



Full wwPDB X-ray Structure Validation Report ⓘ

Jul 20, 2026 – 09:04 PM JST

PDB ID : 9VZ7 / pdb_00009vz7
Title : Crystal structure of T2R-TTL-Tz19 complex
Authors : Wang, Y.X.; Tan, L.
Deposited on : 2025-07-22
Resolution : 2.57 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:

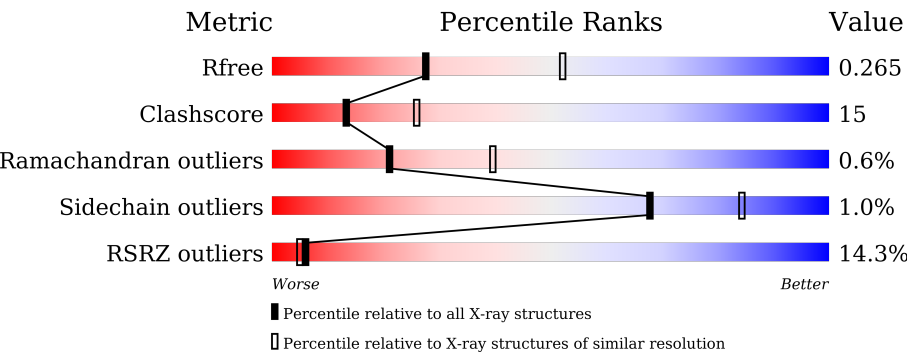
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

1 Overall quality at a glance i

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

The reported resolution of this entry is 2.57 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	4770 (2.60-2.56)
Clashscore	190562	5124 (2.60-2.56)
Ramachandran outliers	187476	5046 (2.60-2.56)
Sidechain outliers	187428	5046 (2.60-2.56)
RSRZ outliers	180081	4770 (2.60-2.56)

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	440	4% 76% 23% .
1	C	440	2% 81% 19% .
2	B	431	6% 71% 27% ..
2	D	431	34% 64% 33% ..
3	E	136	10% 62% 25% . 11%
4	F	380	26% 58% 28% . 13%

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
10	A1EU6	B	505	-	X	-	-

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 17435 atoms, of which 30 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 Detyrosinated tubulin alpha-1B chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	437	Total	C	N	O	S	0	0	0
			3405	2154	580	649	22			
1	C	440	Total	C	N	O	S	0	0	0
			3433	2172	583	656	22			

- Molecule 2 is a protein called Tubulin beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	427	Total	C	N	O	S	0	0	0
			3351	2104	572	649	26			
2	D	421	Total	C	N	O	S	0	0	0
			3300	2076	559	638	27			

- Molecule 3 is a protein called Stathmin-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	121	Total	C	N	O	S	0	0	0
			1000	617	181	197	5			

- Molecule 4 is a protein called Tubulin-tyrosine ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	F	332	Total	C	N	O	S	0	0	0
			2713	1740	466	493	14			

There are 35 discrepancies between the modelled and reference sequences:

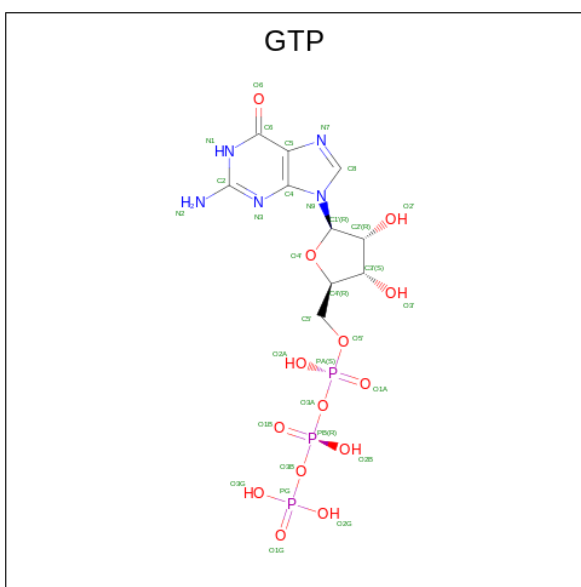
Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	ALA	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	MET	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0

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Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	GLY	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	GLN	deletion	UNP A0A8V0Z8P0
F	?	-	THR	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	VAL	deletion	UNP A0A8V0Z8P0
F	?	-	LEU	deletion	UNP A0A8V0Z8P0
F	?	-	ALA	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	THR	deletion	UNP A0A8V0Z8P0
F	?	-	HIS	deletion	UNP A0A8V0Z8P0
F	?	-	PRO	deletion	UNP A0A8V0Z8P0
F	?	-	GLU	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	VAL	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	SER	deletion	UNP A0A8V0Z8P0
F	?	-	ASP	deletion	UNP A0A8V0Z8P0
F	?	-	LYS	deletion	UNP A0A8V0Z8P0
F	?	-	ASN	deletion	UNP A0A8V0Z8P0
F	?	-	HIS	deletion	UNP A0A8V0Z8P0
F	?	-	GLY	deletion	UNP A0A8V0Z8P0
F	?	-	PHE	deletion	UNP A0A8V0Z8P0
F	379	HIS	-	expression tag	UNP A0A8V0Z8P0
F	380	HIS	-	expression tag	UNP A0A8V0Z8P0

- 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	32	0
			32	10	5	14	3		
5	C	1	Total	C	N	O	P	32	0
			32	10	5	14	3		

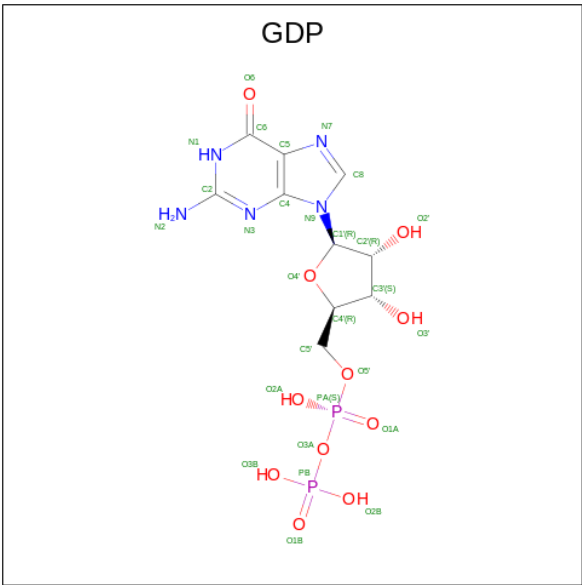
- Molecule 6 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

- Molecule 7 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

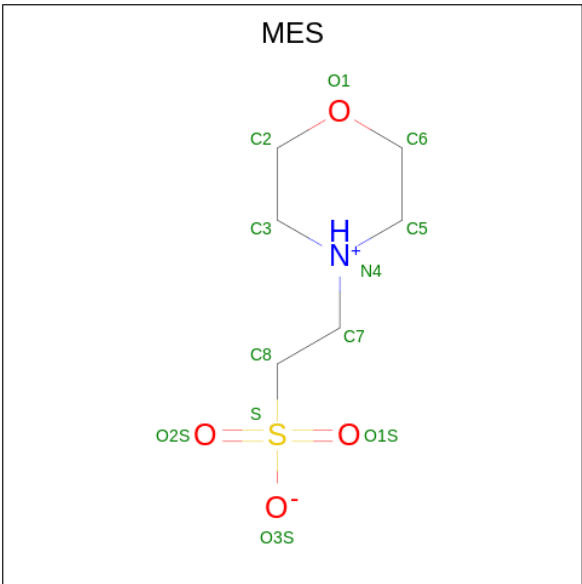
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total	Mg	1	0
			1	1		
7	B	1	Total	Mg	1	0
			1	1		
7	C	1	Total	Mg	1	0
			1	1		

- 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	28	0
			28	10	5	11	2		
8	D	1	Total	C	N	O	P	28	0
			28	10	5	11	2		

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



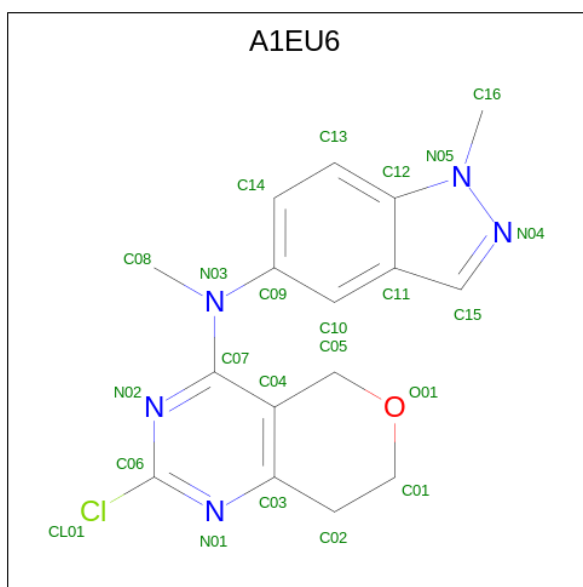
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	B	1	Total	C	N	O	S	12	0
			12	6	1	4	1		

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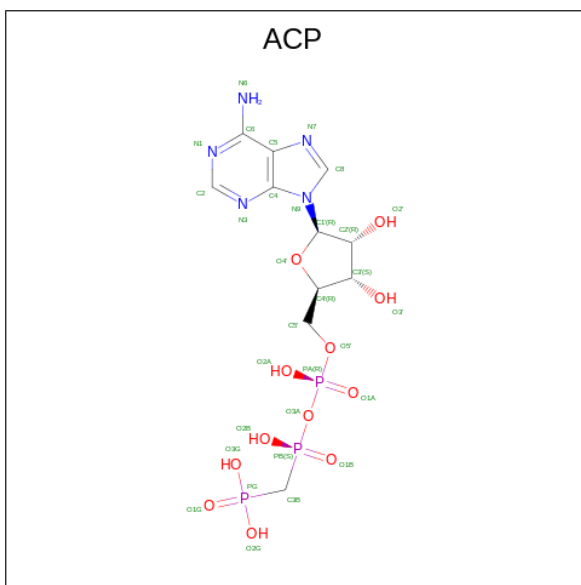
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
9	B	1	12	6	1	4	1	12	0

- Molecule 10 is 2-chloranyl- {N}-methyl- {N}-(1-methylindazol-5-yl)-7,8-dihydro-5 {H}-pyrano[4,3-d]pyrimidin-4-amine (CCD ID: A1EU6) (formula: C₁₆H₁₆ClN₅O) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	C	Cl	H	N	O		
10	B	1	39	16	1	16	5	1	0	0

- Molecule 11 is PHOSPHOMETHYLPHOSPHONIC ACID ADENYLATE ESTER (CCD ID: ACP) (formula: C₁₁H₁₈N₅O₁₂P₃).

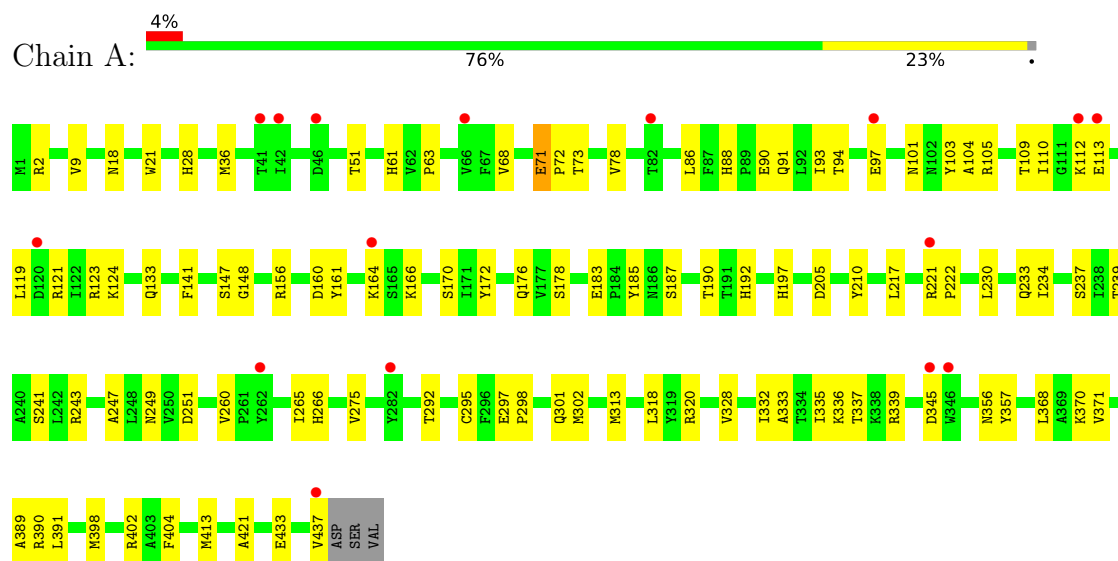


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
11	F	1	Total	C	H	N	O	P	45	0
			45	11	14	5	12	3		

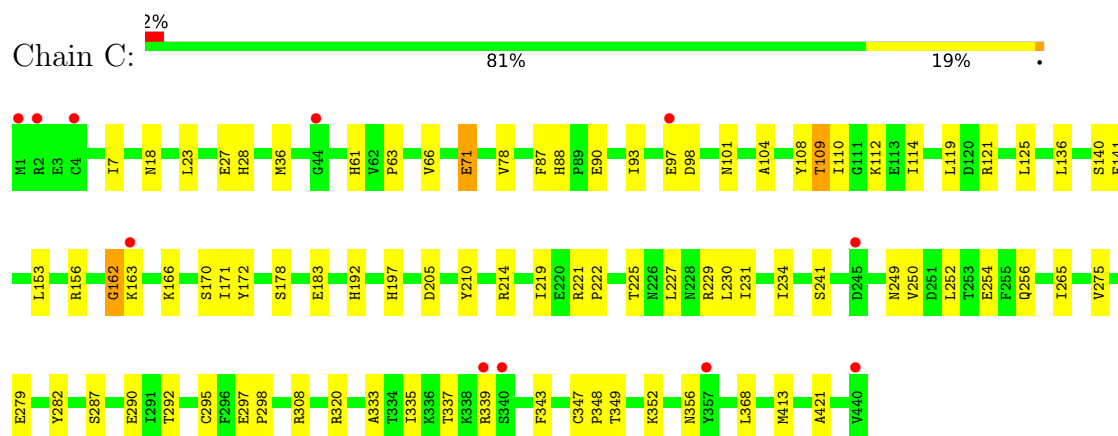
3 Residue-property plots [i](#)

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: Detyrosinated tubulin alpha-1B chain

