1:MET:HE3	1:C:131:GLY:HA3	1.86	0.57
4:F:128:ARG:O	4:F:132:LEU:HG	2.05	0.57
1:C:166:LYS:HE2	1:C:197:HIS:O	2.05	0.56
2:B:124:LYS:HD3	2:B:124:LYS:C	2.30	0.56
1:C:214:ARG:HG2	1:C:219:ILE:O	2.05	0.56
1:A:159:VAL:HG12	1:A:160:ASP:OD1	2.06	0.56
2:B:278:ARG:HG2	2:B:282:GLN:NE2	2.21	0.56
1:C:174:ALA:HB1	1:C:207:GLU:HB2	1.88	0.56
2:B:36:TYR:CD1	2:B:46:LEU:HD21	2.40	0.56
1:C:270:ALA:O	1:C:302:MET:HG2	2.06	0.56
2:D:2:ARG:HB3	2:D:133:GLN:HG2	1.88	0.56
4:F:350:ILE:O	4:F:354:ALA:HB3	2.06	0.56
1:A:328:VAL:O	1:A:332:ILE:HG13	2.06	0.56
1:C:209:ILE:HG23	1:C:230:LEU:HD23	1.88	0.55
2:D:213:CYS:HA	2:D:217:LEU:HD12	1.87	0.55
2:B:108:TYR:CD2	3:E:82:VAL:HG11	2.41	0.55
1:A:151:SER:HB2	1:A:193:THR:OG1	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:100:ALA:HA	2:D:254:LYS:HG3	1.88	0.55
1:A:335:ILE:CG2	1:A:339:ARG:HG3	2.35	0.55
1:C:244:PHE:CD1	1:C:358:GLN:HG2	2.42	0.55
2:B:167:ASN:ND2	2:B:200:GLU:HB2	2.22	0.55
2:D:271:GLY:HA3	2:D:377:PHE:HB3	1.87	0.55
1:A:320:ARG:HD2	12:A:640:HOH:O	2.06	0.55
2:B:5:VAL:HG23	2:B:132:LEU:CD1	2.37	0.55
2:B:317:ALA:C	2:B:318:ILE:HD12	2.32	0.55
2:B:202:TYR:CZ	2:B:238:VAL:HG11	2.42	0.55
2:B:269:MET:HE1	2:B:307:PRO:HG3	1.89	0.55
2:B:295:MET:CG	2:B:377:PHE:HB2	2.37	0.55
1:C:140:SER:HA	1:C:171:ILE:HB	1.90	0.54
1:C:151:SER:HB2	1:C:193:THR:HG21	1.88	0.54
1:A:21:TRP:CZ3	1:A:63:PRO:HB3	2.42	0.54
1:C:18:ASN:OD1	12:C:603:HOH:O	2.17	0.54
1:C:36:MET:HB3	1:C:61:HIS:CE1	2.42	0.54
1:A:103:TYR:CD2	1:A:148:GLY:HA2	2.42	0.54
2:D:213:CYS:HA	2:D:217:LEU:HB2	1.87	0.54
1:A:141:PHE:CE1	1:A:170:SER:HB3	2.43	0.54
1:A:167:LEU:HG	1:A:200:CYS:HB3	1.90	0.54
1:A:265:ILE:HG23	1:A:432:TYR:CZ	2.42	0.54
2:B:23:VAL:HG21	2:B:232:SER:HB3	1.89	0.54
4:F:2:TYR:CE1	4:F:359:PHE:HB3	2.42	0.54
1:A:147:SER:HB2	1:A:190:THR:HB	1.89	0.54
2:B:202:TYR:CE1	2:B:270:PRO:HB3	2.43	0.54
2:B:326:LYS:O	2:B:330:GLU:HG3	2.07	0.54
2:D:1:MET:CE	2:D:50:ASN:HB2	2.35	0.54
2:D:234:THR:OG1	2:D:302:MET:HE3	2.08	0.53
1:A:118:VAL:HG21	1:A:149:PHE:HZ	1.72	0.53
2:D:174:SER:OG	2:D:207:GLU:OE1	2.18	0.53
2:B:5:VAL:HG23	2:B:132:LEU:HD11	1.89	0.53
2:B:413:MET:HE3	2:B:417:GLU:CD	2.33	0.53
2:D:21:TRP:CE3	2:D:63:PRO:HB3	2.43	0.53
1:C:23:LEU:O	1:C:27:GLU:HG3	2.08	0.53
1:A:100:ALA:CB	2:B:253[B]:ARG:HG2	2.39	0.53
2:D:67:LEU:HD12	2:D:67:LEU:H	1.74	0.53
4:F:10:ASN:CB	4:F:44:ARG:HH22	2.17	0.53
1:C:117:LEU:HD11	1:C:121:ARG:NH2	2.24	0.53
2:D:5:VAL:HG23	2:D:132:LEU:CD1	2.39	0.53
2:D:325:MET:CE	2:D:355:VAL:HG21	2.38	0.53
1:A:134:GLY:HA3	1:A:165:SER:O	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:292:THR:HG22	1:C:335:ILE:CD1	2.39	0.53
2:B:244:PHE:CD1	2:B:358:ILE:HD12	2.44	0.52
1:C:66:VAL:HG23	1:C:125:LEU:CD1	2.39	0.52
2:D:169:PHE:CD2	2:D:235:MET:HG2	2.43	0.52
2:B:2:ARG:HB2	2:B:133:GLN:CG	2.39	0.52
2:D:141:LEU:HD12	2:D:172:MET:SD	2.49	0.52
2:B:238:VAL:HG13	2:B:376:THR:HG21	1.92	0.52
4:F:5:VAL:HG12	4:F:30:LEU:HB2	1.91	0.52
2:B:42:LEU:H	2:B:42:LEU:HD12	1.75	0.52
1:C:74:VAL:HB	12:C:641:HOH:O	2.09	0.52
2:B:194:LEU:HD22	2:B:198:THR:HG21	1.92	0.52
1:C:178:SER:HB2	1:C:183:GLU:OE2	2.09	0.52
2:B:251:ASP:O	2:B:255:LEU:HG	2.09	0.52
4:F:296:MET:SD	4:F:380:HIS:HB2	2.48	0.52
2:B:141:LEU:HD12	2:B:172:MET:SD	2.50	0.52
1:C:117:LEU:HD11	1:C:121:ARG:CZ	2.40	0.52
2:D:147:SER:O	2:D:151:THR:HG23	2.09	0.52
2:D:165:ILE:HG21	2:D:252:LEU:HB3	1.91	0.52
2:B:174:SER:CB	2:B:207:GLU:HB2	2.40	0.52
2:D:36:TYR:CD1	2:D:46:LEU:HD21	2.45	0.52
2:D:387:LEU:HD23	2:D:387:LEU:C	2.35	0.51
4:F:217:ARG:NH2	4:F:374:ILE:HA	2.24	0.51
1:A:101:ASN:ND2	1:A:180:ALA:HB2	2.25	0.51
1:A:289:ALA:HA	1:A:331:ALA:HB2	1.92	0.51
4:F:14:TYR:HB3	4:F:41:LEU:HD13	1.91	0.51
2:D:15:GLN:NE2	2:D:74:THR:HG23	2.24	0.51
2:B:103:TRP:CE3	2:B:189:LEU:HD13	2.45	0.51
1:C:234:ILE:HD12	1:C:234:ILE:H	1.76	0.51
1:C:108:TYR:O	1:C:112:LYS:HG2	2.10	0.51
2:D:210:TYR:CD1	2:D:222:PRO:HG2	2.45	0.51
1:A:118:VAL:HG21	1:A:149:PHE:CZ	2.46	0.51
1:A:289:ALA:HA	1:A:331:ALA:CB	2.41	0.51
2:B:16:ILE:HD13	2:B:231:VAL:HG11	1.93	0.51
2:D:320:ARG:O	2:D:373:MET:HA	2.09	0.51
2:D:124:LYS:C	2:D:124:LYS:HD3	2.36	0.51
2:D:412:GLY:C	3:E:133:VAL:HG13	2.36	0.51
2:B:286:LEU:HD12	2:B:290:GLU:OE1	2.10	0.51
1:A:2:ARG:HB3	1:A:131:GLY:O	2.11	0.50
1:A:233:GLN:HG3	1:A:368:LEU:HD12	1.93	0.50
2:B:359:PRO:HB2	2:B:371:LEU:O	2.12	0.50
4:F:17:VAL:O	4:F:21:LEU:HG	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:101:ASN:ND2	1:C:180:ALA:HB2	2.27	0.50
1:C:419:SER:O	1:C:423:GLU:HG3	2.11	0.50
2:D:75:MET:HE3	2:D:92:PHE:CD2	2.47	0.50
1:A:99:ALA:C	1:A:105:ARG:HD3	2.37	0.49
1:C:103:TYR:CE2	1:C:148:GLY:HA2	2.46	0.49
2:D:21:TRP:CE3	2:D:24:ILE:HD11	2.47	0.49
1:C:388:TRP:CE3	1:C:425:MET:HE1	2.48	0.49
2:B:28:HIS:HB3	2:B:49:ILE:HD13	1.93	0.49
2:B:174:SER:OG	2:B:207:GLU:HB2	2.13	0.49
1:C:174:ALA:HB2	1:C:207:GLU:H	1.77	0.49
2:B:67:LEU:HD22	2:B:92:PHE:CE2	2.47	0.49
2:B:96:GLN:HB3	1:C:1:MET:HE2	1.94	0.49
1:C:209:ILE:HG22	1:C:227:LEU:HD22	1.95	0.49
1:A:12:ALA:CB	1:A:140:SER:HB3	2.42	0.49
2:B:172:MET:HG3	2:B:387:LEU:HD11	1.94	0.49
1:C:292:THR:HG22	1:C:335:ILE:HD12	1.94	0.49
4:F:102:PRO:HG2	4:F:105:LEU:CD1	2.38	0.49
2:B:31:ASP:OD1	2:B:35:SER:N	2.43	0.49
2:D:334:ASN:ND2	2:D:338:LYS:HE3	2.24	0.49
4:F:246:GLN:O	4:F:250:SER:HB3	2.11	0.49
1:C:180:ALA:HA	2:D:258:ASN:OD1	2.12	0.49
2:B:269:MET:HG2	2:B:384:ILE:HD13	1.95	0.48
2:D:1:MET:HG3	2:D:50:ASN:HB2	1.95	0.48
2:D:212:ILE:O	2:D:216:THR:HB	2.12	0.48
1:A:14:VAL:HG13	1:A:67:PHE:HD2	1.77	0.48
1:A:233:GLN:HG3	1:A:368:LEU:CD1	2.44	0.48
1:A:336:LYS:HD2	1:A:341:ILE:HD12	1.95	0.48
2:B:259:MET:HG3	10:B:505:WVD:C9	2.42	0.48
1:C:63:PRO:HG2	1:C:87:PHE:CE1	2.47	0.48
1:C:71:GLU:HB3	1:C:98:ASP:HB3	1.95	0.48
2:D:75:MET:HE3	2:D:92:PHE:HD2	1.79	0.48
4:F:287:ILE:HG23	4:F:319:PHE:CE2	2.49	0.48
1:A:76:ASP:OD1	1:A:79:ARG:NH1	2.45	0.48
1:C:286:LEU:HA	1:C:290:GLU:OE1	2.13	0.48
2:D:2:ARG:O	2:D:133:GLN:NE2	2.34	0.48
2:D:106:GLY:O	2:D:111:GLY:HA3	2.14	0.48
2:D:115:VAL:HG23	2:D:153:LEU:CD2	2.43	0.48
1:A:75:ILE:HD12	1:A:94:THR:HG22	1.96	0.48
1:A:214:ARG:HG2	1:A:219:ILE:O	2.14	0.48
2:B:246:GLY:C	2:B:248:LEU:H	2.21	0.48
2:B:295:MET:HG3	2:B:377:PHE:HB2	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:68:VAL:HG11	1:A:149:PHE:CE2	2.49	0.48
4:F:19:ARG:HD2	4:F:19:ARG:C	2.38	0.48
1:C:71:GLU:OE1	1:C:73:THR:OG1	2.25	0.47
2:D:103:TRP:CE3	2:D:189:LEU:HD13	2.49	0.47
1:C:210:TYR:CE1	1:C:222:PRO:HD2	2.49	0.47
2:D:67:LEU:HD12	2:D:67:LEU:N	2.28	0.47
1:C:1:MET:N	12:C:611:HOH:O	2.46	0.47
1:A:12:ALA:HB3	1:A:140:SER:HB3	1.96	0.47
1:A:99:ALA:O	1:A:105:ARG:HD3	2.14	0.47
1:A:298:PRO:HA	1:A:301:GLN:CD	2.39	0.47
2:B:21:TRP:CE3	2:B:63:PRO:HB3	2.49	0.47
1:C:274:PRO:HG2	1:C:371:VAL:HG11	1.96	0.47
4:F:7:ARG:CD	4:F:40:MET:HE2	2.44	0.47
2:B:349:ASN:HA	12:B:646:HOH:O	2.13	0.47
2:D:1:MET:HG3	2:D:50:ASN:CB	2.45	0.47
2:B:46:LEU:HA	2:B:49:ILE:HB	1.96	0.47
2:B:103:TRP:CD1	2:B:148:GLY:HA2	2.50	0.47
2:B:250:ALA:HB1	2:B:255:LEU:CD2	2.44	0.47
2:B:318:ILE:HD12	2:B:318:ILE:N	2.30	0.47
2:D:36:TYR:CD2	2:D:46:LEU:HD11	2.49	0.47
4:F:151:SER:HB3	4:F:180:HIS:CG	2.49	0.47
1:A:2:ARG:O	1:A:51:THR:HG22	2.15	0.47
2:B:19:LYS:O	2:B:23:VAL:HG23	2.15	0.47
2:B:69:ASP:HA	2:B:145:THR:HG21	1.97	0.47
2:D:249:ASN:ND2	12:D:607:HOH:O	2.45	0.47
4:F:24:THR:O	4:F:26:GLN:HG3	2.15	0.47
1:A:325:PRO:HB3	3:E:20:PHE:CE1	2.50	0.47
2:B:255:LEU:HD22	10:B:505:WVD:C2	2.45	0.47
2:B:324:SER:O	2:B:328:VAL:HG23	2.15	0.47
1:C:345:ASP:OD1	1:C:346:TRP:N	2.48	0.47
1:A:79:ARG:HG2	1:A:92:LEU:HD12	1.96	0.46
1:A:274:PRO:HB3	1:A:286:LEU:HD12	1.98	0.46
1:C:174:ALA:CB	1:C:207:GLU:HB2	2.45	0.46
2:D:345:GLU:HG3	2:D:440:ALA:HB2	1.96	0.46
4:F:201:ILE:HG12	4:F:221:LEU:HG	1.96	0.46
1:A:180:ALA:O	1:A:183:GLU:HG3	2.15	0.46
1:A:185:TYR:O	1:A:189:LEU:HG	2.15	0.46
1:C:25:CYS:HB3	1:C:30:ILE:O	2.16	0.46
2:B:7:ILE:O	2:B:137:LEU:HA	2.15	0.46
2:B:237:GLY:HA3	2:B:376:THR:OG1	2.16	0.46
2:D:382:THR:O	2:D:385:GLN:HG2	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:199:PHE:HA	4:F:241:THR:HG21	1.98	0.46
2:B:387:LEU:C	2:B:387:LEU:HD23	2.40	0.46
4:F:282:SER:HB2	4:F:325:LEU:HD13	1.95	0.46
2:B:199:ASP:OD1	9:B:504:MES:H62	2.16	0.46
1:C:150:THR:O	1:C:154:MET:HG2	2.16	0.46
