



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 06:00 AM UTC

PDB ID : 9N2S / pdb_00009n2s
Title : Structure of GDP-bound GM4951_N86K mutant
Authors : Raj, R.; Beutler, B.
Deposited on : 2025-01-29
Resolution : 3.31 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

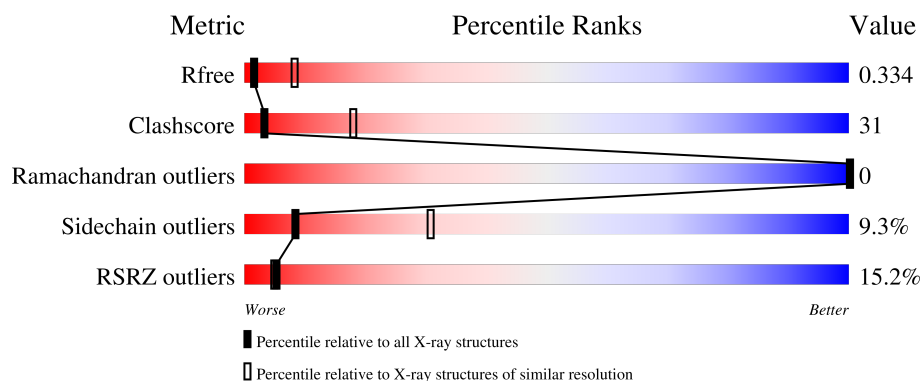
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.31 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	1153 (3.34-3.30)
Clashscore	190562	1193 (3.34-3.30)
Ramachandran outliers	187476	1172 (3.34-3.30)
Sidechain outliers	187428	1171 (3.34-3.30)
RSRZ outliers	180081	1153 (3.34-3.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	416	
1	B	416	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 6117 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

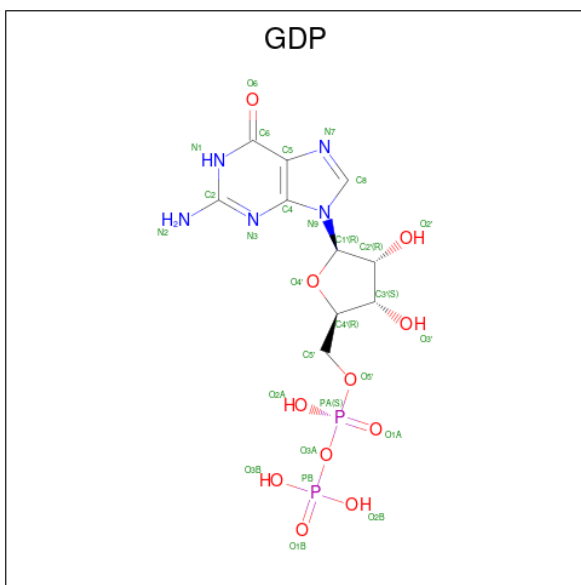
- Molecule 1 is a protein called Interferon inducible GTPase 1C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	381	Total	C	N	O	S	0	0	0
			3007	1930	498	565	14			
1	A	382	Total	C	N	O	S	0	0	0
			3038	1952	501	570	15			

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-9	HIS	-	expression tag	UNP Q3UED7
B	-8	HIS	-	expression tag	UNP Q3UED7
B	-7	HIS	-	expression tag	UNP Q3UED7
B	-6	HIS	-	expression tag	UNP Q3UED7
B	-5	HIS	-	expression tag	UNP Q3UED7
B	-4	HIS	-	expression tag	UNP Q3UED7
B	-3	SER	-	expression tag	UNP Q3UED7
B	-2	GLN	-	expression tag	UNP Q3UED7
B	-1	ASP	-	expression tag	UNP Q3UED7
B	0	PRO	-	expression tag	UNP Q3UED7
B	86	LYS	ASN	engineered mutation	UNP Q3UED7
A	-9	HIS	-	expression tag	UNP Q3UED7
A	-8	HIS	-	expression tag	UNP Q3UED7
A	-7	HIS	-	expression tag	UNP Q3UED7
A	-6	HIS	-	expression tag	UNP Q3UED7
A	-5	HIS	-	expression tag	UNP Q3UED7
A	-4	HIS	-	expression tag	UNP Q3UED7
A	-3	SER	-	expression tag	UNP Q3UED7
A	-2	GLN	-	expression tag	UNP Q3UED7
A	-1	ASP	-	expression tag	UNP Q3UED7
A	0	PRO	-	expression tag	UNP Q3UED7
A	86	LYS	ASN	engineered mutation	UNP Q3UED7

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (CCD ID: GDP) (formula: C₁₀H₁₅N₅O₁₁P₂) (labeled as "Ligand of Interest" by depositor).