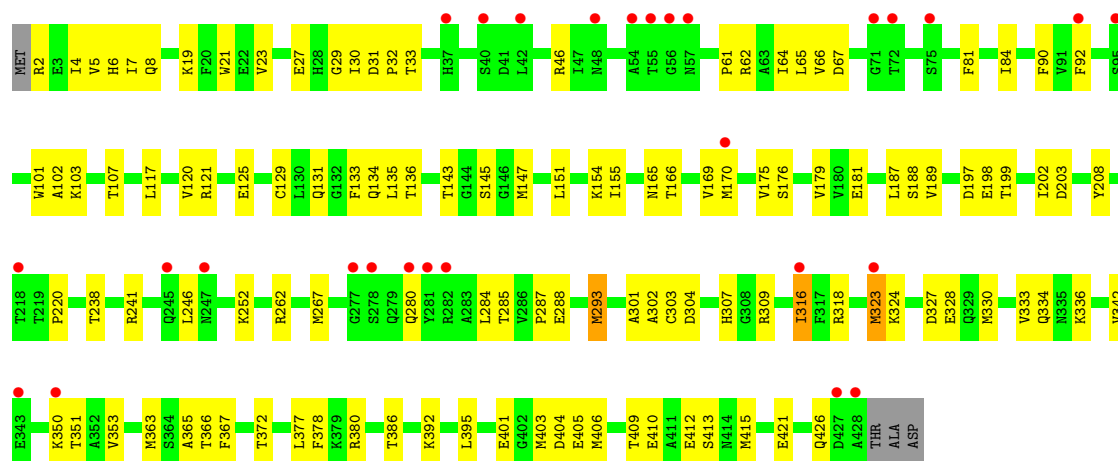


- Molecule 1: Detyrosinated tubulin alpha-1B chain

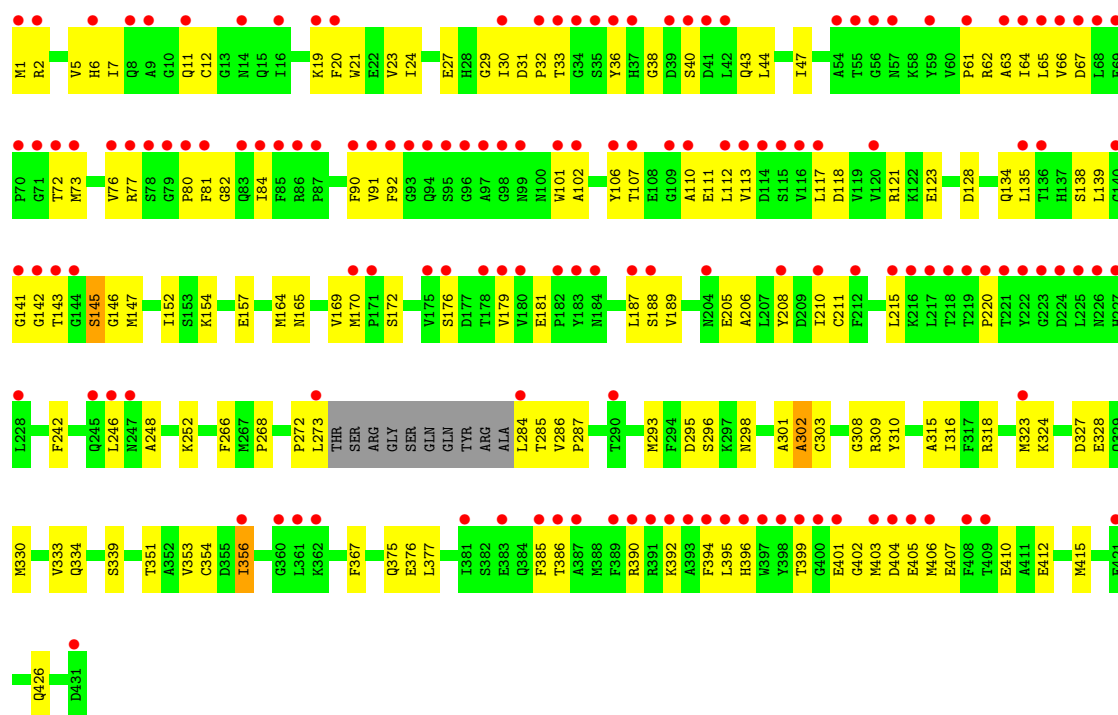


- Molecule 2: Tubulin beta chain

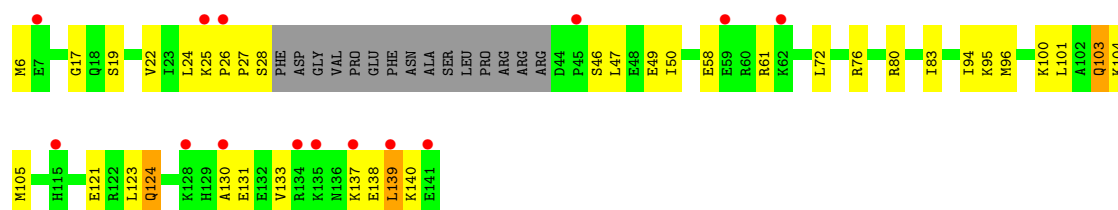




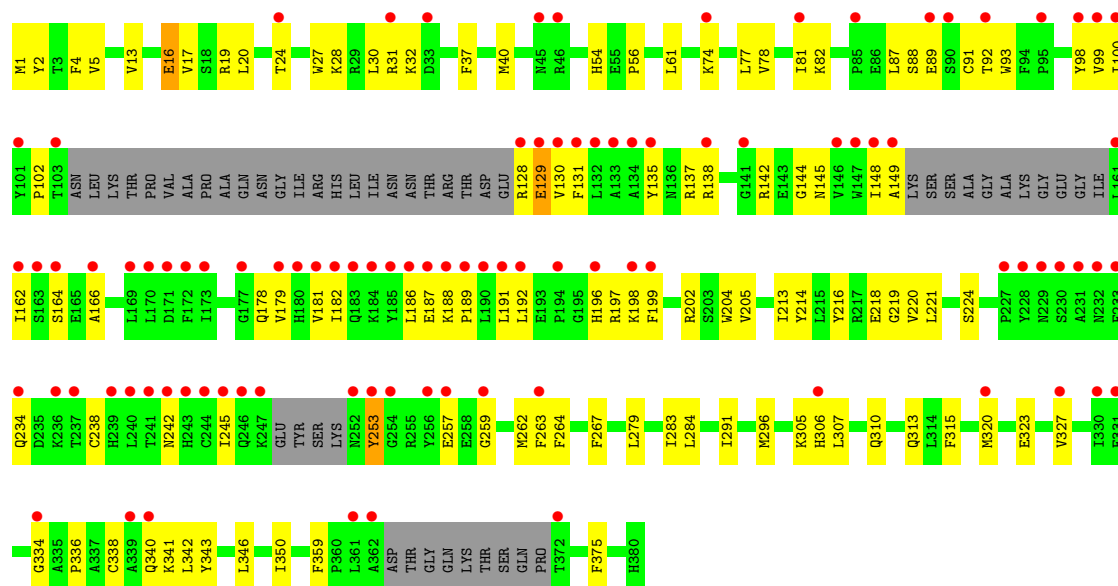
• Molecule 2: Tubulin beta chain



• 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	105.19Å 157.52Å 180.64Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	52.26 – 2.57 52.26 – 2.57	Depositor EDS
% Data completeness (in resolution range)	100.0 (52.26-2.57) 99.9 (52.26-2.57)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.92 (at 2.58Å)	Xtriage
Refinement program	PHENIX (???)	Depositor
R, R_{free}	0.238 , 0.266 0.239 , 0.265	Depositor DCC
R_{free} test set	4782 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	58.8	Xtriage
Anisotropy	0.137	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 40.7	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	17435	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 2.59% 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: GTP, CA, ACP, GDP, A1EU6, MG, MES

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	0.19	0/3482	0.40	0/4728
1	C	0.20	0/3511	0.40	0/4768
2	B	0.17	0/3426	0.38	0/4643
2	D	0.16	0/3373	0.35	0/4570
3	E	0.16	0/1008	0.32	0/1337
4	F	0.12	0/2775	0.30	0/3752
All	All	0.17	0/17575	0.37	0/23798

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	3405	0	3312	94	0
1	C	3433	0	3337	65	1
2	B	3351	0	3216	100	1
2	D	3300	0	3176	135	0
3	E	1000	0	1018	42	0
4	F	2713	0	2659	97	0
5	A	32	0	12	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	32	0	12	0	0
6	A	1	0	0	0	0
6	C	1	0	0	0	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
8	B	28	0	12	0	0
8	D	28	0	12	0	0
9	B	24	0	26	0	0
10	B	23	16	0	2	0
11	F	31	14	14	0	0
All	All	17405	30	16806	502	1

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 15.