1:C:318:LEU:HD12	1:C:318:LEU:N	2.31	0.46
1:A:196:GLU:OE1	1:A:196:GLU:HA	2.15	0.46
1:A:302:MET:HE2	1:A:302:MET:HA	1.97	0.46
1:A:360:PRO:O	1:A:370:LYS:NZ	2.47	0.46
1:A:409:VAL:HA	1:A:413:MET:O	2.16	0.46
1:C:88:HIS:HE1	1:C:90:GLU:HG3	1.81	0.46
1:A:74:VAL:HB	12:A:611:HOH:O	2.16	0.46
2:B:402:LYS:HD3	2:B:415:GLU:OE2	2.16	0.46
1:C:344:VAL:HG21	1:C:346:TRP:CE2	2.51	0.46
2:B:158:ARG:NH1	2:B:196:GLU:O	2.49	0.45
1:A:119:LEU:HD11	1:A:156:ARG:HB3	1.98	0.45
2:B:165:ILE:HG21	2:B:252:LEU:HB3	1.98	0.45
2:B:415:GLU:HG3	12:B:629:HOH:O	2.16	0.45
4:F:217:ARG:HG3	4:F:218:GLU:HG2	1.97	0.45
1:A:357:TYR:CZ	3:E:17:GLY:HA2	2.51	0.45
4:F:192:LEU:HD13	4:F:262:MET:HE1	1.97	0.45
1:A:188:ILE:HD12	1:A:395:PHE:CD2	2.52	0.45
1:A:331:ALA:O	1:A:335:ILE:HG13	2.17	0.45
2:B:143:GLY:HA3	8:B:501:GDP:O3A	2.17	0.45
10:B:505:WVD:C9	10:B:505:WVD:C2	2.94	0.45
1:C:155:GLU:OE1	3:E:101:LEU:HD13	2.17	0.45
4:F:39:LEU:HD12	4:F:61:LEU:O	2.17	0.45
2:D:2:ARG:C	2:D:133:GLN:HE21	2.21	0.45
4:F:17:VAL:HG13	4:F:351:VAL:HG22	1.98	0.45
1:A:98:ASP:HB2	5:A:501:GTP:O2G	2.17	0.45
2:B:96:GLN:CB	1:C:1:MET:HE2	2.47	0.45
1:C:96:LYS:NZ	2:D:130:ASP:OD1	2.49	0.45
3:E:9:ILE:HG12	3:E:21:GLU:O	2.17	0.45
1:A:10:GLY:O	1:A:14:VAL:HG23	2.17	0.45
1:A:87:PHE:HA	1:A:91:GLN:OE1	2.16	0.45
1:A:234:ILE:O	1:A:238:ILE:HG13	2.16	0.45
2:D:105:LYS:HA	2:D:109:THR:HB	1.99	0.45
3:E:129:HIS:O	3:E:133:VAL:HG23	2.17	0.45
4:F:96:GLU:OE2	4:F:98:TYR:OH	2.23	0.45
1:A:345:ASP:HB3	3:E:28:SER:HB2	1.98	0.45
2:B:231:VAL:O	2:B:235:MET:HG3	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:196:GLU:HG2	12:C:671:HOH:O	2.16	0.45
4:F:198:LYS:HG2	4:F:199:PHE:H	1.81	0.45
2:B:205:ASP:OD1	2:B:207:GLU:N	2.45	0.44
4:F:209:HIS:CE1	4:F:358:VAL:HG22	2.52	0.44
1:A:250:VAL:HG12	1:A:254:GLU:OE1	2.18	0.44
2:D:244:PHE:CE1	2:D:358:ILE:HD12	2.52	0.44
1:A:188:ILE:HD12	1:A:395:PHE:HB2	1.99	0.44
2:B:323:MET:HB3	2:B:373:MET:HE2	2.00	0.44
3:E:83:ILE:O	3:E:87:ILE:HG13	2.17	0.44
4:F:284:LEU:HD12	4:F:284:LEU:HA	1.82	0.44
1:A:5:ILE:HB	1:A:135:PHE:CD2	2.53	0.44
1:A:150:THR:O	1:A:154:MET:HG2	2.18	0.44
1:A:187:SER:HB3	1:A:391:LEU:HD21	1.99	0.44
1:A:213:CYS:O	1:A:217:LEU:HB2	2.18	0.44
1:C:335:ILE:HG23	1:C:339:ARG:HD2	1.99	0.44
2:D:112:ALA:O	2:D:115:VAL:HG12	2.18	0.44
4:F:2:TYR:CD1	4:F:359:PHE:HB3	2.53	0.44
1:A:320:ARG:HG3	12:A:647:HOH:O	2.17	0.44
1:A:385:ALA:HB2	1:A:432:TYR:CG	2.52	0.44
1:C:103:TYR:CD2	1:C:148:GLY:HA2	2.52	0.44
4:F:160:ILE:HD12	4:F:160:ILE:N	2.32	0.44
1:A:227:LEU:O	1:A:231:ILE:HG13	2.18	0.43
1:A:255:PHE:O	1:A:259:LEU:HB2	2.18	0.43
2:B:323:MET:HB3	2:B:373:MET:CE	2.48	0.43
1:C:184:PRO:O	1:C:188:ILE:HD13	2.19	0.43
1:C:234:ILE:HD12	1:C:234:ILE:N	2.33	0.43
4:F:147:TRP:HB2	4:F:169:LEU:CD1	2.47	0.43
1:C:266:HIS:O	1:C:268:PRO:HD3	2.18	0.43
1:A:209:ILE:HD11	1:A:302:MET:SD	2.59	0.43
2:B:42:LEU:CB	2:B:358:ILE:HD11	2.48	0.43
1:C:409:VAL:HA	1:C:413:MET:O	2.18	0.43
2:D:20:PHE:CD1	2:D:235:MET:HE2	2.53	0.43
1:A:11:GLN:NE2	12:A:609:HOH:O	2.50	0.43
2:B:203:CYS:SG	2:B:267:PHE:HB3	2.58	0.43
4:F:17:VAL:HG13	4:F:351:VAL:CG2	2.48	0.43
4:F:348:GLN:NE2	4:F:352:ASP:OD1	2.51	0.43
1:A:405:VAL:HG11	1:A:415:GLU:HG3	2.01	0.43
2:B:7:ILE:O	2:B:137:LEU:HD12	2.19	0.43
2:D:6:HIS:HE1	2:D:138:THR:HG23	1.84	0.43
4:F:126:ASP:OD2	4:F:128:ARG:HG3	2.18	0.43
1:A:21:TRP:CE3	1:A:63:PRO:HB3	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:ASN:HB3	3:E:6:MET:HE3	2.01	0.43
2:B:250:ALA:HB1	2:B:255:LEU:HD21	1.99	0.43
1:C:88:HIS:CE1	1:C:90:GLU:HG3	2.54	0.43
2:D:146:GLY:O	2:D:150:GLY:HA3	2.18	0.43
4:F:216:TYR:CE2	4:F:218:GLU:HB2	2.53	0.43
1:C:241:SER:HA	1:C:249:ASN:OD1	2.19	0.43
1:C:319:TYR:HB2	1:C:355:ILE:HG12	2.00	0.43
2:D:12:CYS:HB2	8:D:502:GDP:C8	2.54	0.43
2:B:159:GLU:HB2	3:E:72:LEU:HD13	2.01	0.43
4:F:205:VAL:CG2	4:F:291:ILE:HD13	2.49	0.43
1:A:3:GLU:HG2	1:A:64:ARG:CZ	2.49	0.42
2:B:371:LEU:HD23	2:B:371:LEU:HA	1.77	0.42
1:C:186:ASN:O	1:C:190:THR:HG22	2.18	0.42
4:F:19:ARG:HD2	4:F:19:ARG:O	2.18	0.42
2:B:8:GLN:OE1	2:B:17:GLY:HA3	2.18	0.42
2:B:42:LEU:HD12	2:B:42:LEU:N	2.34	0.42
1:C:430:LYS:HE2	1:C:434:GLU:OE2	2.19	0.42
3:E:60:ARG:O	3:E:64:GLN:HG3	2.19	0.42
1:A:69:ASP:O	1:A:94:THR:HA	2.19	0.42
1:A:180:ALA:HB3	1:A:183:GLU:CG	2.50	0.42
1:A:286:LEU:O	1:A:373:ARG:NH1	2.52	0.42
3:E:44:ASP:HB3	3:E:45:PRO:HD2	2.02	0.42
4:F:162:ILE:HD11	4:F:240:LEU:HD11	2.00	0.42
4:F:223:THR:O	4:F:260:ASN:HB3	2.19	0.42
2:B:40:SER:OG	2:B:42:LEU:HD13	2.19	0.42
1:A:437:VAL:HG12	1:A:438:ASP:N	2.35	0.42
2:D:303:ALA:O	2:D:305:CYS:N	2.49	0.42
4:F:2:TYR:HB2	4:F:27:TRP:CD2	2.55	0.42
1:C:312:TYR:CE2	1:C:341:ILE:HG23	2.55	0.42
2:D:22:GLU:HG2	2:D:83:PHE:CD1	2.55	0.42
2:B:42:LEU:HB2	2:B:358:ILE:HD11	2.02	0.42
2:D:5:VAL:HB	2:D:135:PHE:CD2	2.55	0.42
2:D:295:MET:CE	2:D:377:PHE:HB2	2.46	0.42
2:D:16:ILE:HD11	2:D:138:THR:HB	2.01	0.42
2:D:173:PRO:HG3	2:D:187:ALA:HB2	2.01	0.42
2:D:385:GLN:HB2	2:D:429:VAL:HG13	2.00	0.42
1:A:75:ILE:HB	1:A:94:THR:CG2	2.49	0.42
1:C:66:VAL:HG23	1:C:125:LEU:HD11	2.01	0.42
1:C:328:VAL:O	1:C:332:ILE:HG13	2.20	0.42
2:D:9:ALA:HA	2:D:68:VAL:O	2.20	0.42
2:D:115:VAL:HG21	2:D:156:LYS:HG3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:204:ILE:HG21	2:D:231:VAL:HG22	2.02	0.42
4:F:55:GLU:OE1	4:F:55:GLU:HA	2.18	0.42
1:C:297:GLU:HB3	1:C:300:ASN:HD22	1.85	0.41
1:C:413:MET:HE2	1:C:413:MET:HB3	1.91	0.41
2:D:109:THR:HG22	2:D:110:GLU:N	2.35	0.41
2:D:346:TRP:CE3	2:D:347:ILE:HG13	2.55	0.41
4:F:199:PHE:CD2	4:F:221:LEU:HD23	2.55	0.41
4:F:241:THR:HG1	11:F:401:ACP:HO3'	1.37	0.41
1:A:317:LEU:HB3	1:A:319:TYR:CE1	2.55	0.41
2:B:169:PHE:CE1	2:B:235:MET:HE3	2.55	0.41
1:A:248:LEU:O	12:A:601:HOH:O	2.21	0.41
1:A:260:VAL:HG11	1:A:266:HIS:HB3	2.02	0.41
2:B:308:ARG:HA	2:B:342:TYR:CE1	2.56	0.41
1:C:344:VAL:HG23	1:C:347:CYS:HB3	2.01	0.41
2:B:204:ILE:CG2	2:B:209:LEU:HD11	2.50	0.41
1:C:194:THR:O	1:C:194:THR:HG22	2.20	0.41
4:F:101:TYR:CD2	4:F:179:VAL:HG22	2.56	0.41
2:B:325:MET:HE2	2:B:355:VAL:CG1	2.45	0.41
2:B:402:LYS:HB3	2:B:405:LEU:HD12	2.02	0.41
1:C:21:TRP:CZ2	1:C:65:ALA:HB2	2.56	0.41
1:C:254:GLU:HA	12:C:645:HOH:O	2.20	0.41
2:D:123:ARG:O	2:D:127:GLU:HG3	2.20	0.41
2:D:169:PHE:CE2	2:D:235:MET:HG2	2.56	0.41
4:F:128:ARG:HH12	4:F:170:LEU:HB3	1.84	0.41
2:D:46:LEU:HA	2:D:49:ILE:HB	2.02	0.41
2:D:11:GLN:HB3	8:D:502:GDP:O2A	2.20	0.41
4:F:246:GLN:HB3	4:F:260:ASN:ND2	2.36	0.41
1:A:105:ARG:NH1	1:A:411:GLU:OE2	2.52	0.41
2:B:2:ARG:HB2	2:B:133:GLN:NE2	2.36	0.41
4:F:173:ILE:HD13	4:F:180:HIS:HB2	2.02	0.41
4:F:199:PHE:CA	4:F:241:THR:HG21	2.51	0.41
2:B:19:LYS:HB3	2:B:232:SER:OG	2.21	0.41
2:B:67:LEU:N	2:B:67:LEU:HD12	2.36	0.41
1:C:97:GLU:HG3	2:D:2:ARG:NH2	2.36	0.41
1:C:151:SER:HB2	1:C:193:THR:HG22	2.00	0.41
1:C:174:ALA:O	1:C:178:SER:HB3	2.20	0.41
2:D:109:THR:O	2:D:113:GLU:HG2	2.21	0.41
1:C:208:ALA:O	1:C:212:ILE:HG13	2.21	0.40
1:A:383:ALA:O	1:A:386:GLU:HG3	2.22	0.40
4:F:151:SER:HB3	4:F:180:HIS:CD2	2.55	0.40
4:F:205:VAL:HG21	4:F:291:ILE:HD13	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:254:GLU:HG2	1:A:258:ASN:ND2	2.36	0.40
2:B:107:HIS:O	2:B:152:LEU:HD22	2.22	0.40
2:B:295:MET:SD	2:B:375:ALA:HB1	2.62	0.40
1:C:23:LEU:O	1:C:23:LEU:HD12	2.22	0.40
2:D:5:VAL:HG23	2:D:132:LEU:HD11	2.04	0.40
1:A:411:GLU:HA	1:A:411:GLU:OE1	2.21	0.40
2:B:21:TRP:O	2:B:25:SER:OG	2.36	0.40
2:B:32:PRO:HA	2:B:83:PHE:CD2	2.57	0.40
2:B:278:ARG:HG2	2:B:282:GLN:CD	2.47	0.40
1:C:55:GLU:HA	1:C:60:LYS:O	2.22	0.40
4:F:220:VAL:HG11	4:F:339:ALA:HB2	2.03	0.40
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.56	0.40
1:C:291:ILE:HG13	1:C:292:THR:N	2.37	0.40
2:D:67:LEU:HD22	2:D:92:PHE:CE2	2.57	0.40
2:D:183:GLU:N	2:D:184:PRO:CD	2.85	0.40
2:D:271:GLY:CA	2:D:377:PHE:HB3	2.52	0.40
2:D:392:SER:HB2	2:D:425:MET:HE3	2.04	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	436/451 (97%)	419 (96%)	17 (4%)	0	100	100
1	C	439/451 (97%)	428 (98%)	11 (2%)	0	100	100
2	B	422/445 (95%)	402 (95%)	20 (5%)	0	100	100
2	D	429/445 (96%)	411 (96%)	17 (4%)	1 (0%)	43	66
3	E	119/143 (83%)	116 (98%)	3 (2%)	0	100	100
4	F	344/384 (90%)	327 (95%)	17 (5%)	0	100	100
All	All	2189/2319 (94%)	2103 (96%)	85 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	285	ALA