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

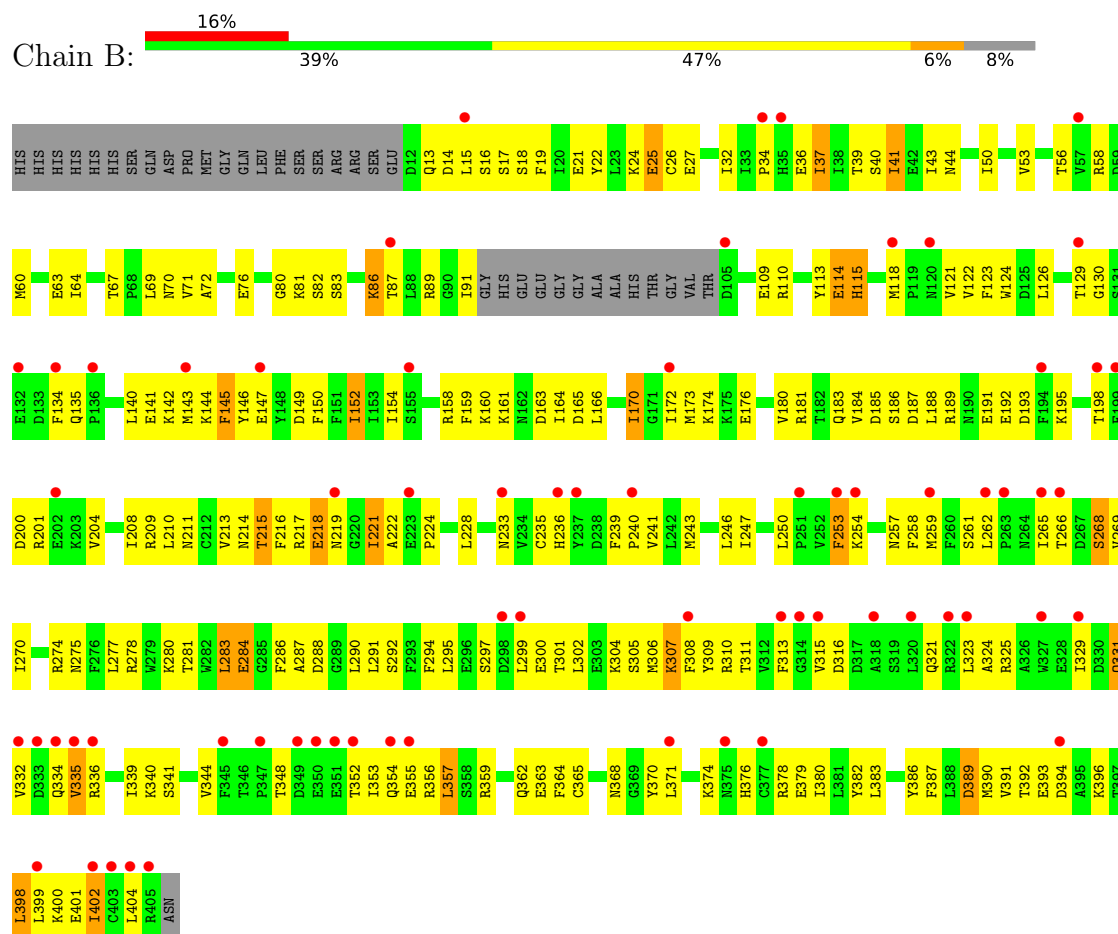
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	7	Total O 7 7	0	0
3	A	9	Total O 9 9	0	0