All (502) 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)
4:F:19:ARG:HD3	4:F:20:LEU:HD12	1.43	1.01
2:B:170:MET:HE2	2:B:377:LEU:HD21	1.39	1.00
2:D:315:ALA:HB3	2:D:351:THR:HG22	1.45	0.98
4:F:242:ASN:HB2	4:F:245:ILE:HB	1.47	0.96
2:D:395:LEU:HD21	2:D:405:GLU:HG2	1.48	0.96
1:A:72:PRO:HB3	1:A:94:THR:HG21	1.53	0.90
2:D:145:SER:OG	2:D:188:SER:OG	1.90	0.89
4:F:186:LEU:HD12	4:F:320:MET:HG2	1.55	0.87
2:B:309:ARG:HH21	2:B:342:VAL:HA	1.40	0.86
2:D:141:GLY:O	2:D:143:THR:N	2.08	0.85
2:D:330:MET:HG3	2:D:351:THR:HG21	1.58	0.85
4:F:31:ARG:HH21	4:F:32:LYS:HG3	1.42	0.84
2:D:66:VAL:HG12	2:D:147:MET:HE1	1.60	0.84
1:A:112:LYS:NZ	1:A:113:GLU:OE2	2.11	0.83
4:F:221:LEU:HD22	4:F:262:MET:HE3	1.59	0.82
1:A:90:GLU:OE1	1:A:124:LYS:NZ	2.12	0.82
4:F:138:ARG:NH1	4:F:144:GLY:O	2.13	0.82
2:B:66:VAL:HG12	2:B:147:MET:HE1	1.61	0.82
2:D:170:MET:HE2	2:D:377:LEU:HD21	1.65	0.79
1:A:161:TYR:HB3	1:A:164:LYS:CG	2.15	0.77
2:D:134:GLN:HA	2:D:165:ASN:O	1.85	0.76
1:A:239:THR:OG1	1:A:243:ARG:NH1	2.20	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:100:ILE:HD12	4:F:128:ARG:N	2.03	0.73
3:E:58:GLU:HG3	3:E:61:ARG:NH2	2.03	0.73
1:A:161:TYR:HB3	1:A:164:LYS:HG2	1.67	0.72
4:F:186:LEU:HD12	4:F:320:MET:CG	2.19	0.72
2:D:44:LEU:HA	2:D:47:ILE:HB	1.71	0.72
4:F:74:LYS:HB3	4:F:181:VAL:HG11	1.72	0.72
2:B:406:MET:HE3	2:B:409:THR:HB	1.70	0.72
2:B:262:ARG:NH1	2:B:421:GLU:OE1	2.22	0.72
2:B:81:PHE:O	2:B:84:ILE:HG22	1.90	0.72
1:C:221:ARG:HD2	2:D:327:ASP:OD2	1.89	0.71
1:A:210:TYR:OH	1:A:221:ARG:HG3	1.90	0.71
2:B:238:THR:HG21	2:B:316:ILE:HD11	1.73	0.71
1:C:254:GLU:HG2	1:C:352:LYS:HE2	1.73	0.71
4:F:144:GLY:HA3	4:F:187:GLU:OE1	1.90	0.71
2:B:392:LYS:HE3	2:B:405:GLU:OE2	1.91	0.71
1:C:93:ILE:HD11	1:C:121:ARG:HG3	1.73	0.71
1:C:221:ARG:NE	2:D:323:MET:HB3	2.05	0.70
4:F:219:GLY:HA3	4:F:264:PHE:CZ	2.27	0.70
4:F:135:TYR:OH	4:F:164:SER:O	2.09	0.70
2:B:166:THR:OG1	2:B:199:THR:HG22	1.91	0.70
4:F:31:ARG:NH2	4:F:32:LYS:HG3	2.07	0.70
3:E:96:MET:O	3:E:100:LYS:HD3	1.90	0.70
1:C:166:LYS:HE2	1:C:197:HIS:O	1.93	0.69
2:B:66:VAL:CG1	2:B:147:MET:HE1	2.23	0.69
3:E:121:GLU:O	3:E:124:GLN:HG3	1.93	0.69
4:F:138:ARG:HB3	4:F:145:ASN:OD1	1.93	0.68
2:B:2:ARG:HB3	2:B:131:GLN:CG	2.23	0.68
2:D:66:VAL:CG1	2:D:147:MET:HE1	2.23	0.68
3:E:6:MET:HE2	3:E:24:LEU:HD22	1.74	0.68
2:B:170:MET:HG3	2:B:377:LEU:HD11	1.76	0.68
2:D:63:ALA:O	2:D:64:ILE:HD13	1.93	0.68
4:F:137:ARG:O	4:F:137:ARG:NH1	2.19	0.68
1:A:88:HIS:N	1:A:91:GLN:OE1	2.22	0.68
2:B:293:MET:HE3	2:B:365:ALA:HB1	1.75	0.68
2:D:401:GLU:HA	3:E:137:LYS:HD2	1.76	0.67
1:A:187:SER:HB3	1:A:391:LEU:HD21	1.77	0.67
2:D:21:TRP:CZ3	2:D:61:PRO:HB3	2.30	0.67
2:B:378:PHE:HD1	2:B:415:MET:HE2	1.61	0.66
2:D:1:MET:HE3	2:D:128:ASP:HB2	1.78	0.66
4:F:188:LYS:HD3	4:F:323:GLU:OE1	1.95	0.66
2:B:189:VAL:CB	2:B:415:MET:HE3	2.25	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:99:VAL:O	4:F:100:ILE:HD13	1.97	0.65
1:A:88:HIS:HE1	1:A:90:GLU:HG3	1.60	0.65
2:B:293:MET:CE	2:B:365:ALA:HB1	2.27	0.64
2:D:6:HIS:CD2	2:D:21:TRP:HE1	2.15	0.64
1:A:97:GLU:O	1:A:110:ILE:HD13	1.97	0.64
1:C:109:THR:HG22	1:C:110:ILE:HD13	1.79	0.64
2:B:316:ILE:HG23	2:B:366:THR:HB	1.79	0.64
3:E:130:ALA:O	3:E:133:VAL:HG12	1.97	0.64
1:A:166:LYS:NZ	1:A:197:HIS:O	2.22	0.64
2:B:6:HIS:CD2	2:B:21:TRP:HE1	2.16	0.64
2:B:189:VAL:HG21	2:B:415:MET:CE	2.28	0.64
2:D:301:ALA:O	2:D:303:CYS:N	2.30	0.64
1:A:133:GLN:OE1	1:A:251:ASP:HA	1.98	0.64
1:A:402:ARG:HH11	1:A:402:ARG:HG3	1.62	0.64
1:A:71:GLU:HG2	1:A:72:PRO:N	2.13	0.63
1:A:88:HIS:CE1	1:A:90:GLU:HG3	2.33	0.63
1:A:357:TYR:CE2	3:E:17:GLY:HA2	2.32	0.63
2:D:246:LEU:HD12	2:D:246:LEU:O	1.98	0.63
2:B:386:THR:HG22	2:B:412:GLU:OE2	1.98	0.63
2:D:293:MET:CG	2:D:367:PHE:HB2	2.29	0.63
4:F:221:LEU:HD22	4:F:262:MET:CE	2.29	0.63
1:C:88:HIS:HE1	1:C:90:GLU:HG3	1.63	0.63
4:F:192:LEU:HD21	4:F:262:MET:HE1	1.78	0.63
4:F:135:TYR:CD2	4:F:166:ALA:HB2	2.34	0.63
3:E:6:MET:HE2	3:E:24:LEU:CD2	2.28	0.63
4:F:192:LEU:HD21	4:F:262:MET:CE	2.29	0.63
2:D:80:PRO:O	2:D:81:PHE:HB2	1.99	0.62
2:D:1:MET:HG3	2:D:128:ASP:HB3	1.81	0.62
4:F:138:ARG:HB3	4:F:145:ASN:CG	2.23	0.62
1:A:101:ASN:ND2	2:B:252:LYS:HE2	2.15	0.62
1:C:230:LEU:O	1:C:234:ILE:HD12	1.98	0.62
1:C:88:HIS:CE1	1:C:90:GLU:HG3	2.34	0.62
4:F:37:PHE:CZ	4:F:40:MET:HE3	2.33	0.62
1:A:71:GLU:HG2	1:A:72:PRO:HD2	1.81	0.62
1:A:63:PRO:HD3	1:A:86:LEU:HG	1.81	0.61
2:D:392:LYS:HD2	2:D:405:GLU:OE2	1.98	0.61
4:F:214:TYR:HB3	4:F:375:PHE:HB3	1.81	0.61
2:B:134:GLN:HA	2:B:165:ASN:O	2.01	0.61
3:E:6:MET:HG3	3:E:24:LEU:CD2	2.31	0.61
1:C:241:SER:HA	1:C:249:ASN:OD1	2.01	0.61
1:A:21:TRP:CZ3	1:A:63:PRO:HB3	2.36	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:279:GLU:N	1:C:279:GLU:OE1	2.32	0.61
4:F:216:TYR:CZ	4:F:218:GLU:HB2	2.36	0.61
1:A:71:GLU:HG2	1:A:72:PRO:CD	2.31	0.61
3:E:46:SER:O	3:E:50:ILE:HG12	2.01	0.60
1:C:298:PRO:HG2	1:C:308:ARG:NH2	2.17	0.60
2:D:67:ASP:O	2:D:92:PHE:HA	2.02	0.60
2:B:378:PHE:CD1	2:B:415:MET:HE2	2.36	0.60
2:B:145:SER:OG	2:B:188:SER:OG	2.12	0.60
2:D:386:THR:HG22	2:D:412:GLU:OE2	2.02	0.60
1:A:336:LYS:HG2	3:E:24:LEU:HD13	1.84	0.59
1:C:28:HIS:O	1:C:36:MET:HE3	2.02	0.59
2:D:29:GLY:C	2:D:30:ILE:HD12	2.28	0.59
2:D:315:ALA:HB3	2:D:351:THR:CG2	2.28	0.59
3:E:96:MET:HE3	3:E:100:LYS:HE2	1.84	0.59
4:F:87:LEU:O	4:F:88:SER:OG	2.19	0.59
1:A:112:LYS:HE2	3:E:61:ARG:HH22	1.67	0.59
2:D:73:MET:HE3	2:D:90:PHE:HD2	1.67	0.59
1:C:335:ILE:HG23	1:C:339:ARG:HG3	1.85	0.59
2:B:179:VAL:HG12	1:C:348:PRO:HG2	1.85	0.59
2:B:189:VAL:HB	2:B:415:MET:HE3	1.85	0.59
4:F:5:VAL:HG12	4:F:30:LEU:HB2	1.84	0.58
1:A:161:TYR:HB3	1:A:164:LYS:HG3	1.84	0.58
1:A:97:GLU:HG3	2:B:2:ARG:NH1	2.19	0.58
2:B:189:VAL:HG11	2:B:415:MET:HE3	1.86	0.58
2:D:101:TRP:CE3	2:D:187:LEU:HD13	2.38	0.58
3:E:6:MET:HG3	3:E:24:LEU:HD23	1.86	0.58
1:A:178:SER:HB2	1:A:183:GLU:OE2	2.04	0.58
1:A:187:SER:CB	1:A:391:LEU:HD21	2.34	0.58
1:C:71:GLU:HB3	1:C:98:ASP:HB3	1.86	0.58
2:B:101:TRP:CE3	2:B:187:LEU:HD13	2.37	0.58
4:F:346:LEU:O	4:F:350:ILE:HG13	2.04	0.58
4:F:283:ILE:HG23	4:F:327:VAL:CG2	2.33	0.57
1:A:233:GLN:HG3	1:A:368:LEU:CD1	2.34	0.57
1:C:249:ASN:OD1	1:C:356:ASN:ND2	2.32	0.57
2:D:1:MET:HE3	2:D:128:ASP:CB	2.35	0.57
2:D:117:LEU:HD11	2:D:154:LYS:HB3	1.84	0.57
1:C:320:ARG:HA	1:C:356:ASN:O	2.04	0.57
2:D:386:THR:O	2:D:390:ARG:HG2	2.04	0.57
4:F:31:ARG:NH1	4:F:31:ARG:HA	2.19	0.57
2:D:81:PHE:O	2:D:84:ILE:HG22	2.04	0.57
1:A:221:ARG:HE	2:B:323:MET:HB3	1.68	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:370:LYS:HD3	1:A:371:VAL:N	2.20	0.56
4:F:148:ILE:O	4:F:182:ILE:HA	2.04	0.56
1:A:302:MET:N	1:A:302:MET:HE2	2.19	0.56
1:A:63:PRO:CD	1:A:86:LEU:HG	2.35	0.56
1:A:172:TYR:HB3	1:A:205:ASP:HA	1.87	0.56
1:A:333:ALA:O	1:A:337:THR:HG23	2.05	0.56
2:B:323:MET:HE3	2:B:353:VAL:HG11	1.86	0.56
2:D:324:LYS:HE2	2:D:328:GLU:OE2	2.05	0.56
1:A:210:TYR:CE1	1:A:222:PRO:HD2	2.40	0.56
2:D:63:ALA:C	2:D:64:ILE:HD13	2.30	0.56
4:F:16:GLU:O	4:F:20:LEU:HD13	2.06	0.56
2:D:65:LEU:HD23	2:D:76:VAL:HG11	1.88	0.56
1:A:28:HIS:O	1:A:36:MET:HE3	2.05	0.56
2:D:404:ASP:OD1	2:D:405:GLU:N	2.38	0.56
2:B:7:ILE:O	2:B:135:LEU:HA	2.05	0.56
2:D:189:VAL:HG11	2:D:415:MET:HE3	1.88	0.56
2:D:11:GLN:HA	2:D:72:THR:HG21	1.86	0.56
2:D:7:ILE:O	2:D:135:LEU:HA	2.05	0.55
2:D:206:ALA:O	2:D:210:ILE:HG13	2.06	0.55
1:A:119:LEU:HD11	1:A:156:ARG:HB3	1.88	0.55
1:C:141:PHE:CE1	1:C:170:SER:HB3	2.41	0.55
4:F:148:ILE:HD13	4:F:162:ILE:CG1	2.37	0.55
1:A:265:ILE:HG21	1:A:313:MET:HE1	1.88	0.55
2:D:1:MET:HE3	2:D:128:ASP:CG	2.31	0.55
2:D:20:PHE:CZ	2:D:24:ILE:HD13	2.42	0.55
2:B:330:MET:O	2:B:333:VAL:HG12	2.07	0.55
4:F:197:ARG:HH22	4:F:257:GLU:CD	2.14	0.55
1:A:103:TYR:CE1	1:A:148:GLY:HA2	2.42	0.55
2:B:21:TRP:CZ3	2:B:61:PRO:HB3	2.42	0.55
4:F:129:GLU:OE1	4:F:129:GLU:N	2.33	0.54
4:F:148:ILE:HD13	4:F:162:ILE:HG12	1.90	0.54
2:D:172:SER:OG	2:D:205:GLU:HB2	2.08	0.54
1:A:93:ILE:HD11	1:A:121:ARG:HG3	1.90	0.54
4:F:138:ARG:HB3	4:F:145:ASN:ND2	2.22	0.54
2:D:36:TYR:CE1	2:D:38:GLY:HA3	2.43	0.54
1:C:265:ILE:HG22	1:C:265:ILE:O	2.07	0.54
2:D:5:VAL:HG22	2:D:62:ARG:HD3	1.89	0.54
2:D:21:TRP:CH2	2:D:61:PRO:HB3	2.42	0.54
2:D:330:MET:O	2:D:333:VAL:HG12	2.08	0.54
1:C:101:ASN:ND2	2:D:252:LYS:HE2	2.23	0.54
2:D:189:VAL:CB	2:D:415:MET:HE3	2.38	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:47:LEU:HD12	3:E:47:LEU:O	2.08	0.54
2:B:189:VAL:CG1	2:B:415:MET:HE3	2.38	0.54
2:D:64:ILE:HD11	2:D:123:GLU:HG3	1.89	0.54
3:E:101:LEU:O	3:E:105:MET:HG2	2.09	0.54
2:B:19:LYS:O	2:B:23:VAL:HG23	2.08	0.53
2:B:309:ARG:NH2	2:B:342:VAL:HA	2.17	0.53
1:C:108:TYR:O	1:C:112:LYS:HG2	2.08	0.53
2:D:107:THR:O	2:D:111:GLU:HG3	2.08	0.53
1:A:147:SER:HB2	1:A:190:THR:HB	1.90	0.53
1:A:275:VAL:HG13	1:A:368:LEU:HD21	1.90	0.53
2:D:102:ALA:HB2	2:D:403:MET:SD	2.49	0.53
1:A:357:TYR:CZ	3:E:17:GLY:HA2	2.44	0.53
2:B:67:ASP:O	2:B:92:PHE:HA	2.09	0.53
2:D:73:MET:HE3	2:D:90:PHE:CD2	2.44	0.53
4:F:128:ARG:N	4:F:128:ARG:HD2	2.24	0.53
1:A:9:VAL:HG22	1:A:68:VAL:CG1	2.39	0.52
1:C:287:SER:OG	1:C:290:GLU:HG3	2.09	0.52
1:A:123:ARG:HH22	1:A:160:ASP:HB3	1.74	0.52
1:A:247:ALA:HB3	3:E:19:SER:OG	2.09	0.52
1:C:275:VAL:HG13	1:C:368:LEU:HD21	1.91	0.52
3:E:58:GLU:HG3	3:E:61:ARG:HH21	1.73	0.52
4:F:4:PHE:HB3	4:F:27:TRP:CZ3	2.44	0.52
4:F:31:ARG:NE	4:F:32:LYS:H	2.07	0.52
2:D:242:PHE:CZ	2:D:356:ILE:HD13	2.44	0.52
3:E:138:GLU:C	3:E:140:LYS:H	2.17	0.52
2:B:285:THR:HB	2:B:287:PRO:HD2	1.91	0.52
1:C:97:GLU:O	1:C:110:ILE:HG21	2.09	0.52
2:D:77:ARG:O	2:D:82:GLY:HA3	2.09	0.52
4:F:213:ILE:CD1	4:F:296:MET:HE2	2.39	0.52
2:B:293:MET:HE3	2:B:365:ALA:CB	2.40	0.52
3:E:139:LEU:O	3:E:139:LEU:HG	2.10	0.52
1:A:123:ARG:NH2	1:A:160:ASP:HB3	2.25	0.52
1:A:221:ARG:NE	2:B:323:MET:HB3	2.25	0.52
1:A:345:ASP:HB2	3:E:28:SER:HB2	1.92	0.52
2:B:197:ASP:C	2:B:198:GLU:HG3	2.35	0.52
4:F:283:ILE:HG23	4:F:327:VAL:HG22	1.91	0.51
2:B:29:GLY:C	2:B:30:ILE:HD12	2.35	0.51
2:D:316:ILE:N	2:D:316:ILE:HD12	2.25	0.51
1:A:335:ILE:HG23	1:A:339:ARG:HG3	1.92	0.51
2:B:2:ARG:HB3	2:B:131:GLN:HG2	1.92	0.51
1:C:252:LEU:O	1:C:256:GLN:HG3	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:101:TRP:HD1	2:B:145:SER:OG	1.94	0.51
1:A:298:PRO:HA	1:A:301:GLN:CD	2.36	0.51
4:F:13:VAL:O	4:F:17:VAL:HG23	2.11	0.51
1:C:292:THR:HG22	1:C:335:ILE:HD12	1.93	0.51
2:D:21:TRP:CE3	2:D:61:PRO:HB3	2.45	0.51
4:F:19:ARG:CD	4:F:20:LEU:HD12	2.27	0.51
1:A:210:TYR:HH	1:A:221:ARG:HG3	1.74	0.50
2:D:65:LEU:N	2:D:65:LEU:HD12	2.27	0.50
3:E:46:SER:HB3	3:E:49:GLU:HG3	1.93	0.50
2:B:117:LEU:HD11	2:B:154:LYS:HD3	1.93	0.50
1:C:66:VAL:HG23	1:C:125:LEU:CD1	2.42	0.50
1:C:292:THR:HG22	1:C:335:ILE:CD1	2.41	0.50
1:C:333:ALA:O	1:C:337:THR:HG23	2.11	0.50
4:F:213:ILE:HD11	4:F:296:MET:HE2	1.91	0.50
1:A:18:ASN:OD1	1:A:78:VAL:HG22	2.12	0.50
1:A:217:LEU:HD21	1:A:368:LEU:HD23	1.94	0.50
1:A:230:LEU:O	1:A:234:ILE:HD12	2.10	0.50
2:B:324:LYS:HE3	2:B:328:GLU:OE2	2.11	0.50
2:D:211:CYS:HA	2:D:215:LEU:HB2	1.93	0.50
1:A:185:TYR:CZ	1:A:398:MET:HE2	2.46	0.50
1:C:18:ASN:OD1	1:C:78:VAL:HG22	2.11	0.50
2:D:189:VAL:HB	2:D:415:MET:HE3	1.94	0.50
2:D:286:VAL:HB	2:D:287:PRO:HD3	1.94	0.50