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	369/379 (97%)	365 (99%)	4 (1%)	65	84
1	C	372/379 (98%)	370 (100%)	2 (0%)	81	92
2	B	368/383 (96%)	366 (100%)	2 (0%)	81	92
2	D	368/383 (96%)	364 (99%)	4 (1%)	65	84
3	E	110/127 (87%)	109 (99%)	1 (1%)	70	87
4	F	315/342 (92%)	314 (100%)	1 (0%)	86	94
All	All	1902/1993 (95%)	1888 (99%)	14 (1%)	76	89

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU
1	A	282	TYR
1	A	284	GLU
1	A	381	THR
2	B	201	THR
2	B	202	TYR
1	C	347	CYS
1	C	381	THR
2	D	200	GLU
2	D	229	HIS
2	D	247	GLN
2	D	325	MET
3	E	128	LYS
4	F	257	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	393	HIS
2	B	15	GLN
2	B	192	HIS
2	B	193	GLN
2	B	282	GLN
2	B	294	GLN
2	B	349	ASN
2	B	424	ASN
2	B	434	GLN
1	C	11	GLN
1	C	15	GLN
1	C	256	GLN
1	C	300	ASN
1	C	356	ASN
1	C	393	HIS
1	C	406	HIS
2	D	6	HIS
2	D	294	GLN
2	D	336	GLN
2	D	349	ASN
3	E	92	ASN
3	E	108	ASN
3	E	136	ASN
4	F	180	HIS
4	F	183	GLN
4	F	229	ASN
4	F	269	GLN
4	F	306	HIS
4	F	379	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 16 ligands modelled in this entry, 9 are monoatomic - leaving 7 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	$\# Z > 2$
11	ACP	F	401	6	31,33,33	1.70	9 (29%)	47,52,52	1.88	10 (21%)
8	GDP	D	502	-	29,30,30	1.14	3 (10%)	45,47,47	1.71	6 (13%)
5	GTP	C	501	6	33,34,34	0.98	2 (6%)	50,54,54	1.51	8 (16%)
5	GTP	A	501	6	33,34,34	0.99	2 (6%)	50,54,54	1.53	8 (16%)
8	GDP	B	501	6	29,30,30	1.14	2 (6%)	45,47,47	1.73	6 (13%)
9	MES	B	504	-	12,12,12	2.26	1 (8%)	15,16,16	1.97	4 (26%)
10	WVD	B	505	-	16,16,16	1.66	4 (25%)	17,22,22	3.61	11 (64%)