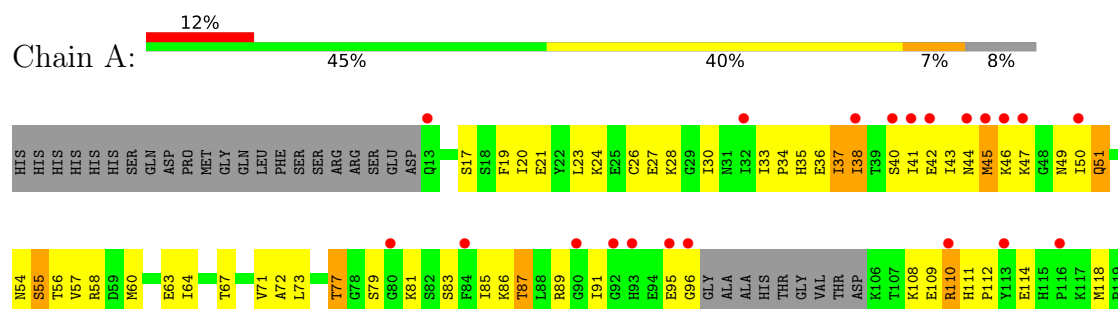
3 Residue-property plots

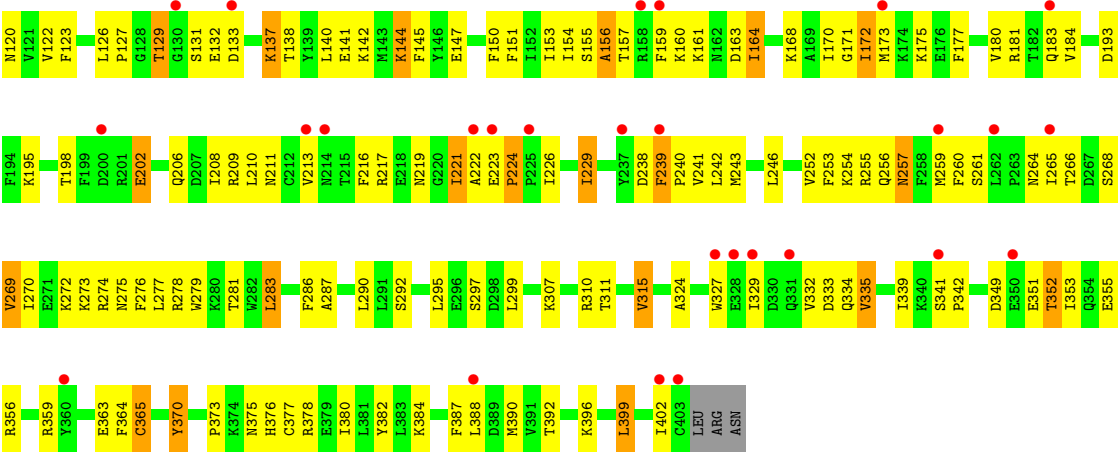
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Interferon inducible GTPase 1C



• Molecule 1: Interferon inducible GTPase 1C





4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	54.55Å 67.36Å 70.93Å 106.58° 100.73° 106.78°	Depositor
Resolution (Å)	47.91 – 3.31 47.91 – 3.31	Depositor EDS
% Data completeness (in resolution range)	74.7 (47.91-3.31) 75.0 (47.91-3.31)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.48 (at 3.33Å)	Xtriage
Refinement program	REFMAC 5.8.0349	Depositor
R, R_{free}	0.275 , 0.327 0.277 , 0.334	Depositor DCC
R_{free} test set	467 reflections (3.52%)	wwPDB-VP
Wilson B-factor (Å ²)	40.6	Xtriage
Anisotropy	0.085	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 49.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.82	EDS
Total number of atoms	6117	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.31% 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

5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.57	0/3104	1.14	14/4201 (0.3%)
1	B	0.59	0/3069	1.19	15/4156 (0.4%)
All	All	0.58	0/6173	1.17	29/8357 (0.3%)

There are no bond length outliers.

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	142	LYS	N-CA-C	-10.84	99.25	111.71
1	A	257	ASN	N-CA-C	-8.57	100.94	111.40
1	B	253	PHE	N-CA-C	-7.59	104.54	113.88
1	B	218	GLU	N-CA-C	-7.47	100.18	110.35
1	A	87	THR	N-CA-C	-7.41	103.14	111.07
1	A	402	ILE	N-CA-C	-7.36	105.55	112.83
1	A	172	ILE	N-CA-C	-7.11	103.60	110.42
1	A	335	VAL	N-CA-C	7.09	121.97	112.04
1	B	268	SER	N-CA-C	-6.80	103.10	111.33
1	A	221	ILE	CA-C-O	-6.78	116.12	120.66
1	A	224	PRO	N-CA-C	-6.76	102.45	110.70
1	A	211	ASN	N-CA-C	-6.69	103.91	111.07
1	B	163	ASP	N-CA-C	-6.46	103.74	111.69
1	A	261	SER	N-CA-C	-6.25	104.55	111.36
1	B	357	LEU	N-CA-C	-6.17	104.64	111.36
1	B	173	MET	N-CA-C	-6.16	105.86	113.19
1	A	157	THR	N-CA-C	6.13	118.28	107.61
1	A	156	ALA	N-CA-C	-6.12	105.76	113.72
1	B	334	GLN	N-CA-C	-6.11	105.95	113.41
1	A	292	SER	N-CA-C	-6.11	103.25	112.04
1	B	307	LYS	N-CA-C	-5.90	104.75	111.07
1	B	115	HIS	N-CA-C	-5.57	102.72	109.57