4:F:131:PHE:CG	4:F:182:ILE:HD11	2.46	0.50
2:B:65:LEU:N	2:B:65:LEU:HD12	2.27	0.50
2:D:1:MET:HE3	2:D:128:ASP:OD2	2.11	0.50
2:D:72:THR:O	2:D:76:VAL:HG23	2.11	0.50
2:D:285:THR:HB	2:D:287:PRO:HD2	1.93	0.50
4:F:263:PHE:CZ	4:F:341:LYS:HD3	2.46	0.50
2:D:106:TYR:CD1	3:E:133:VAL:HG11	2.47	0.50
1:A:210:TYR:CZ	1:A:222:PRO:HD2	2.47	0.49
2:D:20:PHE:CE1	2:D:24:ILE:HG21	2.47	0.49
1:C:119:LEU:HD11	1:C:156:ARG:HB3	1.94	0.49
1:C:343:PHE:CG	1:C:349:THR:HG22	2.47	0.49
1:C:172:TYR:HB3	1:C:205:ASP:HA	1.94	0.49
2:D:157:GLU:HB2	3:E:123:LEU:HD13	1.95	0.49
1:A:2:ARG:O	1:A:51:THR:HG22	2.12	0.49
2:B:238:THR:HG21	2:B:316:ILE:CD1	2.41	0.49
1:A:370:LYS:HD3	1:A:370:LYS:C	2.38	0.49
2:D:189:VAL:CG1	2:D:415:MET:HE3	2.43	0.49
2:D:318:ARG:HH21	2:D:356:ILE:HG12	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:78:VAL:HG21	4:F:181:VAL:HG21	1.95	0.49
2:D:309:ARG:NH1	2:D:339:SER:O	2.45	0.49
2:B:2:ARG:HA	2:B:129:CYS:O	2.13	0.49
1:C:93:ILE:CD1	1:C:121:ARG:HG3	2.42	0.49
2:D:272:PRO:HB3	2:D:284:LEU:CD2	2.43	0.49
3:E:80:ARG:HA	3:E:83:ILE:HG22	1.95	0.48
2:D:377:LEU:C	2:D:377:LEU:HD23	2.38	0.48
4:F:178:GLN:N	4:F:178:GLN:OE1	2.47	0.48
1:A:265:ILE:HD12	1:A:265:ILE:N	2.28	0.48
2:D:101:TRP:NE1	2:D:146:GLY:HA2	2.28	0.48
2:B:406:MET:HE2	2:B:410:GLU:HG3	1.95	0.48
2:D:189:VAL:HG21	2:D:415:MET:CE	2.43	0.48
1:A:301:GLN:C	1:A:302:MET:HE2	2.39	0.48
1:C:66:VAL:HG23	1:C:125:LEU:HD12	1.95	0.48
2:D:40:SER:O	2:D:43:GLN:NE2	2.36	0.48
2:D:211:CYS:HA	2:D:215:LEU:HD12	1.94	0.48
4:F:1:MET:HE1	4:F:28:LYS:HB3	1.95	0.48
2:B:404:ASP:OD1	2:B:405:GLU:N	2.46	0.48
4:F:135:TYR:HD2	4:F:166:ALA:HB2	1.78	0.48
4:F:135:TYR:HE2	4:F:166:ALA:H	1.61	0.48
1:C:23:LEU:O	1:C:27:GLU:HG3	2.14	0.48
3:E:25:LYS:HG2	3:E:26:PRO:O	2.14	0.48
4:F:130:VAL:HG12	4:F:130:VAL:O	2.13	0.48
2:B:350:LYS:HB2	10:B:505:A1EU6:C15	2.43	0.48
1:C:221:ARG:CZ	2:D:323:MET:HB3	2.44	0.47
1:C:250:VAL:HG11	1:C:352:LYS:HE3	1.96	0.47
1:A:133:GLN:OE1	1:A:251:ASP:CA	2.62	0.47
2:B:301:ALA:O	2:B:303:CYS:N	2.46	0.47
2:D:402:GLY:C	3:E:133:VAL:HG23	2.40	0.47
4:F:224:SER:OG	4:F:238:CYS:HA	2.15	0.47
2:B:323:MET:CE	2:B:353:VAL:HG11	2.44	0.47
2:D:5:VAL:HG22	2:D:62:ARG:CD	2.43	0.47
2:D:208:TYR:CD1	2:D:220:PRO:HG2	2.49	0.47
2:D:293:MET:HG2	2:D:367:PHE:HB2	1.95	0.47
4:F:216:TYR:CE2	4:F:218:GLU:HB2	2.50	0.47
2:B:64:ILE:HD12	2:B:120:VAL:HG22	1.96	0.47
4:F:198:LYS:HG2	4:F:199:PHE:N	2.30	0.47
1:A:97:GLU:HG2	1:A:105:ARG:HH21	1.80	0.47
1:C:140:SER:HA	1:C:171:ILE:HB	1.97	0.47
2:D:91:VAL:HG12	2:D:112:LEU:HD21	1.96	0.47
4:F:20:LEU:O	4:F:24:THR:HG23	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:77:LEU:HD11	4:F:81:ILE:HD11	1.96	0.47
4:F:142:ARG:O	4:F:142:ARG:HG2	2.14	0.47
1:A:71:GLU:OE2	1:A:73:THR:HB	2.14	0.47
1:A:221:ARG:HD2	2:B:327:ASP:OD2	2.14	0.47
4:F:198:LYS:HG2	4:F:199:PHE:H	1.79	0.47
1:C:7:ILE:HG21	1:C:153:LEU:HD21	1.96	0.47
1:A:433:GLU:O	1:A:437:VAL:HG23	2.15	0.46
2:B:304:ASP:HB3	2:B:307:HIS:ND1	2.30	0.46
2:B:377:LEU:C	2:B:377:LEU:HD23	2.40	0.46
2:D:310:TYR:CE1	2:D:367:PHE:HZ	2.32	0.46
4:F:263:PHE:CE2	4:F:341:LYS:HD3	2.50	0.46
2:B:31:ASP:OD1	2:B:33:THR:HG22	2.15	0.46
2:D:31:ASP:OD1	2:D:33:THR:HG22	2.15	0.46
1:A:21:TRP:CH2	1:A:63:PRO:HB3	2.49	0.46
2:B:169:VAL:HA	2:B:202:ILE:O	2.14	0.46
1:C:162:GLY:HA2	3:E:94:ILE:HD11	1.97	0.46
1:C:221:ARG:HE	2:D:323:MET:CB	2.29	0.46
2:D:330:MET:HE2	2:D:351:THR:CG2	2.45	0.46
3:E:22:VAL:HG13	3:E:22:VAL:O	2.16	0.46
1:A:336:LYS:HG2	3:E:24:LEU:CD1	2.45	0.46
3:E:131:GLU:OE1	3:E:131:GLU:HA	2.14	0.46
4:F:267:PHE:CE2	4:F:279:LEU:HD13	2.50	0.46
2:B:31:ASP:CG	2:B:33:THR:HG22	2.41	0.46
4:F:202:ARG:HB3	4:F:220:VAL:HG12	1.98	0.46
4:F:61:LEU:HD12	4:F:310:GLN:O	2.16	0.46
1:A:292:THR:O	1:A:295:CYS:HB2	2.16	0.46
1:C:210:TYR:OH	1:C:221:ARG:HG3	2.16	0.46
1:A:221:ARG:HE	2:B:323:MET:CB	2.29	0.46
2:B:8:GLN:HB3	2:B:136:THR:OG1	2.16	0.46
2:D:273:LEU:HD11	2:D:298:ASN:HA	1.97	0.46
4:F:135:TYR:CE1	4:F:145:ASN:HB3	2.50	0.46
2:B:323:MET:HE3	2:B:353:VAL:CG1	2.46	0.46
1:C:136:LEU:HD12	1:C:136:LEU:N	2.31	0.46
2:D:401:GLU:C	3:E:137:LYS:HB2	2.41	0.46
2:D:118:ASP:HA	2:D:121:ARG:NH1	2.31	0.45
4:F:2:TYR:CZ	4:F:359:PHE:HB3	2.51	0.45
1:C:292:THR:O	1:C:295:CYS:HB2	2.15	0.45
2:B:65:LEU:HD22	2:B:90:PHE:CE2	2.51	0.45
2:D:266:PHE:O	2:D:268:PRO:HD3	2.16	0.45
1:A:36:MET:HB3	1:A:61:HIS:CE1	2.52	0.45
1:A:104:ALA:HB2	1:A:413:MET:SD	2.56	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:389:ALA:O	1:A:390:ARG:C	2.60	0.45
2:B:395:LEU:HD21	2:B:405:GLU:HG2	1.99	0.45
4:F:199:PHE:CD2	4:F:221:LEU:HD23	2.51	0.45
1:C:227:LEU:O	1:C:231:ILE:HG13	2.17	0.45
2:D:170:MET:HG3	2:D:377:LEU:HD11	1.99	0.45
4:F:197:ARG:HB3	4:F:224:SER:O	2.16	0.45
2:D:31:ASP:HB2	2:D:32:PRO:HD2	1.98	0.45
2:B:176:SER:HB2	2:B:181:GLU:OE1	2.16	0.45
2:B:336:LYS:HB3	2:B:336:LYS:HE2	1.68	0.45
1:C:221:ARG:HE	2:D:323:MET:HB3	1.81	0.45
1:C:265:ILE:N	1:C:265:ILE:HD12	2.31	0.45
2:D:12:CYS:SG	2:D:169:VAL:HG21	2.56	0.45
2:D:179:VAL:HG21	2:D:394:PHE:CZ	2.52	0.45
2:D:392:LYS:HD2	2:D:405:GLU:CD	2.41	0.45
4:F:189:PRO:O	4:F:191:LEU:HD12	2.17	0.45
2:B:203:ASP:CG	2:B:380:ARG:HH22	2.24	0.45
2:B:330:MET:O	2:B:334:GLN:HG3	2.17	0.45
2:D:138:SER:HA	2:D:169:VAL:HB	1.99	0.45
2:B:208:TYR:CE1	2:B:220:PRO:HG2	2.52	0.44
4:F:78:VAL:CG1	4:F:82:LYS:HE3	2.47	0.44
4:F:313:GLN:HB3	4:F:315:PHE:CE1	2.52	0.44
2:D:211:CYS:O	2:D:215:LEU:HB2	2.18	0.44
2:D:323:MET:HG2	2:D:353:VAL:HG11	1.99	0.44
2:D:73:MET:CE	2:D:90:PHE:HB3	2.47	0.44
1:A:93:ILE:CD1	1:A:121:ARG:HG3	2.48	0.44
1:C:104:ALA:HB2	1:C:413:MET:SD	2.58	0.44
2:D:23:VAL:O	2:D:27:GLU:HG3	2.16	0.44
4:F:338:CYS:SG	4:F:342:LEU:HB2	2.57	0.44
2:D:395:LEU:CD2	2:D:405:GLU:HG2	2.34	0.44
4:F:98:TYR:O	4:F:181:VAL:HG23	2.18	0.44
1:A:320:ARG:HA	1:A:356:ASN:O	2.17	0.44
1:C:221:ARG:NE	2:D:323:MET:CB	2.80	0.44
2:D:176:SER:OG	2:D:181:GLU:OE1	2.10	0.44
4:F:148:ILE:HG13	4:F:149:ALA:N	2.32	0.44
4:F:205:VAL:HG21	4:F:291:ILE:HD13	1.99	0.44
2:B:103:LYS:HE2	2:B:401:GLU:OE2	2.17	0.44
2:D:32:PRO:HB3	2:D:81:PHE:HA	1.99	0.44
2:D:246:LEU:HD13	2:D:248:ALA:HB2	1.99	0.44
2:D:385:PHE:CE1	2:D:412:GLU:HB2	2.53	0.44
4:F:192:LEU:CD2	4:F:262:MET:HE1	2.46	0.44
2:B:372:THR:CB	2:B:426:GLN:HB2	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:210:TYR:CE1	1:C:222:PRO:HD2	2.53	0.43
2:B:21:TRP:CE3	2:B:61:PRO:HB3	2.52	0.43
2:B:46:ARG:HB2	2:B:241:ARG:O	2.18	0.43
2:B:304:ASP:HB3	2:B:307:HIS:CG	2.53	0.43
4:F:340:GLN:HA	4:F:343:TYR:HD2	1.82	0.43
1:A:72:PRO:CB	1:A:94:THR:HG21	2.37	0.43
2:B:238:THR:OG1	2:B:318:ARG:HD2	2.19	0.43
2:D:31:ASP:HB2	2:D:32:PRO:CD	2.49	0.43
2:D:206:ALA:HB2	2:D:302:ALA:N	2.33	0.43
4:F:91:CYS:SG	4:F:93:TRP:CE2	3.12	0.43
1:A:161:TYR:O	1:A:164:LYS:HG2	2.19	0.43
4:F:191:LEU:HD23	4:F:196:HIS:C	2.43	0.43
1:C:343:PHE:HB2	1:C:349:THR:HG22	2.00	0.43
2:D:101:TRP:CD1	2:D:146:GLY:HA2	2.53	0.43
1:A:241:SER:HB2	1:A:249:ASN:O	2.18	0.43
2:D:330:MET:O	2:D:334:GLN:HG3	2.19	0.43
3:E:96:MET:CE	3:E:100:LYS:HE2	2.49	0.43
1:A:112:LYS:HE2	3:E:61:ARG:NH2	2.32	0.43
1:C:254:GLU:HG2	1:C:352:LYS:CE	2.46	0.43
2:D:31:ASP:CG	2:D:33:THR:HG22	2.43	0.43
1:A:141:PHE:CE1	1:A:170:SER:HB3	2.53	0.43
1:A:328:VAL:O	1:A:332:ILE:HG13	2.19	0.43
2:B:284:LEU:N	2:B:284:LEU:HD12	2.34	0.43
2:B:284:LEU:O	2:B:363:MET:CE	2.67	0.43
2:D:7:ILE:O	2:D:135:LEU:HD12	2.18	0.43
2:D:65:LEU:CD2	2:D:76:VAL:HG11	2.49	0.43
1:C:93:ILE:HG22	1:C:114:ILE:HD11	2.01	0.42
2:D:19:LYS:O	2:D:23:VAL:HG23	2.18	0.42
2:D:354:CYS:SG	2:D:356:ILE:HG23	2.59	0.42
1:A:176:GLN:NE2	4:F:56:PRO:HB3	2.34	0.42
4:F:144:GLY:HA3	4:F:187:GLU:CD	2.44	0.42
2:D:272:PRO:HB3	2:D:284:LEU:HD21	2.00	0.42
1:A:124:LYS:HE2	1:A:124:LYS:HB3	1.87	0.42
2:B:121:ARG:O	2:B:125:GLU:HG3	2.18	0.42
1:C:71:GLU:HG2	1:C:98:ASP:HB3	2.01	0.42
1:A:71:GLU:CG	1:A:72:PRO:HD2	2.47	0.42
4:F:135:TYR:HE1	4:F:145:ASN:HB3	1.84	0.42
1:A:72:PRO:HB3	1:A:94:THR:CG2	2.37	0.42
2:B:102:ALA:HB2	2:B:403:MET:SD	2.59	0.42
1:C:192:HIS:CG	1:C:421:ALA:HA	2.55	0.42
2:B:61:PRO:HD3	2:B:84:ILE:HG12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:103:LYS:HA	2:B:107:THR:OG1	2.20	0.42
3:E:101:LEU:HD12	3:E:101:LEU:HA	1.82	0.42
2:B:293:MET:HE2	2:B:366:THR:C	2.44	0.42
2:D:36:TYR:CZ	2:D:38:GLY:HA3	2.54	0.42
2:B:67:ASP:HA	2:B:143:THR:HG21	2.01	0.42
2:B:151:LEU:O	2:B:155:ILE:HG13	2.20	0.42
2:D:110:ALA:O	2:D:113:VAL:HG12	2.20	0.42
4:F:263:PHE:HE2	4:F:342:LEU:HD21	1.84	0.42
4:F:307:LEU:HD23	4:F:307:LEU:HA	1.90	0.42
2:B:280:GLN:N	2:B:280:GLN:OE1	2.53	0.41
2:B:406:MET:CE	2:B:409:THR:HB	2.44	0.41
2:B:350:LYS:HD2	2:B:351:THR:H	1.85	0.41
2:D:6:HIS:O	2:D:63:ALA:HA	2.20	0.41
1:A:265:ILE:O	1:A:265:ILE:HG22	2.20	0.41
2:D:295:ASP:OD1	2:D:296:SER:N	2.53	0.41
2:B:31:ASP:HB2	2:B:32:PRO:HD2	2.01	0.41
3:E:140:LYS:O	3:E:140:LYS:HG2	2.20	0.41
4:F:334:GLY:C	4:F:336:PRO:HD3	2.46	0.41
2:B:324:LYS:O	2:B:328:GLU:HG3	2.20	0.41
2:D:172:SER:CB	2:D:205:GLU:HB2	2.51	0.41
3:E:130:ALA:HA	3:E:133:VAL:HG12	2.02	0.41
4:F:1:MET:HE2	4:F:28:LYS:HG2	2.01	0.41
2:D:308:GLY:HA2	2:D:426:GLN:OE1	2.21	0.41
4:F:100:ILE:HG23	4:F:128:ARG:N	2.36	0.41
2:B:267:MET:HG2	2:B:301:ALA:HB3	2.03	0.41
2:B:350:LYS:HB2	10:B:505:A1EU6:N04	2.36	0.41
2:D:395:LEU:HD21	2:D:405:GLU:CG	2.34	0.41
4:F:197:ARG:NH2	4:F:257:GLU:OE2	2.54	0.41
4:F:202:ARG:HD3	4:F:204:TRP:NE1	2.35	0.41
1:C:97:GLU:HG3	2:D:2:ARG:NH1	2.35	0.41
1:C:178:SER:HB2	1:C:183:GLU:OE2	2.20	0.41
1:C:225:THR:O	1:C:229:ARG:HG3	2.20	0.41
2:D:139:LEU:HD22	2:D:188:SER:HB3	2.01	0.41
2:D:152:ILE:HG23	2:D:164:MET:HG2	2.03	0.41
2:D:406:MET:O	2:D:410:GLU:HG3	2.21	0.41
1:A:21:TRP:CE3	1:A:63:PRO:HB3	2.56	0.41
1:A:237:SER:O	1:A:318:LEU:HD23	2.21	0.41
2:B:284:LEU:O	2:B:363:MET:HE2	2.21	0.41
1:C:343:PHE:CD1	1:C:349:THR:HG22	2.56	0.41
2:D:375:GLN:O	2:D:376:GLU:C	2.64	0.41
3:E:72:LEU:O	3:E:76:ARG:HG2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:103:GLN:HG3	3:E:104:LYS:N	2.36	0.41
4:F:191:LEU:HD23	4:F:196:HIS:O	2.20	0.41
4:F:191:LEU:HD22	4:F:196:HIS:CD2	2.55	0.41
1:A:192:HIS:CG	1:A:421:ALA:HA	2.56	0.41
1:A:398:MET:HE3	1:A:404:PHE:HD2	1.85	0.41
2:B:23:VAL:O	2:B:27:GLU:HG3	2.21	0.41
1:C:63:PRO:HG2	1:C:87:PHE:CE1	2.55	0.41
4:F:102:PRO:HG3	4:F:178:GLN:O	2.21	0.41
4:F:253:TYR:CZ	4:F:259:GLY:HA2	2.56	0.41
1:A:402:ARG:HG3	1:A:402:ARG:NH1	2.31	0.40
2:B:5:VAL:HB	2:B:133:PHE:CD1	2.56	0.40
3:E:124:GLN:HE21	3:E:124:GLN:HB2	1.61	0.40
1:C:36:MET:HB3	1:C:61:HIS:CE1	2.56	0.40
4:F:31:ARG:HA	4:F:31:ARG:CZ	2.51	0.40
4:F:284:LEU:HD12	4:F:284:LEU:HA	1.85	0.40
1:C:214:ARG:HG2	1:C:219:ILE:O	2.21	0.40
2:D:172:SER:OG	2:D:205:GLU:OE1	2.38	0.40
2:D:396:HIS:HA	2:D:399:THR:OG1	2.20	0.40
1:A:390:ARG:HD3	4:F:54:HIS:CD2	2.56	0.40
2:B:4:ILE:O	2:B:62:ARG:HD2	2.21	0.40
2:B:285:THR:O	2:B:288:GLU:N	2.55	0.40
3:E:95:LYS:HE2	3:E:95:LYS:HB3	1.94	0.40
1:A:260:VAL:HG11	1:A:266:HIS:HB3	2.03	0.40
2:B:293:MET:HG3	2:B:367:PHE:HB2	2.04	0.40
1:C:210:TYR:CZ	1:C:222:PRO:HD2	2.56	0.40
2:D:30:ILE:HD12	2:D:30:ILE:N	2.36	0.40
2:D:117:LEU:HD11	2:D:154:LYS:CB	2.51	0.40
2:D:403:MET:HE3	2:D:407:GLU:CD	2.46	0.40
4:F:305:LYS:HE3	4:F:306:HIS:CE1	2.56	0.40