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
11	ACP	F	401	6	-	12/19/38/38	0/3/3/3
8	GDP	D	502	-	-	1/16/32/32	0/3/3/3
5	GTP	C	501	6	-	9/22/38/38	0/3/3/3
5	GTP	A	501	6	-	8/22/38/38	0/3/3/3
8	GDP	B	501	6	-	3/16/32/32	0/3/3/3
9	MES	B	504	-	-	4/6/14/14	0/1/1/1
10	WVD	B	505	-	-	1/8/18/18	0/2/2/2

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	B	504	MES	C8-S	-7.52	1.67	1.77
11	F	401	ACP	C5-C4	4.77	1.47	1.39
10	B	505	WVD	C5-N1	3.23	1.40	1.34
8	D	502	GDP	C5-C4	3.12	1.47	1.38
10	B	505	WVD	C7-N3	3.02	1.38	1.30
8	B	501	GDP	C5-C4	3.01	1.47	1.38
11	F	401	ACP	PG-O3G	2.98	1.61	1.55
11	F	401	ACP	PG-O2G	2.95	1.61	1.55
11	F	401	ACP	PB-O3A	2.92	1.61	1.58
11	F	401	ACP	C5-C6	2.77	1.48	1.41
10	B	505	WVD	C1-N2	2.47	1.38	1.33
5	A	501	GTP	PA-O3A	2.36	1.62	1.59
11	F	401	ACP	C8-N7	2.31	1.36	1.31
5	C	501	GTP	PA-O3A	2.30	1.62	1.59
8	B	501	GDP	C6-N1	-2.30	1.34	1.38
8	D	502	GDP	C6-N1	-2.27	1.34	1.38
11	F	401	ACP	C5-N7	-2.25	1.35	1.39
11	F	401	ACP	PB-O2B	2.22	1.61	1.56
10	B	505	WVD	C8-N3	2.19	1.41	1.38
5	C	501	GTP	C2-N3	2.18	1.38	1.33
11	F	401	ACP	PA-O3A	2.14	1.61	1.59
8	D	502	GDP	C5-N7	-2.06	1.34	1.39
5	A	501	GTP	C2-N3	2.03	1.38	1.33

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	505	WVD	C6-C5-N1	6.78	127.54	118.88
10	B	505	WVD	S1-C7-N3	-5.92	110.99	116.08
8	D	502	GDP	C5-C4-N3	-5.91	118.99	128.39
8	B	501	GDP	C5-C4-N3	-5.89	119.01	128.39
11	F	401	ACP	C5-C4-N3	-5.76	118.78	126.72
10	B	505	WVD	C7-S1-C6	5.57	91.96	88.93
8	B	501	GDP	C2-N3-C4	5.06	121.01	112.30
8	D	502	GDP	C2-N3-C4	5.02	120.95	112.30
5	A	501	GTP	C5-C4-N3	-4.77	120.80	128.39
5	C	501	GTP	C5-C4-N3	-4.74	120.85	128.39
11	F	401	ACP	N3-C4-N9	4.66	135.09	127.17
10	B	505	WVD	C6-C8-N3	-4.65	110.51	114.99
5	A	501	GTP	C2-N3-C4	4.64	120.29	112.30
5	C	501	GTP	C2-N3-C4	4.40	119.89	112.30
8	B	501	GDP	N9-C4-N3	4.40	134.75	125.95
8	D	502	GDP	N9-C4-N3	4.29	134.54	125.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	505	WVD	C9-C8-C6	4.08	135.22	127.12
10	B	505	WVD	C7-N3-C8	3.99	115.19	110.71
10	B	505	WVD	O1-C5-N1	-3.94	116.44	122.67
9	B	504	MES	C5-N4-C3	3.87	117.18	108.84
11	F	401	ACP	PB-O3A-PA	-3.87	119.73	132.37
11	F	401	ACP	C2-N3-C4	3.64	120.71	111.83
8	B	501	GDP	C6-C5-N7	3.43	136.53	130.29
11	F	401	ACP	C4-C5-N7	-3.40	106.70	110.58
8	D	502	GDP	C6-C5-N7	3.35	136.38	130.29
9	B	504	MES	C6-C5-N4	-3.21	105.25	110.12
11	F	401	ACP	N3-C2-N1	-3.19	123.76	128.58
9	B	504	MES	O1S-S-C8	3.07	111.36	106.73
5	C	501	GTP	N9-C4-N3	2.98	131.92	125.95
10	B	505	WVD	C9-C8-N3	-2.96	114.27	120.69
5	A	501	GTP	N9-C4-N3	2.89	131.74	125.95
5	A	501	GTP	C2-N1-C6	-2.84	119.97	125.11
5	C	501	GTP	N9-C8-N7	-2.80	108.21	113.40
10	B	505	WVD	C8-C6-S1	2.79	111.35	109.64
5	A	501	GTP	N9-C8-N7	-2.79	108.23	113.40
11	F	401	ACP	C4-N9-C8	2.77	108.64	105.74
5	C	501	GTP	C2-N1-C6	-2.72	120.18	125.11
8	D	502	GDP	C4-C5-N7	-2.64	106.49	110.67
5	C	501	GTP	C8-N7-C5	2.63	108.94	104.26
8	B	501	GDP	C4-C5-N7	-2.60	106.56	110.67
5	A	501	GTP	C8-N7-C5	2.58	108.85	104.26
11	F	401	ACP	C3'-C2'-C1'	2.53	106.25	101.46
11	F	401	ACP	C5-N7-C8	2.53	107.42	103.45
10	B	505	WVD	O1-C5-C6	-2.50	116.02	119.66
5	A	501	GTP	C5-C6-N1	2.48	119.56	113.25
10	B	505	WVD	C4-N2-C1	-2.46	122.24	126.04
5	C	501	GTP	C5-C6-N1	2.37	119.27	113.25
5	A	501	GTP	O6-C6-C5	-2.32	120.41	126.53
8	B	501	GDP	O6-C6-C5	-2.31	120.44	126.53
9	B	504	MES	C7-N4-C5	2.28	117.32	111.24
5	C	501	GTP	O6-C6-C5	-2.16	120.84	126.53
8	D	502	GDP	O6-C6-C5	-2.08	121.03	126.53
11	F	401	ACP	C6-C5-N7	2.01	135.97	132.09

There are no chirality outliers.