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	340	LYS	N-CA-C	5.55	118.52	111.69
1	B	109	GLU	N-CA-C	-5.40	101.51	109.18
1	B	398	LEU	N-CA-C	-5.31	106.74	113.43
1	A	87	THR	N-CA-CB	5.27	117.66	110.01
1	B	379	GLU	N-CA-C	-5.23	105.26	111.69
1	A	370	TYR	N-CA-C	-5.17	102.87	110.52
1	B	165	ASP	N-CA-C	5.05	116.60	111.14

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3038	0	2937	179	0
1	B	3007	0	2899	188	0
2	A	28	0	12	2	0
2	B	28	0	12	3	0
3	A	9	0	0	0	0
3	B	7	0	0	0	0
All	All	6117	0	5860	366	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 31.

All (366) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:ILE:HD11	1:A:334:GLN:CB	1.64	1.28
1:A:329:ILE:CD1	1:A:334:GLN:HB2	1.66	1.24
1:A:131:SER:O	1:A:132:GLU:HG2	1.39	1.20
1:B:81:LYS:HB2	1:B:154:ILE:HD11	1.20	1.18
1:A:329:ILE:HD11	1:A:334:GLN:HB2	1.15	1.10
1:B:161:LYS:O	1:B:164:ILE:HG13	1.52	1.08
1:B:81:LYS:HB2	1:B:154:ILE:CD1	1.85	1.07