All (1) 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)
2:B:401:GLU:OE1	1:C:282:TYR:OH[4_445]	2.15	0.05

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	435/440 (99%)	423 (97%)	11 (2%)	1 (0%)	43	63
1	C	438/440 (100%)	423 (97%)	13 (3%)	2 (0%)	24	44
2	B	425/431 (99%)	410 (96%)	13 (3%)	2 (0%)	24	44
2	D	417/431 (97%)	401 (96%)	13 (3%)	3 (1%)	18	36
3	E	117/136 (86%)	113 (97%)	2 (2%)	2 (2%)	7	14
4	F	322/380 (85%)	305 (95%)	15 (5%)	2 (1%)	21	39
All	All	2154/2258 (95%)	2075 (96%)	67 (3%)	12 (1%)	21	39

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	142	GLY
2	D	302	ALA
4	F	129	GLU
2	B	302	ALA
3	E	27	PRO
4	F	253	TYR
1	A	109	THR
1	C	162	GLY
1	C	109	THR
3	E	139	LEU
2	D	145	SER
2	B	175	VAL

5.3.2 Protein sidechains

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

The Analysed column shows the number of residues for which the sidechain conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	366/371 (99%)	364 (100%)	2 (0%)	81	91
1	C	370/371 (100%)	366 (99%)	4 (1%)	65	83
2	B	367/372 (99%)	362 (99%)	5 (1%)	59	79
2	D	362/372 (97%)	361 (100%)	1 (0%)	86	94
3	E	109/122 (89%)	107 (98%)	2 (2%)	51	74
4	F	295/338 (87%)	290 (98%)	5 (2%)	53	76
All	All	1869/1946 (96%)	1850 (99%)	19 (1%)	68	84

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU
1	A	297	GLU
2	B	246	LEU
2	B	293	MET
2	B	316	ILE
2	B	323	MET
2	B	413	SER
1	C	71	GLU
1	C	163	LYS
1	C	297	GLU
1	C	347	CYS
2	D	356	ILE
3	E	103	GLN
3	E	124	GLN
4	F	16	GLU
4	F	89	GLU
4	F	92	THR
4	F	179	VAL
4	F	234	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	133	GLN
3	E	124	GLN
4	F	306	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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 13 ligands modelled in this entry, 5 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	MES	B	503	-	12,12,12	1.10	1 (8%)	14,16,16	0.85	0
10	A1EU6	B	505	-	26,26,26	4.57	18 (69%)	34,38,38	7.20	19 (55%)
8	GDP	B	501	7	28,30,30	1.14	3 (10%)	44,47,47	1.85	8 (18%)
9	MES	B	502	-	12,12,12	1.12	1 (8%)	14,16,16	0.85	1 (7%)
11	ACP	F	401	-	30,33,33	2.03	2 (6%)	45,52,52	0.97	3 (6%)
5	GTP	A	501	7	30,34,34	0.82	1 (3%)	46,54,54	1.79	11 (23%)
5	GTP	C	501	7	30,34,34	0.83	1 (3%)	46,54,54	1.79	11 (23%)
8	GDP	D	501	-	28,30,30	1.15	3 (10%)	44,47,47	1.86	9 (20%)

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	MES	B	503	-	-	2/6/14/14	0/1/1/1
10	A1EU6	B	505	-	-	0/8/15/15	0/4/4/4
8	GDP	B	501	7	-	4/16/32/32	0/3/3/3
9	MES	B	502	-	-	5/6/14/14	0/1/1/1
11	ACP	F	401	-	-	1/19/38/38	0/3/3/3
5	GTP	A	501	7	-	7/22/38/38	0/3/3/3
5	GTP	C	501	7	-	4/22/38/38	0/3/3/3
8	GDP	D	501	-	-	5/16/32/32	0/3/3/3

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	B	505	A1EU6	N05-N04	-12.38	1.30	1.37
10	B	505	A1EU6	C04-C07	10.83	1.61	1.41
11	F	401	ACP	PB-O3A	10.17	1.69	1.58
10	B	505	A1EU6	C04-C03	7.50	1.51	1.40
10	B	505	A1EU6	C05-C04	5.67	1.60	1.51
10	B	505	A1EU6	C03-N01	4.87	1.42	1.34
10	B	505	A1EU6	C06-N01	-4.67	1.24	1.32
10	B	505	A1EU6	C02-C03	4.30	1.57	1.50
10	B	505	A1EU6	O01-C01	-3.98	1.26	1.42
10	B	505	A1EU6	C15-N04	-3.57	1.28	1.32
10	B	505	A1EU6	O01-C05	-3.55	1.34	1.42
10	B	505	A1EU6	C06-N02	-3.55	1.26	1.32
10	B	505	A1EU6	C11-C12	3.46	1.46	1.41
10	B	505	A1EU6	C11-C15	3.26	1.46	1.42
8	B	501	GDP	C5-C4	3.15	1.47	1.38
8	D	501	GDP	C5-C4	3.15	1.47	1.38
10	B	505	A1EU6	C12-N05	3.03	1.43	1.36
9	B	502	MES	C8-S	2.99	1.81	1.77
9	B	503	MES	C8-S	2.91	1.81	1.77
10	B	505	A1EU6	C07-N03	2.84	1.45	1.39
8	D	501	GDP	C6-N1	-2.49	1.34	1.38
8	B	501	GDP	C6-N1	-2.42	1.34	1.38
10	B	505	A1EU6	C13-C12	-2.32	1.35	1.39
11	F	401	ACP	PB-O2B	-2.29	1.51	1.56
5	C	501	GTP	C2-N3	2.24	1.38	1.33
5	A	501	GTP	C2-N3	2.20	1.38	1.33
10	B	505	A1EU6	C14-C09	2.12	1.43	1.39
8	D	501	GDP	C5-N7	-2.11	1.35	1.39
8	B	501	GDP	C5-N7	-2.11	1.35	1.39
10	B	505	A1EU6	C02-C01	-2.09	1.44	1.50