All (38) torsion outliers are listed below:

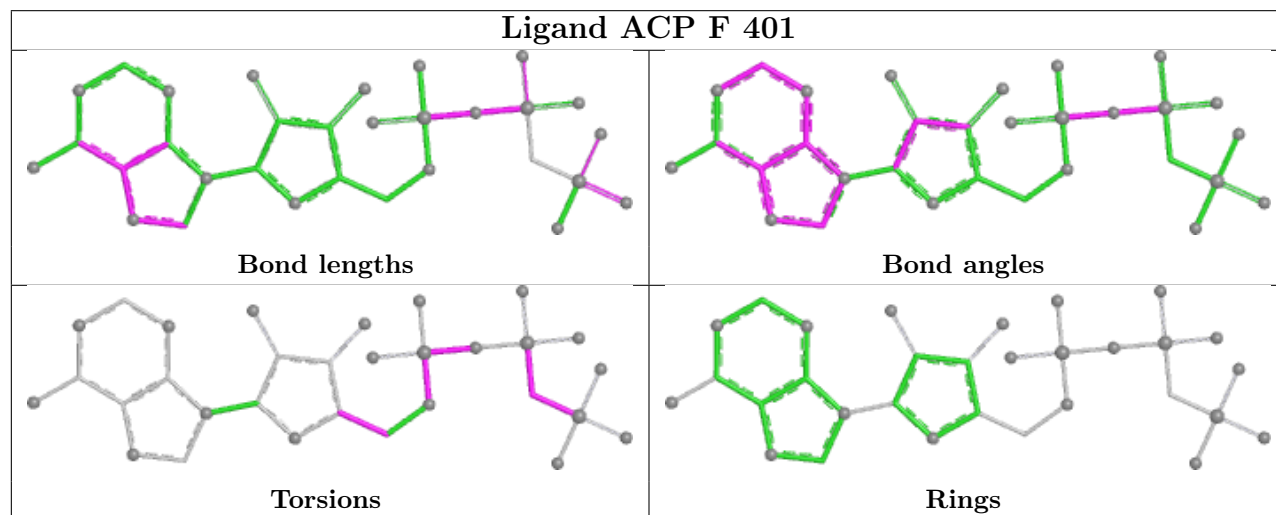
Mol	Chain	Res	Type	Atoms
5	A	501	GTP	C5'-O5'-PA-O3A
5	A	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O1A
8	B	501	GDP	C5'-O5'-PA-O3A
8	B	501	GDP	C5'-O5'-PA-O1A
8	B	501	GDP	C5'-O5'-PA-O2A
8	D	502	GDP	C5'-O5'-PA-O3A
9	B	504	MES	C8-C7-N4-C5
10	B	505	WVD	N1-C5-C6-C8
11	F	401	ACP	PB-C3B-PG-O1G
11	F	401	ACP	PB-C3B-PG-O2G
11	F	401	ACP	PB-C3B-PG-O3G
11	F	401	ACP	PG-C3B-PB-O1B
11	F	401	ACP	PG-C3B-PB-O2B
11	F	401	ACP	PG-C3B-PB-O3A
11	F	401	ACP	C5'-O5'-PA-O1A
11	F	401	ACP	C5'-O5'-PA-O2A
11	F	401	ACP	C5'-O5'-PA-O3A
11	F	401	ACP	O4'-C4'-C5'-O5'
11	F	401	ACP	C3'-C4'-C5'-O5'
9	B	504	MES	C7-C8-S-O3S
9	B	504	MES	C7-C8-S-O1S
9	B	504	MES	C7-C8-S-O2S
5	C	501	GTP	PB-O3B-PG-O1G
5	A	501	GTP	C5'-O5'-PA-O2A
5	C	501	GTP	C5'-O5'-PA-O2A
5	A	501	GTP	PB-O3A-PA-O2A
5	A	501	GTP	PB-O3B-PG-O1G
5	A	501	GTP	PB-O3B-PG-O2G
5	A	501	GTP	PB-O3B-PG-O3G
5	C	501	GTP	PB-O3B-PG-O2G
5	C	501	GTP	PB-O3B-PG-O3G
11	F	401	ACP	PB-O3A-PA-O2A
5	A	501	GTP	PB-O3A-PA-O1A
5	C	501	GTP	PB-O3A-PA-O2A
5	C	501	GTP	C4'-C5'-O5'-PA
5	C	501	GTP	PB-O3A-PA-O1A

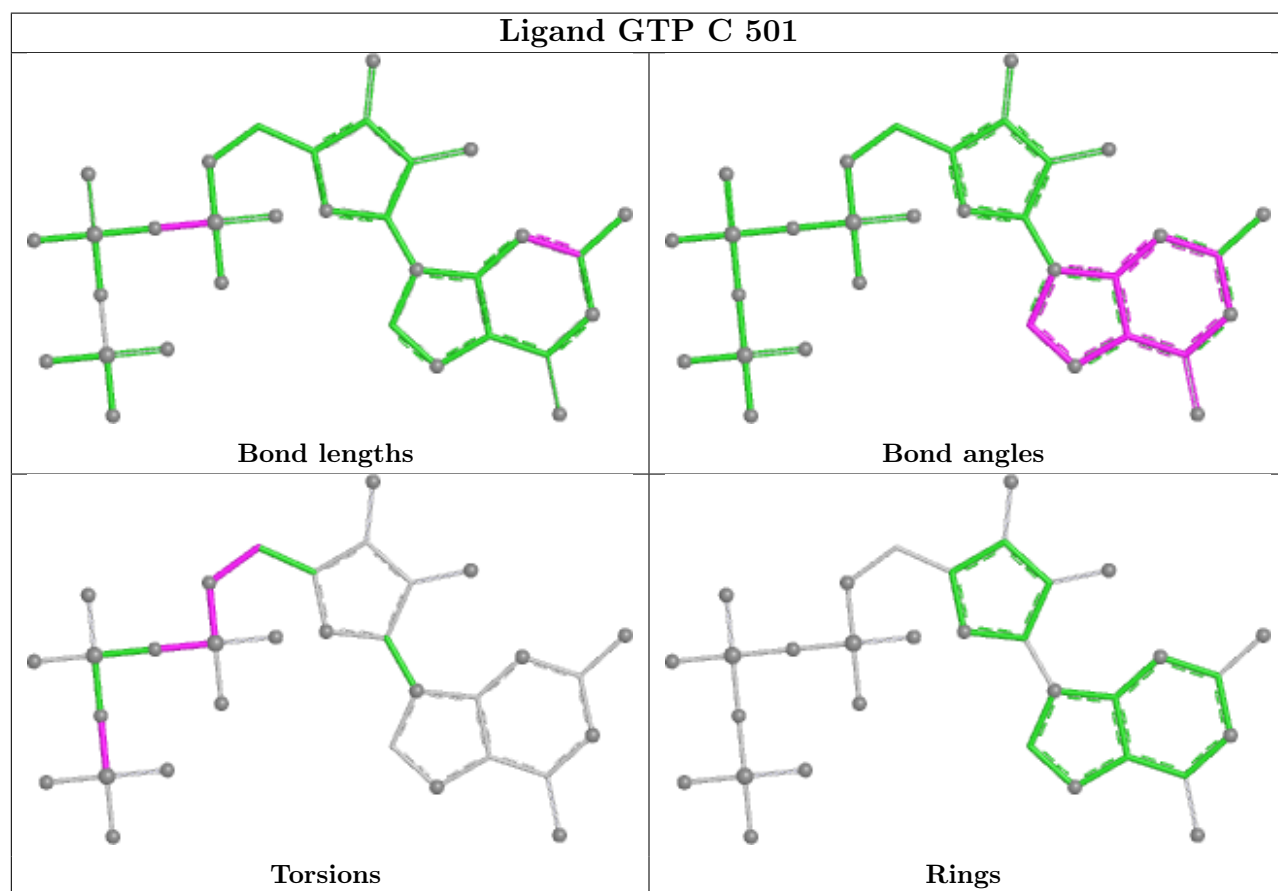
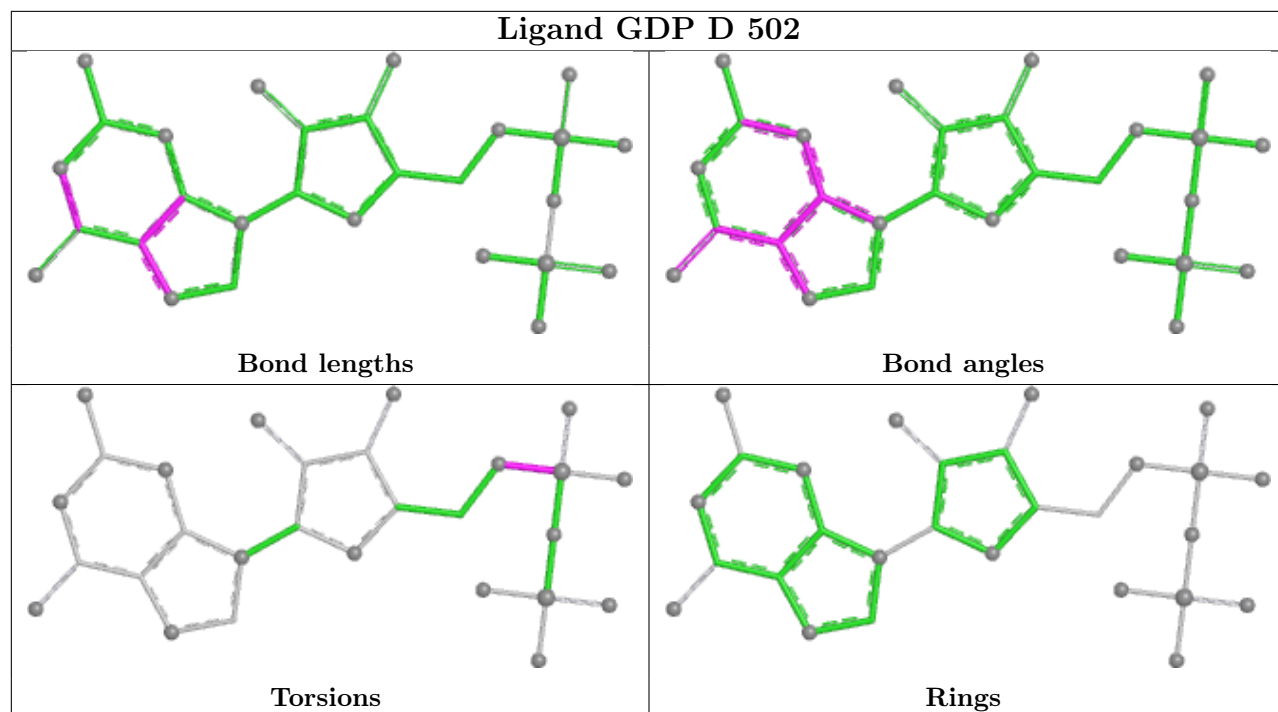
There are no ring outliers.

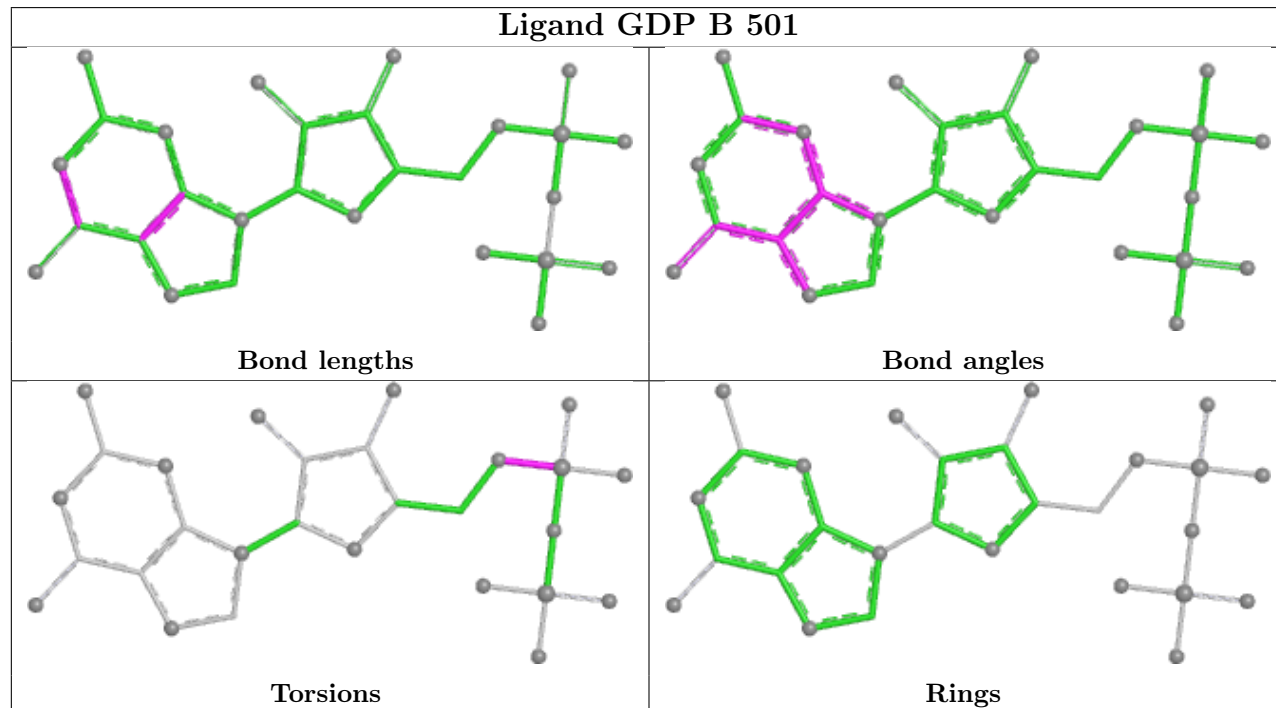
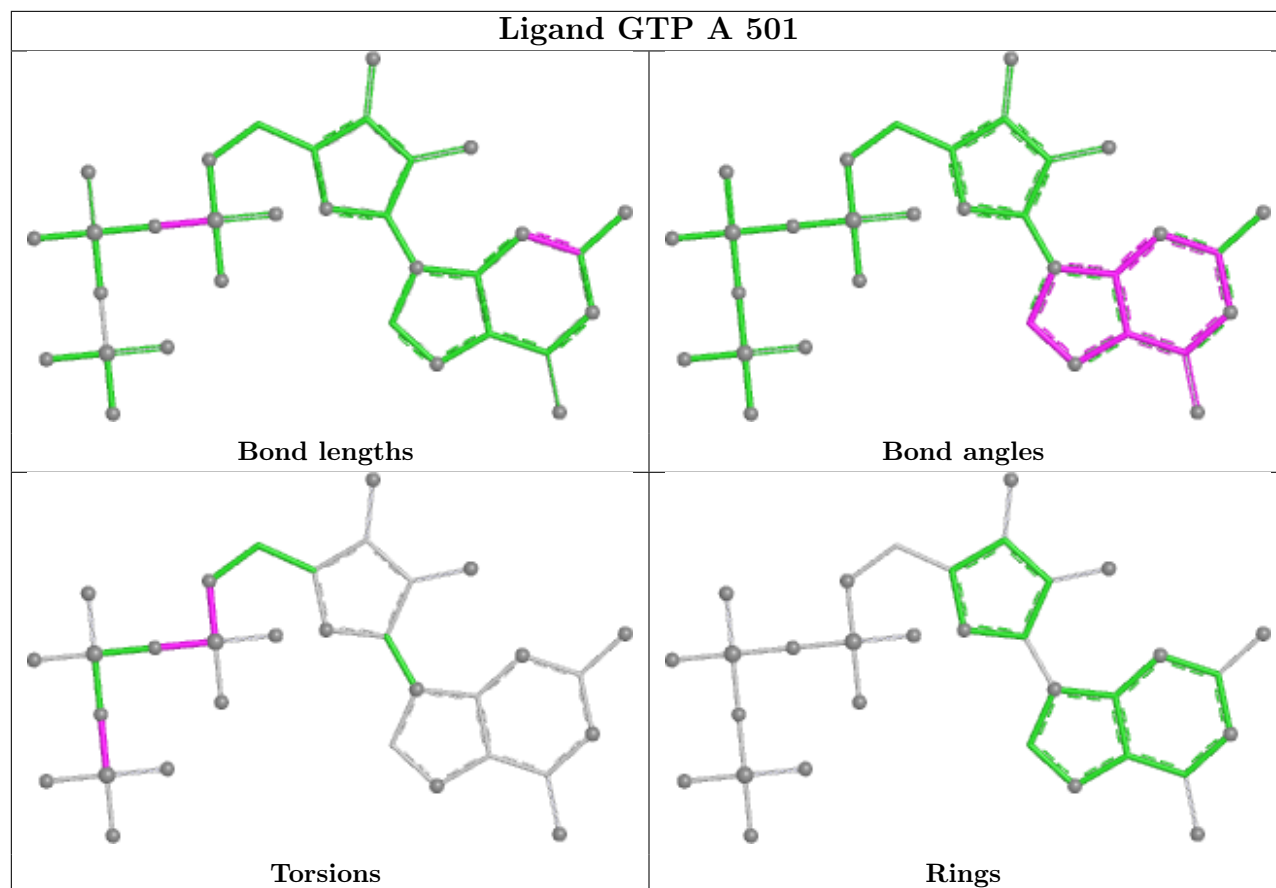
7 monomers are involved in 14 short contacts:

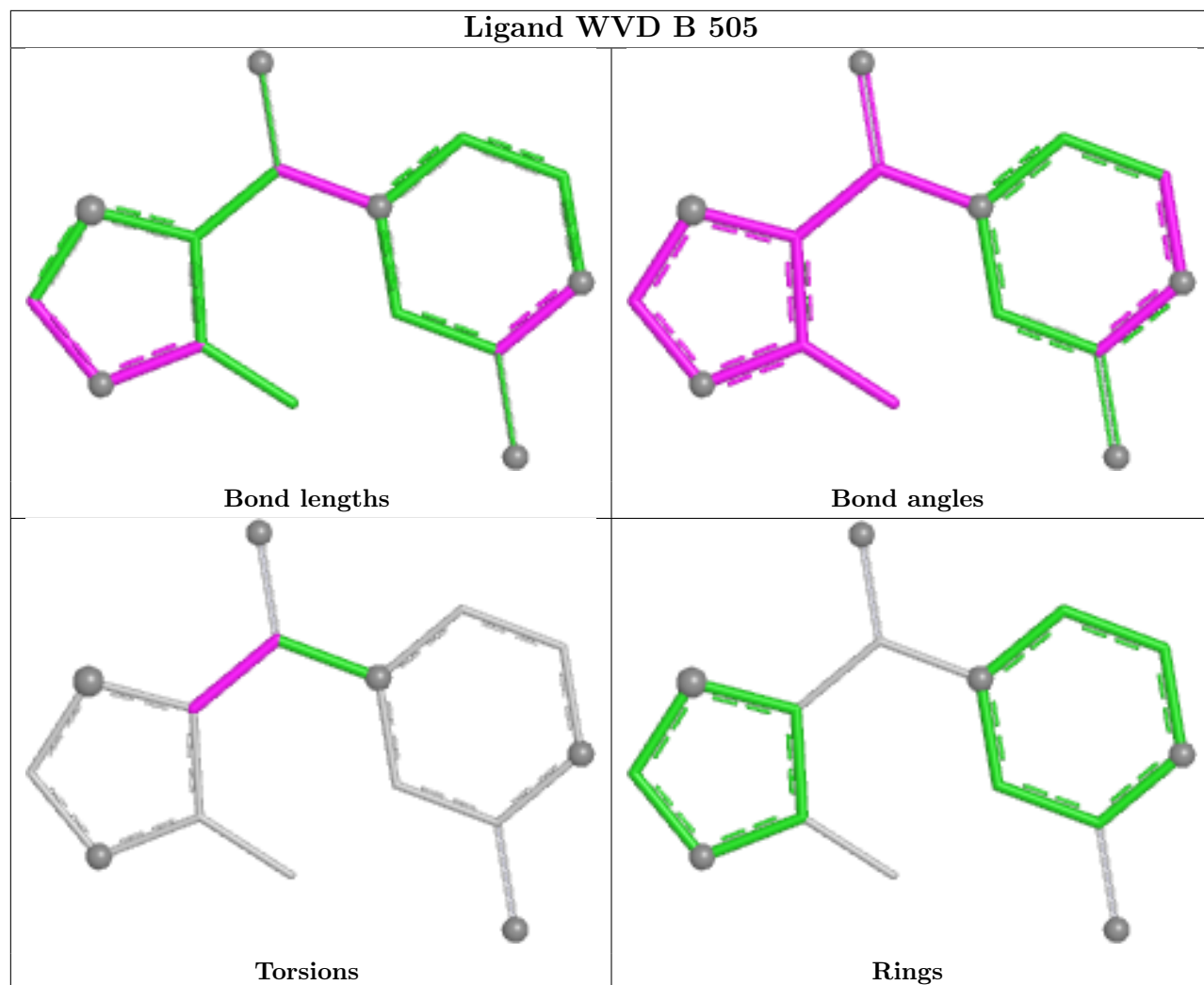
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	F	401	ACP	3	0
8	D	502	GDP	3	0
5	C	501	GTP	1	0
5	A	501	GTP	1	0
8	B	501	GDP	2	0
9	B	504	MES	1	0
10	B	505	WVD	3	0