All (62) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	505	A1EU6	C11-C12-N05	-21.20	99.00	106.68
10	B	505	A1EU6	C12-N05-N04	19.62	122.38	111.62
10	B	505	A1EU6	C02-C03-N01	12.47	132.51	115.85
10	B	505	A1EU6	C11-C15-N04	11.78	120.99	112.06
10	B	505	A1EU6	C04-C03-N01	-11.22	114.02	123.49
10	B	505	A1EU6	C15-N04-N05	-10.97	97.54	106.42
10	B	505	A1EU6	N02-C07-N03	8.01	124.49	116.12
10	B	505	A1EU6	C16-N05-C12	-7.91	118.24	128.39
10	B	505	A1EU6	C02-C03-C04	-7.77	113.47	121.49
10	B	505	A1EU6	C12-C11-C15	-7.30	100.09	104.48
8	B	501	GDP	C5-C4-N3	-6.17	118.46	128.46
8	D	501	GDP	C5-C4-N3	-6.07	118.61	128.46
5	C	501	GTP	C5-C4-N3	-5.08	120.22	128.46
5	A	501	GTP	C5-C4-N3	-5.05	120.26	128.46
8	B	501	GDP	C2-N3-C4	4.89	121.01	112.30
10	B	505	A1EU6	C13-C12-N05	4.85	138.63	132.07
8	D	501	GDP	C2-N3-C4	4.79	120.84	112.30
8	D	501	GDP	N9-C4-N3	4.66	135.29	125.94
8	B	501	GDP	N9-C4-N3	4.62	135.22	125.94
5	C	501	GTP	C2-N3-C4	4.52	120.35	112.30
5	A	501	GTP	C2-N3-C4	4.49	120.31	112.30
10	B	505	A1EU6	C06-N02-C07	4.30	123.10	110.86
10	B	505	A1EU6	C01-C02-C03	4.27	120.07	111.75
10	B	505	A1EU6	C04-C07-N02	-4.16	116.19	122.61
10	B	505	A1EU6	O01-C01-C02	3.97	121.56	111.81
8	D	501	GDP	PA-O3A-PB	-3.81	119.76	132.83
10	B	505	A1EU6	C05-O01-C01	3.74	122.48	111.26
10	B	505	A1EU6	C10-C11-C15	3.72	141.56	135.50
5	A	501	GTP	PA-O3A-PB	-3.71	120.10	132.83
5	C	501	GTP	PB-O3B-PG	-3.67	120.23	132.83
5	A	501	GTP	PB-O3B-PG	-3.66	120.26	132.83
5	C	501	GTP	PA-O3A-PB	-3.55	120.64	132.83
8	B	501	GDP	PA-O3A-PB	-3.42	121.09	132.83
10	B	505	A1EU6	C07-C04-C03	-3.38	114.10	115.80
5	C	501	GTP	N9-C4-N3	3.30	132.56	125.94
5	A	501	GTP	N9-C4-N3	3.26	132.49	125.94
11	F	401	ACP	PB-O3A-PA	-3.22	122.36	132.56
11	F	401	ACP	O2B-PB-O1B	3.17	120.65	110.07
8	B	501	GDP	C6-C5-N7	3.12	136.05	130.25
8	D	501	GDP	C6-C5-N7	3.09	135.99	130.25
10	B	505	A1EU6	O01-C05-C04	2.94	117.78	112.23
5	A	501	GTP	C2-N1-C6	-2.89	119.84	125.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	501	GTP	C2-N1-C6	-2.87	119.87	125.10
8	B	501	GDP	C4-C5-N7	-2.62	106.57	110.72
5	A	501	GTP	N9-C8-N7	-2.61	108.48	113.39
5	C	501	GTP	N9-C8-N7	-2.60	108.50	113.39
11	F	401	ACP	O1G-PG-C3B	-2.55	105.75	111.24
5	C	501	GTP	C8-N7-C5	2.53	108.82	104.24
5	A	501	GTP	C8-N7-C5	2.52	108.79	104.24
8	D	501	GDP	C4-C5-N7	-2.51	106.75	110.72
5	C	501	GTP	C5-C6-N1	2.50	119.54	113.19
5	A	501	GTP	C5-C6-N1	2.49	119.52	113.19
8	B	501	GDP	C3'-C2'-C1'	2.46	106.09	101.43
5	C	501	GTP	O6-C6-C5	-2.40	120.23	126.60
5	A	501	GTP	O6-C6-C5	-2.40	120.25	126.60
8	D	501	GDP	C3'-C2'-C1'	2.20	105.60	101.43
5	A	501	GTP	C3'-C2'-C1'	2.16	105.53	101.43
5	C	501	GTP	C3'-C2'-C1'	2.12	105.46	101.43
8	D	501	GDP	O6-C6-C5	-2.12	120.98	126.60
8	B	501	GDP	O6-C6-C5	-2.10	121.03	126.60
8	D	501	GDP	C2'-C3'-C4'	2.04	106.60	102.64
9	B	502	MES	O2S-S-C8	-2.03	104.47	106.92

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	501	GTP	PB-O3B-PG-O2G
5	A	501	GTP	PB-O3B-PG-O3G
5	A	501	GTP	C5'-O5'-PA-O1A
5	A	501	GTP	C5'-O5'-PA-O2A
5	C	501	GTP	C5'-O5'-PA-O1A
5	C	501	GTP	C5'-O5'-PA-O2A
8	B	501	GDP	PA-O3A-PB-O3B
8	B	501	GDP	C5'-O5'-PA-O2A
8	D	501	GDP	PA-O3A-PB-O3B
8	D	501	GDP	C5'-O5'-PA-O1A
9	B	502	MES	C8-C7-N4-C3
9	B	502	MES	C8-C7-N4-C5
9	B	502	MES	C7-C8-S-O1S
9	B	502	MES	C7-C8-S-O3S
8	D	501	GDP	PA-O3A-PB-O2B
5	A	501	GTP	C5'-O5'-PA-O3A
5	C	501	GTP	C5'-O5'-PA-O3A

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Mol	Chain	Res	Type	Atoms
8	D	501	GDP	C5'-O5'-PA-O3A
8	B	501	GDP	C5'-O5'-PA-O1A
9	B	502	MES	C7-C8-S-O2S
5	A	501	GTP	C4'-C5'-O5'-PA
5	C	501	GTP	C4'-C5'-O5'-PA
9	B	503	MES	C8-C7-N4-C3
9	B	503	MES	C8-C7-N4-C5
5	A	501	GTP	PB-O3B-PG-O1G
8	D	501	GDP	PA-O3A-PB-O1B
8	B	501	GDP	C5'-O5'-PA-O3A
11	F	401	ACP	O4'-C4'-C5'-O5'

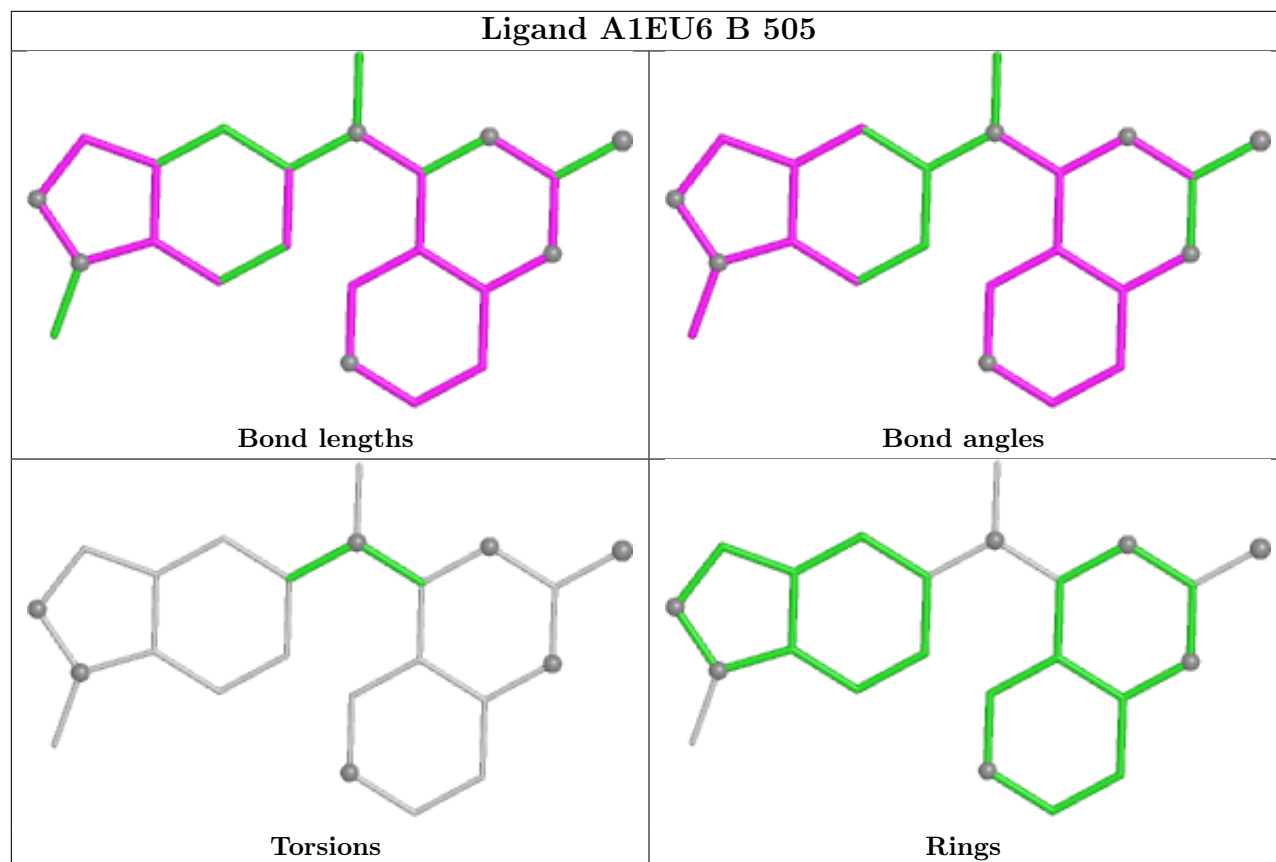
There are no ring outliers.

1 monomer is involved in 2 short contacts:

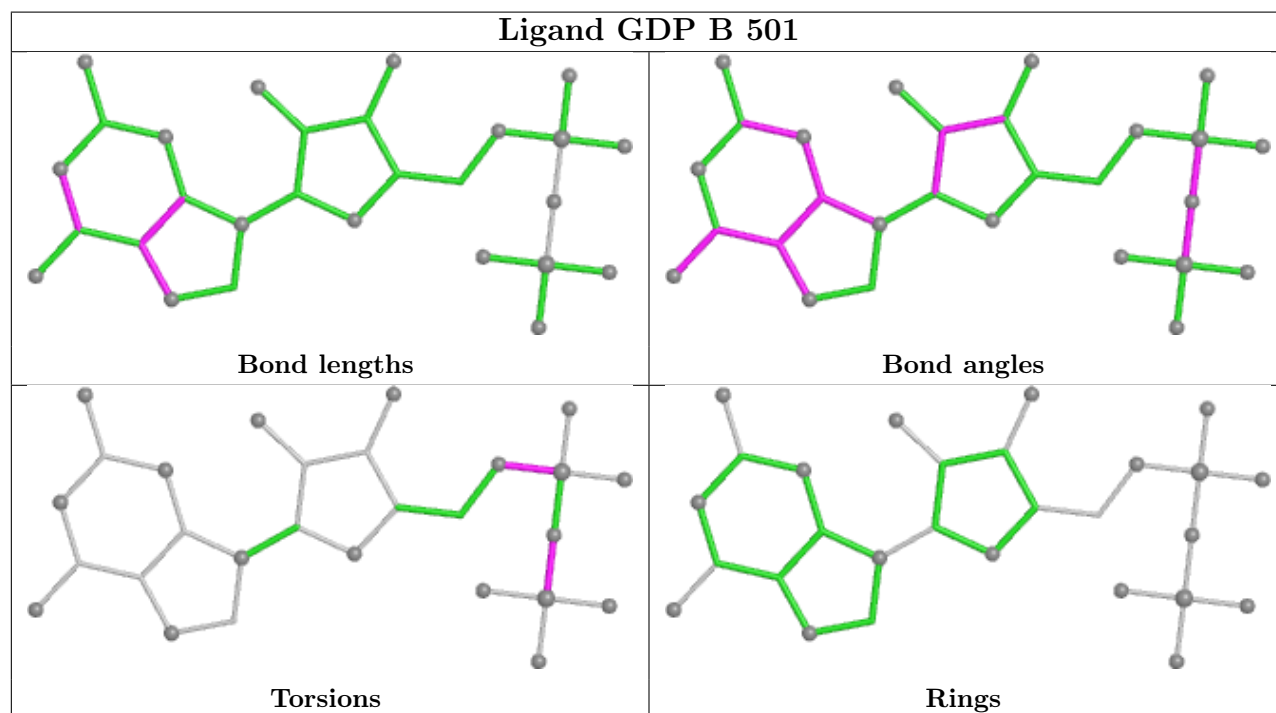
Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	B	505	A1EU6	2	0

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.