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

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	438/451 (97%)	0.58	23 (5%)	32	26	40, 56, 81, 113	0
1	C	440/451 (97%)	0.17	10 (2%)	61	55	19, 45, 65, 85	1 (0%)
2	B	424/445 (95%)	0.51	15 (3%)	47	41	32, 53, 88, 110	2 (0%)
2	D	431/445 (96%)	0.89	29 (6%)	24	19	43, 66, 94, 142	5 (1%)
3	E	123/143 (86%)	0.99	17 (13%)	6	5	40, 66, 98, 117	0
4	F	352/384 (91%)	1.31	65 (18%)	3	3	49, 83, 130, 148	0
All	All	2208/2319 (95%)	0.69	159 (7%)	21	17	19, 59, 107, 148	8 (0%)

All (159) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	155	ALA	6.8
1	A	179	THR	6.1
4	F	159	GLY	5.5
2	B	249	ASN	5.4
2	D	279	GLY	5.1
2	B	248	LEU	4.5
2	D	283	TYR	4.4
3	E	26	PRO	4.1
3	E	143	ALA	4.1
1	C	177	VAL	3.9
2	D	285	ALA	3.8
4	F	240	LEU	3.8
4	F	160	ILE	3.8
2	D	281	GLN	3.7
4	F	161	LEU	3.7
2	D	278	ARG	3.6
2	D	284	ARG	3.5
1	A	282	TYR	3.5
4	F	169	LEU	3.5

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Mol	Chain	Res	Type	RSRZ
4	F	245	ILE	3.5
1	A	196	GLU	3.4
4	F	130	VAL	3.4
1	C	350	GLY	3.4
2	D	280	SER	3.4
1	C	357	TYR	3.3
2	B	202	TYR	3.3
2	D	249	ASN	3.3
4	F	263	PHE	3.2
3	E	25	LYS	3.2
1	A	178	SER	3.2
3	E	27	PRO	3.2
4	F	105	LEU	3.1
1	C	440	VAL	3.1
2	D	404	PHE	3.1
2	D	241	CYS	3.1
3	E	24	LEU	3.1
4	F	231	ALA	3.1
1	A	346	TRP	3.1
2	B	281	GLN	3.0
2	D	276	THR	3.0
4	F	371	PRO	3.0
2	B	250	ALA	3.0
4	F	134	ALA	3.0
2	B	42	LEU	3.0
2	D	277	SER	3.0
1	A	437	VAL	3.0
1	A	351	PHE	3.0
1	C	341	ILE	2.9
3	E	6	MET	2.9
2	D	407	TRP	2.9
4	F	149	ALA	2.9
2	D	82	PRO	2.9
4	F	249	TYR	2.9
4	F	233	PHE	2.9
2	B	285	ALA	2.9
2	B	284	ARG	2.9
4	F	172	PHE	2.9
1	C	340	SER	2.9
2	D	37	HIS	2.9
1	A	281	ALA	2.9
4	F	170	LEU	2.9

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Mol	Chain	Res	Type	RSRZ
4	F	334	GLY	2.9
2	B	1	MET	2.8
1	A	316	CYS	2.8
4	F	131	PHE	2.8
4	F	186	LEU	2.8
4	F	152	SER	2.7
4	F	314	LEU	2.7
2	D	56	ALA	2.7
2	D	282	GLN	2.7
4	F	179	VAL	2.7
3	E	142	GLU	2.7
4	F	382	HIS	2.7
1	A	349	THR	2.7
4	F	243	HIS	2.7
4	F	167	SER	2.6
2	D	250	ALA	2.6
4	F	132	LEU	2.6
4	F	381	HIS	2.6
2	D	246	GLY	2.6
4	F	162	ILE	2.6
4	F	251	LYS	2.6
1	A	283	HIS	2.6
4	F	166	ALA	2.6
1	A	167	LEU	2.5
4	F	223	THR	2.5
4	F	173	ILE	2.5
1	A	77	GLU	2.5
3	E	120	LEU	2.5
4	F	27	TRP	2.5
2	D	57	THR	2.5
3	E	7	GLU	2.5
4	F	100	ILE	2.5
2	D	248	LEU	2.4
3	E	123	LEU	2.4
2	D	401	ARG	2.4
1	C	179	THR	2.4
4	F	182	ILE	2.4
2	B	276	THR	2.4
2	D	220	THR	2.4
2	D	174	SER	2.4
4	F	330	ILE	2.4
1	A	180	ALA	2.4

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Mol	Chain	Res	Type	RSRZ
2	D	286	LEU	2.4
4	F	256	TYR	2.4
4	F	181	VAL	2.4
1	A	42	ILE	2.3
2	B	325	MET	2.3
4	F	253	TYR	2.3
2	D	182	VAL	2.3
2	D	195	VAL	2.3
4	F	99	VAL	2.3
2	B	247	GLN	2.3
4	F	379	HIS	2.3
2	B	275	LEU	2.3
3	E	116	LEU	2.2
3	E	8	VAL	2.2
4	F	139	ARG	2.2
4	F	15	ALA	2.2
4	F	140	GLU	2.2
1	A	37	PRO	2.2
3	E	22	VAL	2.2
4	F	321	VAL	2.2
1	A	262	TYR	2.2
4	F	125	THR	2.2
4	F	313	GLN	2.2
4	F	283	ILE	2.2
1	A	169	PHE	2.2
1	A	348	PRO	2.2
2	B	82	PRO	2.2
4	F	153	ALA	2.2
1	A	337	THR	2.2
4	F	177	GLY	2.2
4	F	372	THR	2.1
4	F	306	HIS	2.1
4	F	362	ALA	2.1
2	D	197	ASN	2.1
3	E	90	ASN	2.1
4	F	98	TYR	2.1
4	F	228	TYR	2.1
1	A	347	CYS	2.1
4	F	339	ALA	2.1
4	F	22	LEU	2.1
2	B	2	ARG	2.1
3	E	50	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
4	F	178	GLN	2.1
3	E	125	GLU	2.1
1	C	175	PRO	2.1
1	A	117	LEU	2.0
4	F	57	GLY	2.0
4	F	141	GLY	2.0
4	F	154	GLY	2.0
4	F	254	GLY	2.0
3	E	28	SER	2.0
2	D	272	PHE	2.0
1	C	284	GLU	2.0
4	F	150	LYS	2.0
1	A	438	ASP	2.0
1	C	88	HIS	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
10	WVD	B	505	15/15	0.75	0.24	49,65,81,89	26
11	ACP	F	401	31/31	0.83	0.13	91,100,118,128	0
6	MG	D	503	1/1	0.90	0.15	61,61,61,61	0
7	CA	B	503	1/1	0.91	0.14	72,72,72,72	0
9	MES	B	504	12/12	0.91	0.10	43,56,71,76	0
6	MG	F	402	1/1	0.92	0.09	84,84,84,84	0
7	CA	A	504	1/1	0.92	0.08	87,87,87,87	0
8	GDP	D	502	28/28	0.94	0.10	51,61,68,80	0
5	GTP	A	501	32/32	0.96	0.08	33,43,51,54	0

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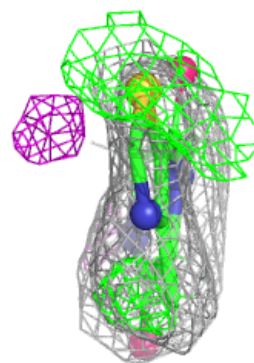
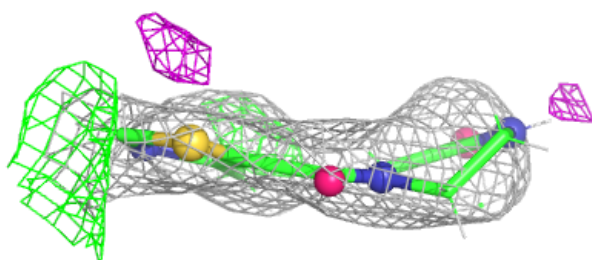
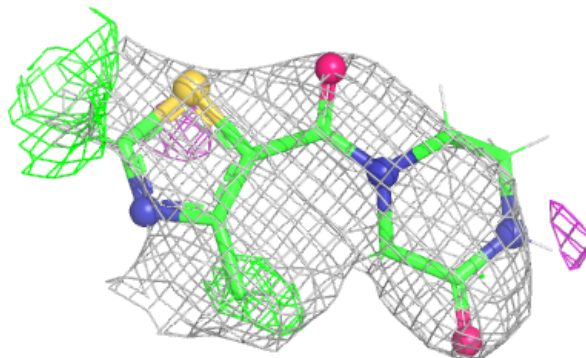
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
7	CA	A	503	1/1	0.96	0.09	76,76,76,76	0
5	GTP	C	501	32/32	0.97	0.07	29,39,44,49	0
8	GDP	B	501	28/28	0.97	0.07	29,38,45,50	0
6	MG	D	501	1/1	0.98	0.07	45,45,45,45	0
7	CA	C	502	1/1	0.99	0.04	56,56,56,56	0
6	MG	A	502	1/1	0.99	0.04	45,45,45,45	0
6	MG	B	502	1/1	0.99	0.09	34,34,34,34	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.