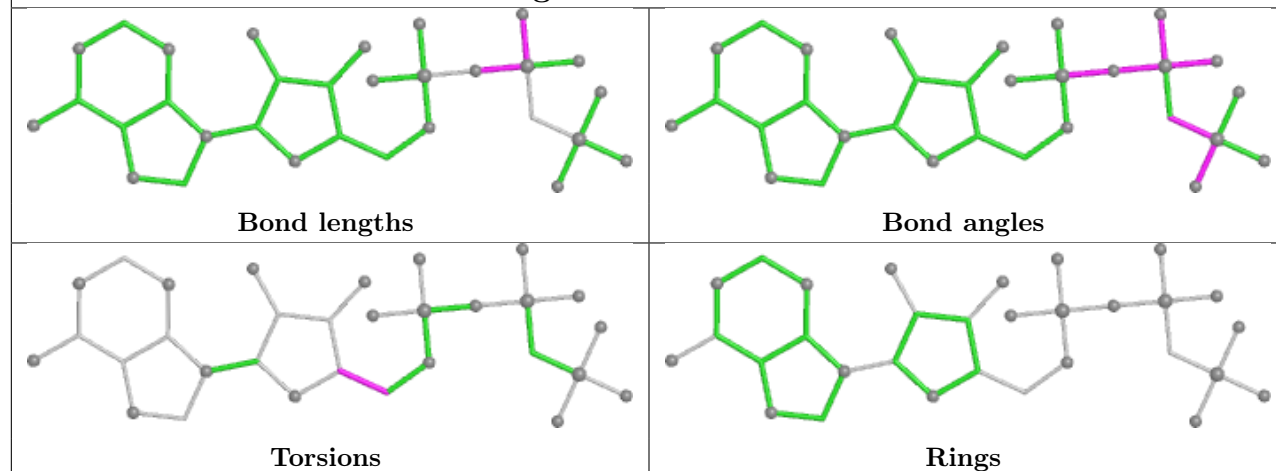
Ligand A1EU6 B 505



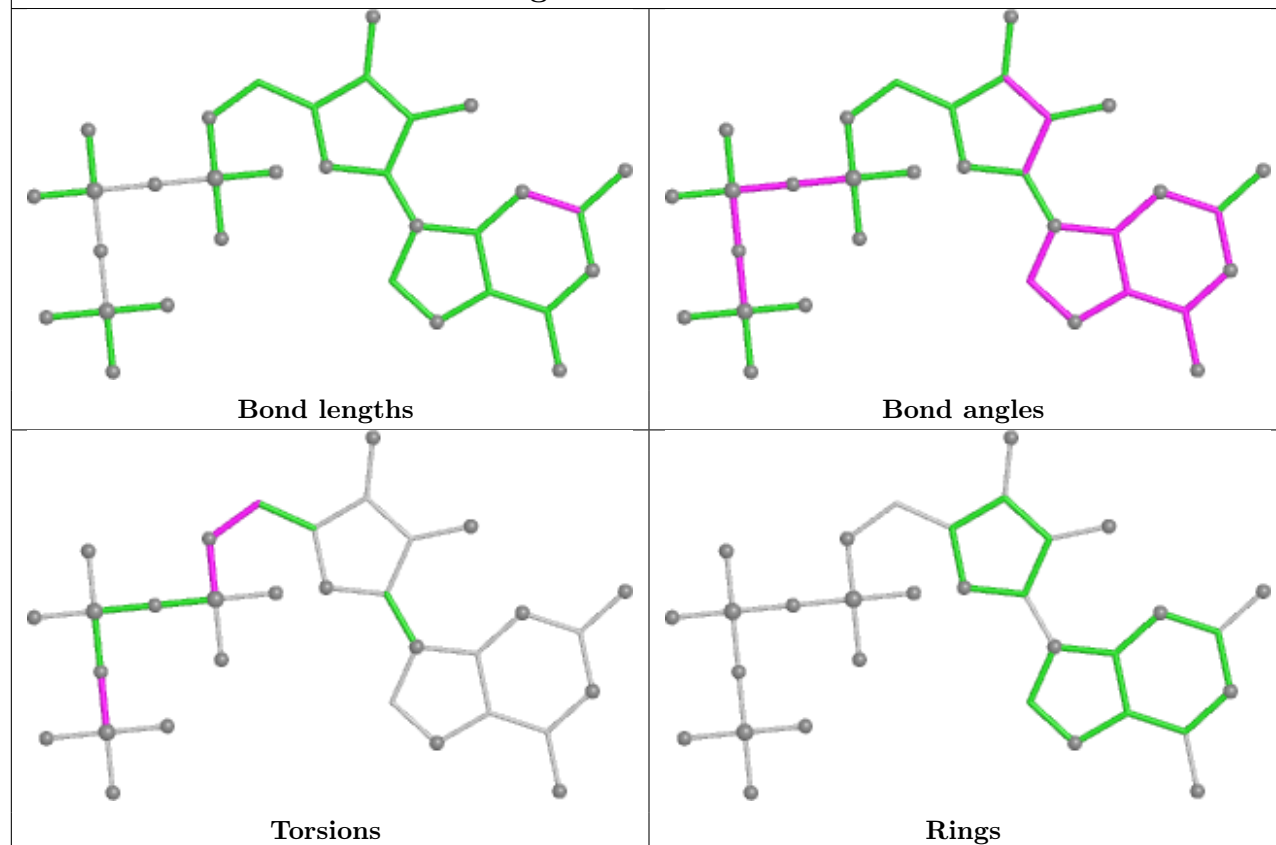
Ligand GDP B 501

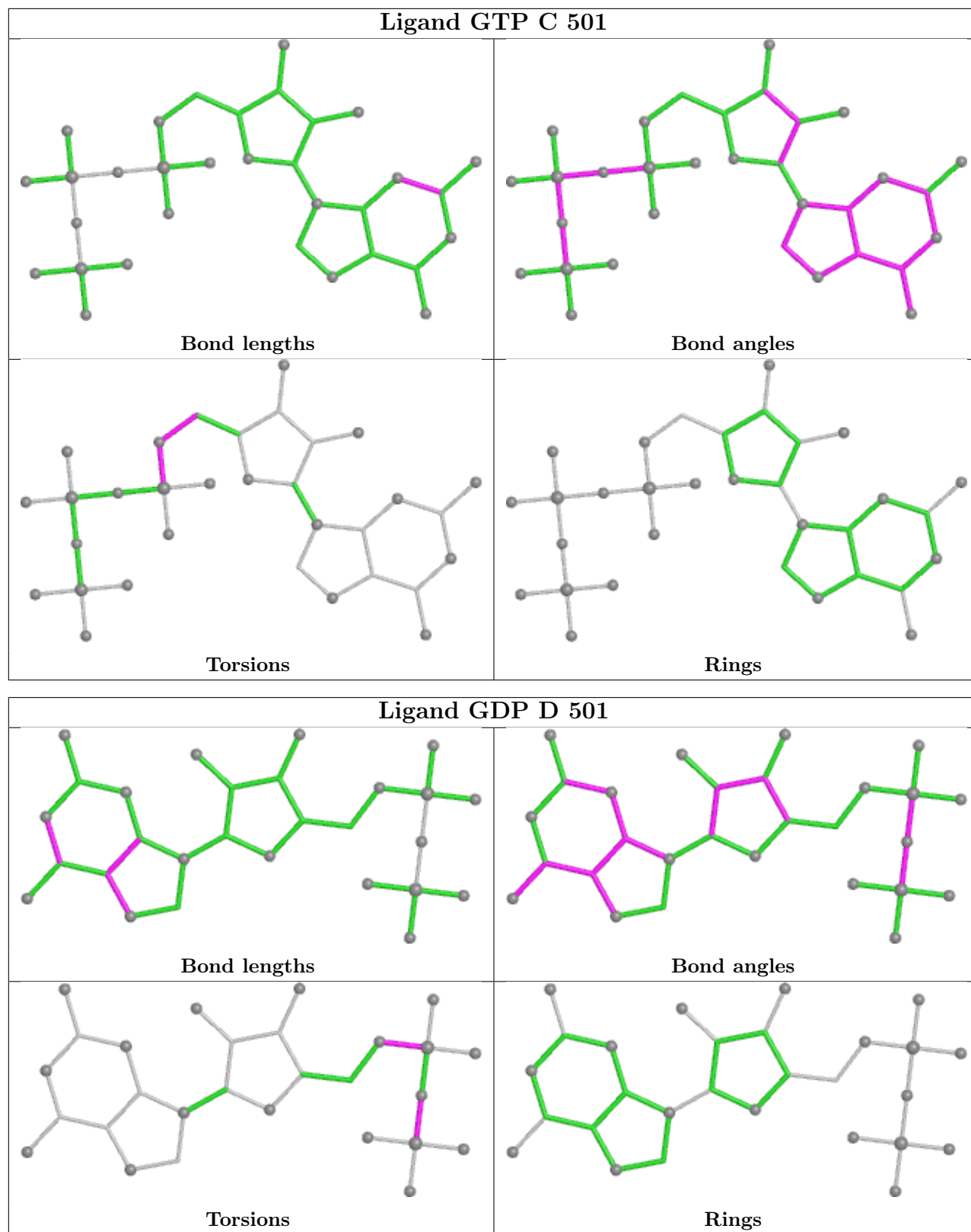


Ligand ACP F 401



Ligand GTP A 501





5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	437/440 (99%)	0.44	16 (3%) 45 40	37, 53, 75, 85	0
1	C	440/440 (100%)	0.14	11 (2%) 58 54	28, 44, 63, 86	0
2	B	427/431 (99%)	0.50	28 (6%) 24 20	33, 52, 81, 111	0
2	D	421/431 (97%)	1.62	146 (34%) 1 1	39, 75, 109, 116	0
3	E	121/136 (88%)	1.04	14 (11%) 9 7	45, 65, 107, 115	0
4	F	332/380 (87%)	1.53	97 (29%) 1 1	47, 77, 138, 148	0
All	All	2178/2258 (96%)	0.82	312 (14%) 6 5	28, 58, 109, 148	0

All (312) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	F	148	ILE	6.6
4	F	149	ALA	6.1
2	D	247	ASN	5.9
2	D	395	LEU	5.8
4	F	134	ALA	5.7
2	D	397	TRP	5.7
4	F	162	ILE	5.7
4	F	161	LEU	5.6
4	F	245	ILE	5.4
4	F	146	VAL	5.1
2	D	1	MET	5.0
4	F	233	PHE	5.0
2	D	178	THR	4.9
2	D	99	ASN	4.9
2	D	91	VAL	4.8
2	D	179	VAL	4.8
4	F	253	TYR	4.8
2	D	92	PHE	4.8
2	D	391	ARG	4.7

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Mol	Chain	Res	Type	RSRZ
2	D	389	PHE	4.6
4	F	147	TRP	4.5
2	D	394	PHE	4.5
2	D	393	ALA	4.5
2	D	116	VAL	4.4
4	F	130	VAL	4.4
4	F	98	TYR	4.4
4	F	186	LEU	4.4
2	B	218	THR	4.4
4	F	103	THR	4.3
2	D	223	GLY	4.3
4	F	131	PHE	4.2
2	D	180	VAL	4.2
4	F	194	PRO	4.2
2	D	68	LEU	4.2
4	F	132	LEU	4.1
2	D	80	PRO	4.1
2	D	107	THR	4.1
2	D	42	LEU	4.1
4	F	99	VAL	4.0
3	E	59	GLU	4.0
2	D	406	MET	4.0
4	F	166	ALA	3.9
2	D	55	THR	3.9
4	F	135	TYR	3.9
2	D	73	MET	3.9
2	D	76	VAL	3.9
4	F	247	LYS	3.8
2	D	284	LEU	3.8
2	D	144	GLY	3.8
1	A	437	VAL	3.7
4	F	184	LYS	3.7
2	D	85	PHE	3.7
4	F	263	PHE	3.7
4	F	187	GLU	3.7
2	D	98	GLY	3.7
2	D	141	GLY	3.7
2	D	117	LEU	3.7
2	D	16	ILE	3.6
2	D	170	MET	3.6
4	F	331	GLU	3.6
2	D	216	LYS	3.6

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Mol	Chain	Res	Type	RSRZ
2	D	183	TYR	3.6
4	F	228	TYR	3.6
4	F	198	LYS	3.6
2	D	398	TYR	3.5
1	C	340	SER	3.5
2	D	219	THR	3.5
2	D	115	SER	3.5
2	D	212	PHE	3.5
4	F	101	TYR	3.5
2	D	81	PHE	3.5
2	D	83	GLN	3.4
4	F	172	PHE	3.4
2	D	93	GLY	3.4
4	F	372	THR	3.4
4	F	173	ILE	3.4
4	F	231	ALA	3.4
4	F	163	SER	3.4
2	D	217	LEU	3.3
2	B	247	ASN	3.3
2	D	220	PRO	3.3
4	F	170	LEU	3.3
1	C	97	GLU	3.3
4	F	182	ILE	3.3
1	C	440	VAL	3.3
2	D	396	HIS	3.3
2	D	90	PHE	3.2
2	D	106	TYR	3.2
2	B	278	SER	3.2
2	B	42	LEU	3.2
2	D	246	LEU	3.2
4	F	169	LEU	3.2
2	D	143	THR	3.2
2	D	226	ASN	3.2
2	D	71	GLY	3.2
4	F	133	ALA	3.2
2	D	109	GLY	3.2
2	D	208	TYR	3.1
4	F	362	ALA	3.1
2	D	112	LEU	3.1
2	D	176	SER	3.1
2	D	408	PHE	3.1
2	D	404	ASP	3.0

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Mol	Chain	Res	Type	RSRZ
4	F	256	TYR	3.0
4	F	33	ASP	3.0
4	F	199	PHE	3.0
2	D	14	ASN	3.0
2	D	101	TRP	3.0
4	F	246	GLN	3.0
2	B	55	THR	3.0
4	F	237	THR	3.0
1	C	339	ARG	3.0
4	F	254	GLY	3.0
3	E	141	GLU	3.0
3	E	115	HIS	3.0
2	D	120	VAL	2.9
4	F	179	VAL	2.9
2	B	428	ALA	2.9
2	D	77	ARG	2.9
2	D	356	ILE	2.9
2	D	218	THR	2.9
4	F	188	LYS	2.9
4	F	240	LEU	2.9
2	B	72	THR	2.9
4	F	236	LYS	2.9
2	D	94	GLN	2.9
4	F	129	GLU	2.9
4	F	180	HIS	2.9
2	D	32	PRO	2.9
4	F	92	THR	2.9
4	F	185	TYR	2.9
2	D	386	THR	2.8
4	F	241	THR	2.8
2	D	65	LEU	2.8
2	D	225	LEU	2.8
2	B	245	GLN	2.8
2	D	245	GLN	2.8
2	D	362	LYS	2.8
4	F	74	LYS	2.8
2	B	57	ASN	2.8
2	B	95	SER	2.8
4	F	164	SER	2.8
2	D	96	GLY	2.8
2	D	11	GLN	2.8
2	D	39	ASP	2.8

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Mol	Chain	Res	Type	RSRZ
2	D	84	ILE	2.8
2	D	54	ALA	2.8
2	D	37	HIS	2.8
2	D	140	GLY	2.7
1	C	357	TYR	2.7
2	D	222	TYR	2.7
2	D	110	ALA	2.7
2	D	401	GLU	2.7
2	D	215	LEU	2.7
3	E	139	LEU	2.7
2	D	72	THR	2.7
2	B	280	GLN	2.7
2	D	175	VAL	2.7
4	F	190	LEU	2.7
2	D	9	ALA	2.7
2	D	387	ALA	2.7
2	B	316	ILE	2.7
2	B	323	MET	2.7
4	F	234	GLN	2.7
2	D	56	GLY	2.6
4	F	141	GLY	2.6
4	F	244	CYS	2.6
2	D	6	HIS	2.6
1	A	112	LYS	2.6
2	D	142	GLY	2.6
2	D	273	LEU	2.6
1	A	120	ASP	2.6
2	D	323	MET	2.6
4	F	192	LEU	2.6
3	E	137	LYS	2.6
2	B	277	GLY	2.6
2	D	2	ARG	2.6
4	F	181	VAL	2.6
3	E	62	LYS	2.6
3	E	134	ARG	2.5
2	D	400	GLY	2.5
4	F	334	GLY	2.5
1	A	42	ILE	2.5
4	F	183	GLN	2.5
1	A	282	TYR	2.5
2	D	30	ILE	2.5
1	A	221	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
4	F	320	MET	2.5
2	D	36	TYR	2.5
4	F	227	PRO	2.5
4	F	177	GLY	2.5
2	D	385	PHE	2.5
4	F	128	ARG	2.5
2	D	221	THR	2.5
2	D	360	GLY	2.5
2	B	37	HIS	2.5
1	C	2	ARG	2.5
2	B	75	SER	2.5
2	D	35	SER	2.5
2	D	95	SER	2.5
2	D	290	THR	2.5
4	F	239	HIS	2.4
1	A	66	VAL	2.4
2	D	136	THR	2.4
1	A	113	GLU	2.4
2	D	405	GLU	2.4
2	D	63	ALA	2.4
2	D	78	SER	2.4
2	B	48	ASN	2.4
2	D	102	ALA	2.4
1	C	163	LYS	2.4
2	B	343	GLU	2.4
2	D	392	LYS	2.4
2	B	40	SER	2.4
2	D	67	ASP	2.4
2	D	431	ASP	2.4
4	F	191	LEU	2.4
2	D	59	TYR	2.4
4	F	89	GLU	2.4
1	C	4	CYS	2.3
3	E	135	LYS	2.3
2	D	57	ASN	2.3
3	E	7	GLU	2.3
2	D	40	SER	2.3
2	D	64	ILE	2.3
2	D	187	LEU	2.3
4	F	171	ASP	2.3
2	D	69	GLU	2.3
4	F	257	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
2	D	97	ALA	2.3
3	E	130	ALA	2.3
2	D	399	THR	2.3
2	D	8	GLN	2.3
2	D	381	ILE	2.3
2	D	114	ASP	2.3
3	E	128	LYS	2.3
2	D	113	VAL	2.3
4	F	242	ASN	2.3
4	F	339	ALA	2.3
2	D	409	THR	2.3
4	F	230	SER	2.3
2	D	361	LEU	2.3
2	B	350	LYS	2.3
1	A	41	THR	2.2
1	A	82	THR	2.2
1	C	44	GLY	2.2
2	D	227	HIS	2.2
2	D	421	GLU	2.2
3	E	45	PRO	2.2
4	F	46	ARG	2.2
4	F	243	HIS	2.2
1	C	1	MET	2.2
2	D	20	PHE	2.2
2	D	171	PRO	2.2
4	F	229	ASN	2.2
2	D	135	LEU	2.2
4	F	361	LEU	2.2
2	D	70	PRO	2.2
4	F	306	HIS	2.2
2	B	71	GLY	2.2
2	D	182	PRO	2.2
2	B	54	ALA	2.1
2	D	210	ILE	2.1
4	F	330	ILE	2.1
4	F	95	PRO	2.1
4	F	196	HIS	2.1
4	F	259	GLY	2.1
2	B	282	ARG	2.1
2	D	188	SER	2.1
2	D	403	MET	2.1
4	F	45	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
4	F	252	ASN	2.1
2	D	34	GLY	2.1
4	F	31	ARG	2.1
4	F	81	ILE	2.1
4	F	100	ILE	2.1
1	A	164	LYS	2.1
2	D	19	LYS	2.1
3	E	25	LYS	2.1
2	D	61	PRO	2.1
4	F	85	PRO	2.1
2	B	170	MET	2.1
2	D	228	LEU	2.1
2	B	56	GLY	2.1
2	D	79	GLY	2.1
2	D	33	THR	2.1
2	D	383	GLU	2.1
1	A	46	ASP	2.1
1	C	245	ASP	2.1
2	B	427	ASP	2.1
2	D	41	ASP	2.1
2	D	224	ASP	2.1
4	F	340	GLN	2.0
2	D	86	ARG	2.0
2	D	390	ARG	2.0
4	F	138	ARG	2.0
4	F	232	ASN	2.0
1	A	262	TYR	2.0
1	A	345	ASP	2.0
4	F	90	SER	2.0
4	F	189	PRO	2.0
2	B	92	PHE	2.0
2	D	66	VAL	2.0
4	F	327	VAL	2.0
1	A	97	GLU	2.0
2	D	184	ASN	2.0
2	D	204	ASN	2.0
4	F	24	THR	2.0
1	A	346	TRP	2.0
2	D	87	PRO	2.0
3	E	26	PRO	2.0
2	B	281	TYR	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](#)

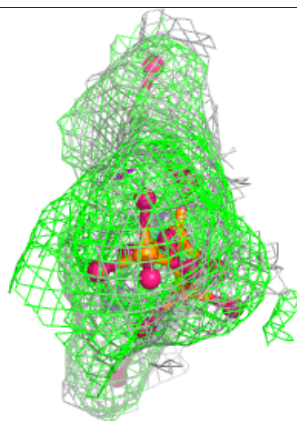
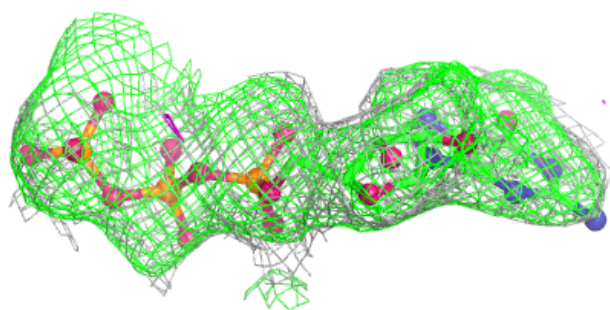
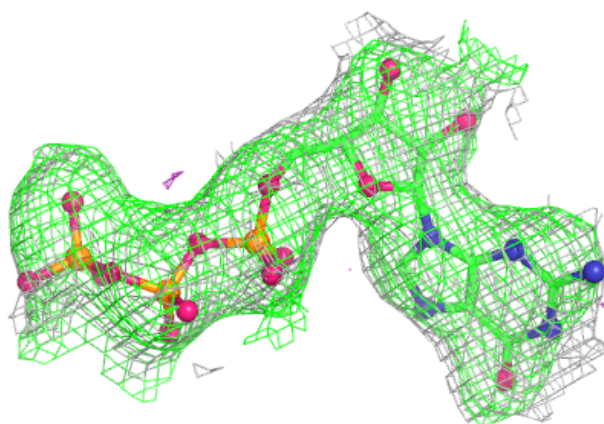
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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
5	GTP	A	501	32/32	-	-	41,42,44,45	32
5	GTP	C	501	32/32	-	-	34,36,38,39	32
6	CA	A	502	1/1	-	-	77,77,77,77	1
6	CA	C	502	1/1	-	-	61,61,61,61	1
7	MG	A	503	1/1	-	-	46,46,46,46	1
7	MG	B	504	1/1	-	-	52,52,52,52	1
7	MG	C	503	1/1	-	-	39,39,39,39	1
8	GDP	B	501	28/28	-	-	38,44,46,47	28
8	GDP	D	501	28/28	-	-	74,83,86,87	28
9	MES	B	502	12/12	-	-	43,44,47,48	12
9	MES	B	503	12/12	-	-	60,60,61,61	12
10	A1EU6	B	505	23/23	0.91	0.13	40,49,59,91	0
11	ACP	F	401	31/31	-	-	91,102,125,127	45

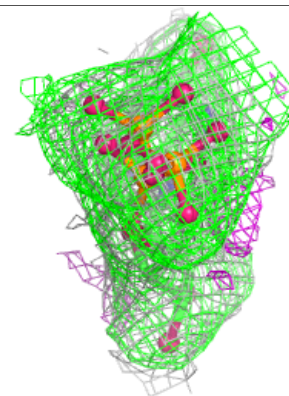
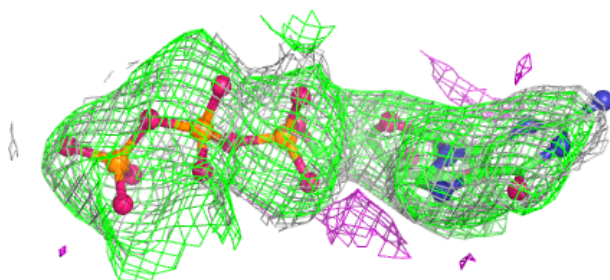
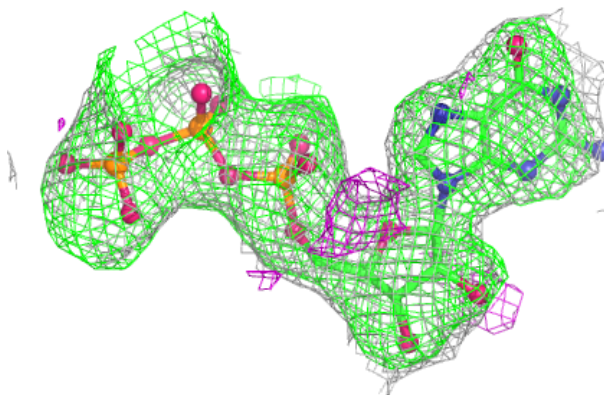
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 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)

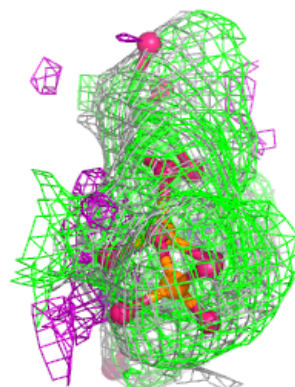
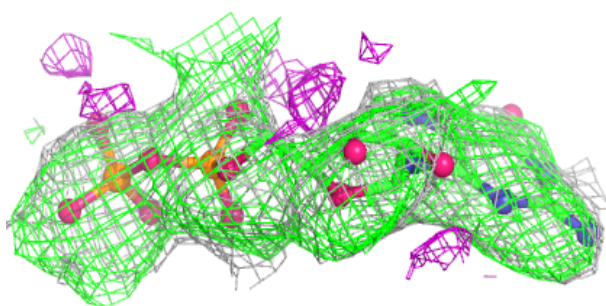
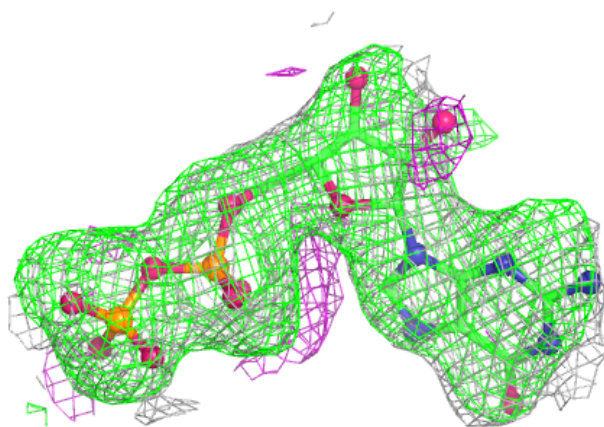
**Electron density around GTP C 501:**

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



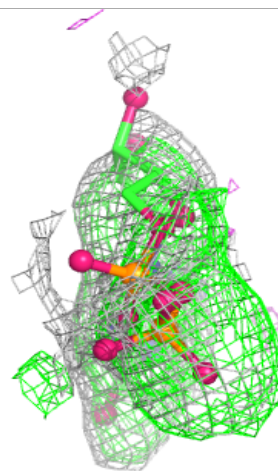
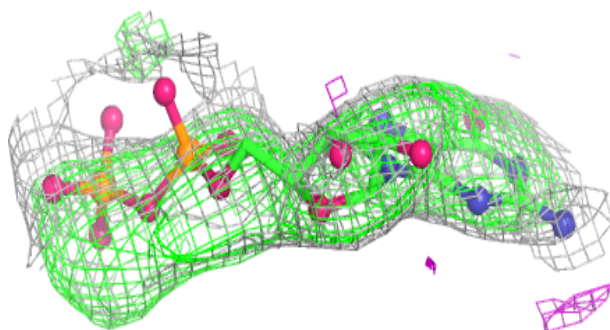
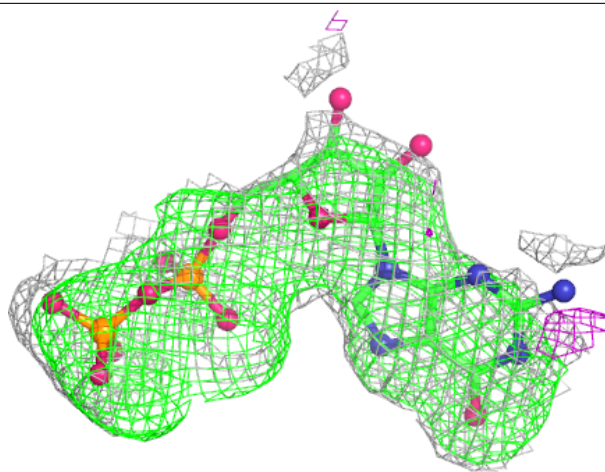
Electron density around GDP B 501:

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



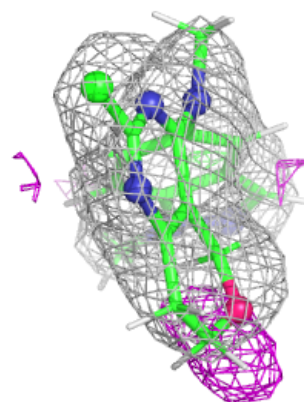
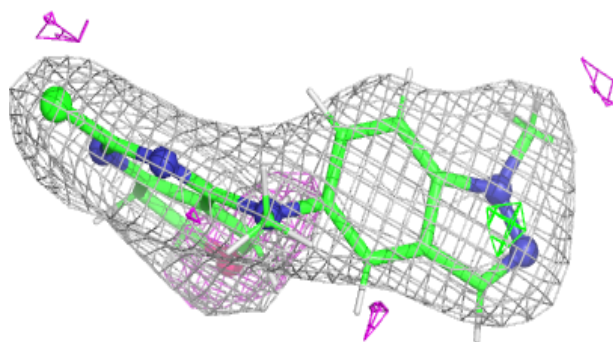
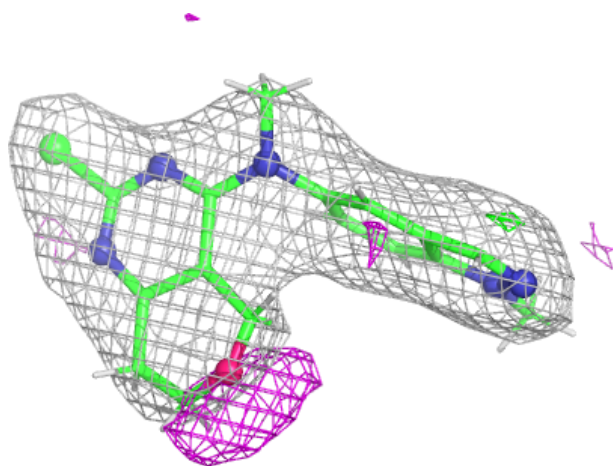
Electron density around GDP D 501:

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



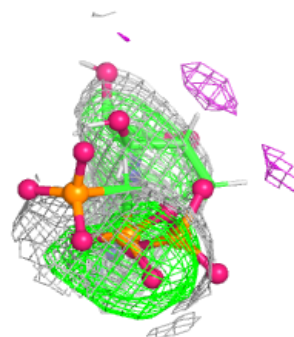
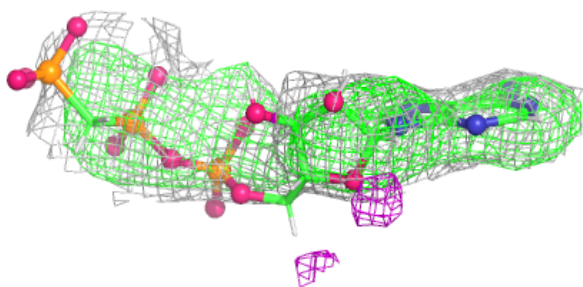
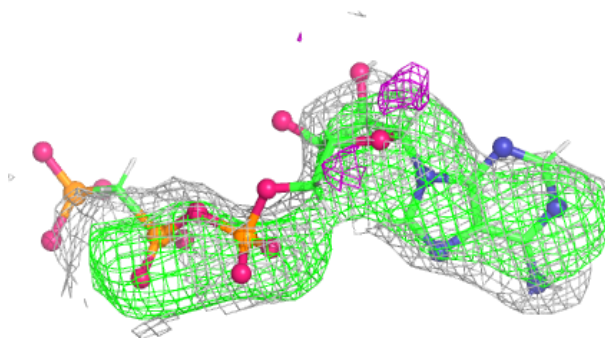
Electron density around A1EU6 B 505:

$2mF_o-DF_c$ (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)



6.5 Other polymers [i](#)

There are no such residues in this entry.