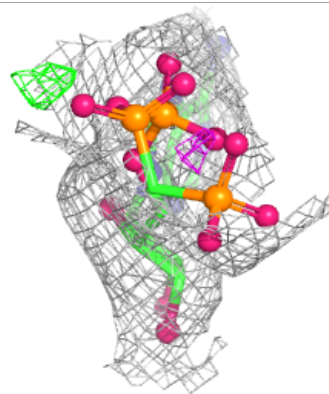
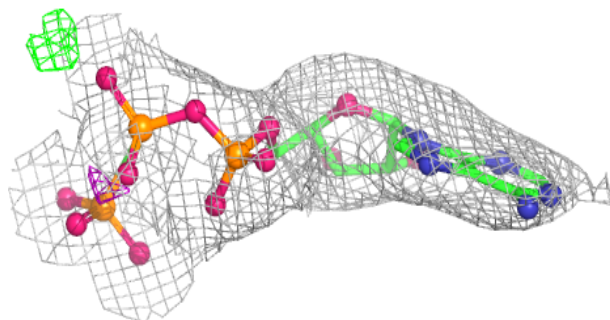
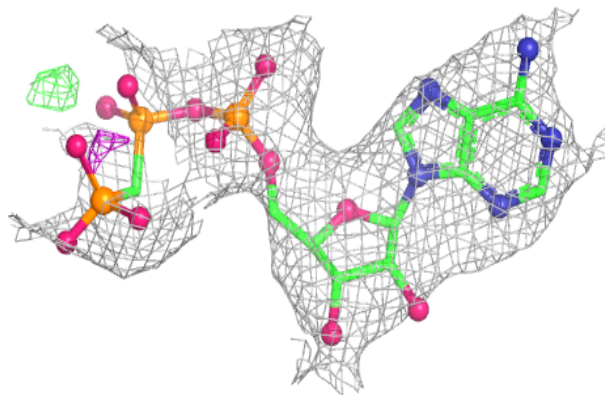
Electron density around WVD B 505:

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



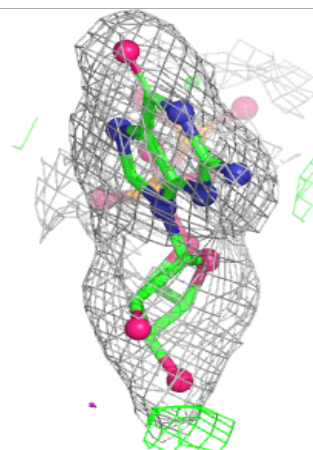
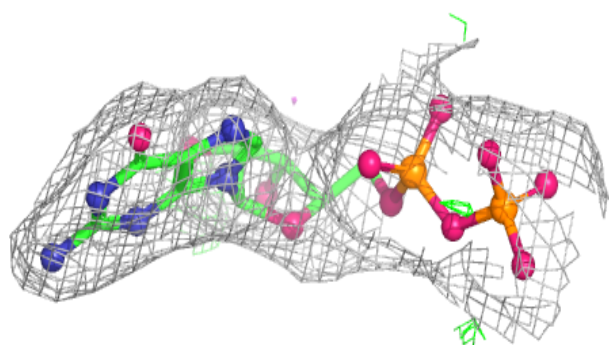
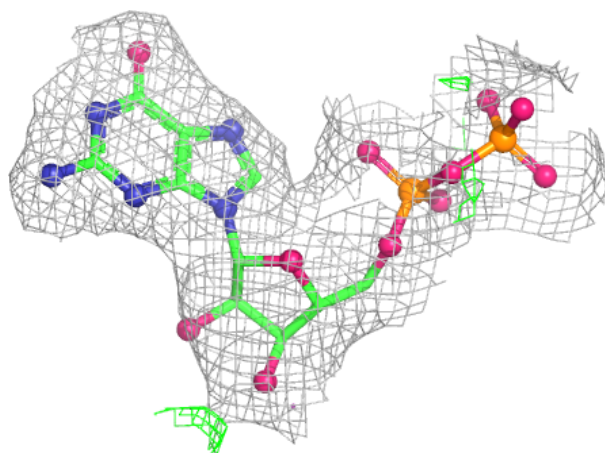
Electron density around ACP F 401:

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



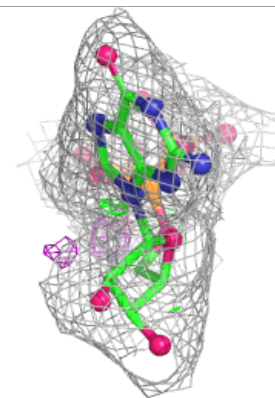
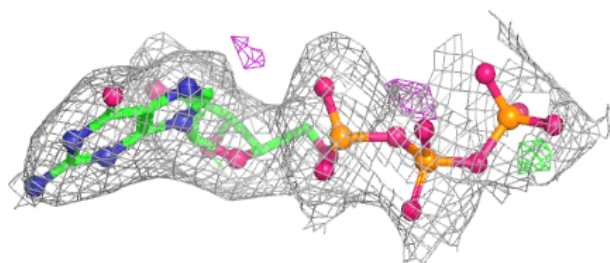
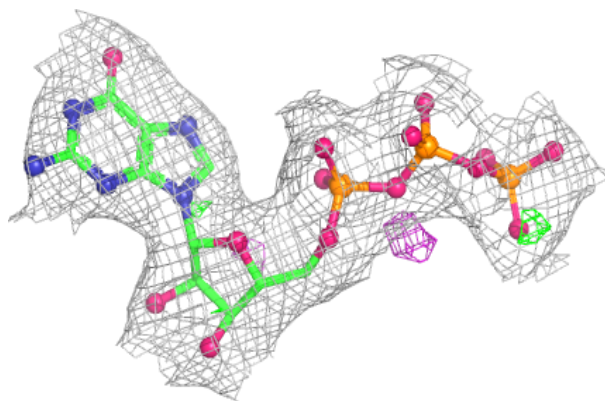
Electron density around GDP D 502:

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

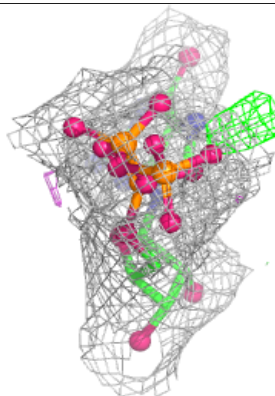
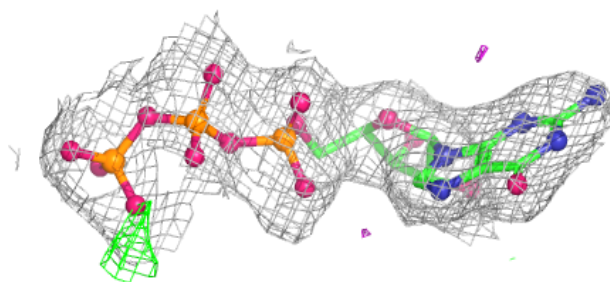
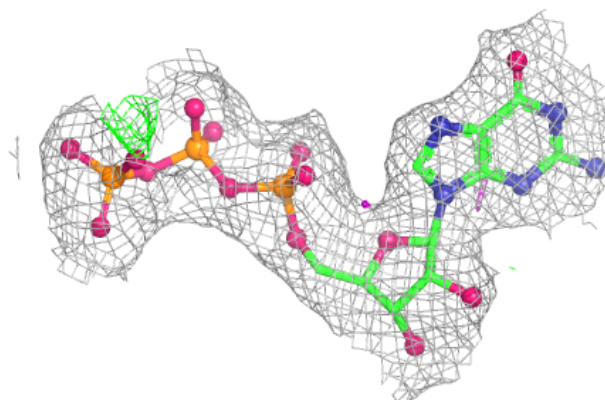


Electron density around GTP A 501:

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

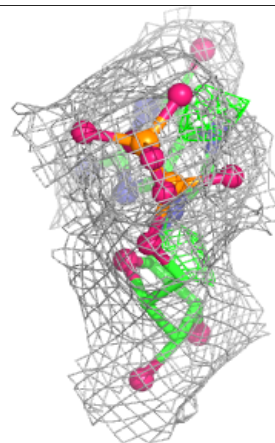
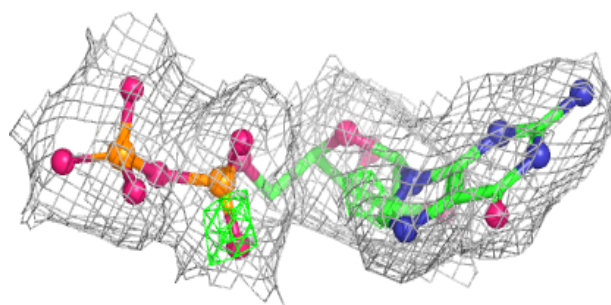
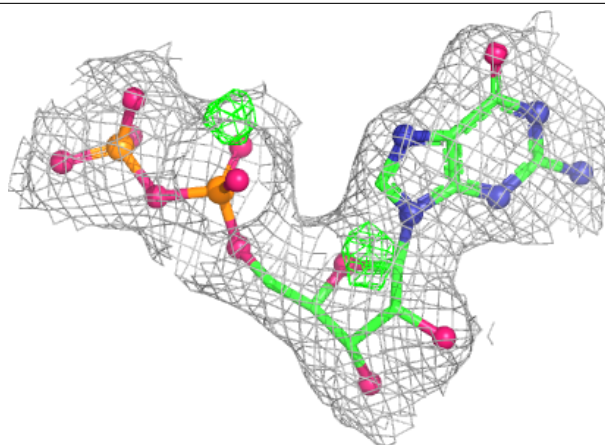
**Electron density around GTP C 501:**

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



Electron density around GDP B 501:

$2mF_o-DF_c$ (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.