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:329:ILE:HD11	1:A:334:GLN:CG	1.97	0.94
1:B:70:ASN:HD22	1:B:122:VAL:CG2	1.81	0.93
1:B:315:VAL:HG13	1:B:339:ILE:HD12	1.50	0.93
1:A:131:SER:O	1:A:132:GLU:CG	2.20	0.89
1:B:387:PHE:O	1:B:391:VAL:HG22	1.76	0.86
1:B:239:PHE:HB3	1:B:240:PRO:HD3	1.59	0.85
1:B:353:ILE:O	1:B:356:ARG:HG2	1.77	0.85
1:A:329:ILE:HD13	1:A:334:GLN:HB2	1.57	0.85
1:A:329:ILE:CD1	1:A:334:GLN:CB	2.39	0.82
1:A:260:PHE:HA	1:A:273:LYS:HE2	1.62	0.82
1:B:365:CYS:HA	1:B:370:TYR:HB2	1.59	0.81
1:A:329:ILE:HD11	1:A:334:GLN:HG3	1.63	0.80
1:A:259:MET:SD	1:A:272:LYS:HB3	2.23	0.77
1:A:60:MET:SD	1:A:279:TRP:HZ2	2.08	0.77
1:B:246:LEU:O	1:B:250:LEU:HG	1.85	0.76
1:A:274:ARG:HH21	1:A:275:ASN:HD21	1.32	0.76
1:A:222:ALA:C	1:A:223:GLU:OE1	2.29	0.76
1:A:222:ALA:CB	1:A:223:GLU:OE1	2.34	0.76
1:A:277:LEU:O	1:A:281:THR:HG23	1.87	0.75
1:B:280:LYS:O	1:B:284:GLU:HG2	1.87	0.74
1:B:297:SER:HB3	1:B:300:GLU:HG3	1.67	0.74
1:A:131:SER:C	1:A:132:GLU:HG2	2.12	0.74
1:B:329:ILE:HG21	1:B:335:VAL:HG23	1.69	0.73
1:B:58:ARG:NH1	1:B:291:LEU:HD11	2.02	0.73
1:B:70:ASN:ND2	1:B:122:VAL:CG2	2.51	0.73
1:A:50:ILE:HD11	1:A:290:LEU:HD13	1.71	0.72
1:A:324:ALA:HB1	1:A:329:ILE:HG23	1.72	0.70
1:B:277:LEU:O	1:B:281:THR:HG23	1.91	0.70
1:B:58:ARG:HH12	1:B:291:LEU:HD11	1.56	0.69
1:B:81:LYS:CB	1:B:154:ILE:HD11	2.12	0.69
1:B:233:ASN:HB3	1:B:236:HIS:CD2	2.28	0.69
1:B:140:LEU:HD22	1:B:145:PHE:HB2	1.74	0.68
1:A:145:PHE:HE1	1:A:170:ILE:HG23	1.58	0.68
1:B:69:LEU:CD2	1:B:258:PHE:HB2	2.24	0.67
1:B:221:ILE:HG22	1:B:222:ALA:H	1.60	0.67
1:A:60:MET:SD	1:A:279:TRP:CZ2	2.88	0.67
1:A:19:PHE:HB2	1:A:60:MET:HE1	1.74	0.67
1:A:216:PHE:HB3	1:A:221:ILE:HG23	1.77	0.67
1:B:89:ARG:NH2	1:B:114:GLU:O	2.25	0.67
1:B:185:ASP:OD1	1:B:186:SER:N	2.29	0.66
1:B:110:ARG:HD2	1:B:124:TRP:CE3	2.31	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:184:VAL:HG21	1:B:228:LEU:HB3	1.76	0.66
1:B:191:GLU:O	1:B:195:LYS:N	2.28	0.66
1:A:137:LYS:O	1:A:140:LEU:N	2.28	0.65
1:B:64:ILE:HG22	1:B:253:PHE:CD1	2.31	0.65
1:A:184:VAL:HG13	1:A:208:ILE:HD13	1.78	0.65
1:A:145:PHE:CZ	1:A:175:LYS:HG3	2.32	0.65
1:A:64:ILE:HD11	1:A:253:PHE:CE1	2.31	0.64
1:B:150:PHE:CD1	1:B:250:LEU:HD21	2.33	0.64
1:B:266:THR:O	1:B:269:VAL:HB	1.97	0.64
1:A:274:ARG:HG3	1:A:388:LEU:HG	1.80	0.64
1:A:83:SER:O	1:A:87:THR:HG23	1.97	0.64
1:B:60:MET:O	1:B:64:ILE:HG23	1.98	0.64
1:A:264:ASN:HA	1:A:269:VAL:HG21	1.80	0.64
1:A:54:ASN:HD21	1:A:58:ARG:NH1	1.97	0.63
1:A:365:CYS:HA	1:A:370:TYR:HB2	1.80	0.63
1:B:144:LYS:CB	1:B:147:GLU:HB2	2.28	0.63
1:B:81:LYS:CB	1:B:154:ILE:CD1	2.70	0.63
1:B:353:ILE:O	1:B:357:LEU:HG	1.99	0.63
1:A:57:VAL:HG11	1:A:287:ALA:HB2	1.81	0.62
1:B:393:GLU:O	1:B:396:LYS:N	2.32	0.62
1:B:390:MET:O	1:B:393:GLU:HB2	2.00	0.62
1:A:86:LYS:HG3	1:A:96:GLY:HA2	1.82	0.62
1:A:140:LEU:HD22	1:A:145:PHE:CD1	2.36	0.61
1:A:265:ILE:HG13	1:A:266:THR:H	1.65	0.61
1:B:83:SER:O	1:B:87:THR:HG23	2.01	0.61
1:B:259:MET:O	1:B:262:LEU:HG	2.00	0.61
1:B:311:THR:HA	1:B:316:ASP:HB2	1.81	0.61
1:B:336:ARG:O	1:B:339:ILE:HG12	2.01	0.61
1:A:38:ILE:HG12	1:A:286:PHE:HZ	1.66	0.61
1:B:37:ILE:O	1:B:41:ILE:HD12	2.01	0.61
1:B:69:LEU:HD21	1:B:258:PHE:HB2	1.83	0.61
1:A:120:ASN:HD21	1:A:257:ASN:ND2	1.98	0.60
1:A:160:LYS:O	1:A:164:ILE:HG23	2.01	0.60
1:A:114:GLU:HG3	1:A:122:VAL:HG22	1.84	0.60
1:A:222:ALA:HB3	1:A:223:GLU:OE1	2.02	0.59
1:B:22:TYR:HE1	1:B:32:ILE:HG13	1.68	0.59
1:A:55:SER:O	1:A:56:THR:C	2.45	0.59
1:B:332:VAL:HA	1:B:335:VAL:HB	1.83	0.59
1:B:19:PHE:HE1	1:B:37:ILE:HG21	1.68	0.59
1:B:341:SER:O	1:B:344:VAL:HG23	2.03	0.58
1:B:353:ILE:O	1:B:356:ARG:CG	2.49	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:SER:HA	1:A:390:MET:SD	2.44	0.58
1:B:140:LEU:HD11	1:B:170:ILE:HG12	1.84	0.58
1:A:110:ARG:HB3	1:A:126:LEU:CD2	2.34	0.58
1:A:332:VAL:O	1:A:335:VAL:HG12	2.03	0.58
1:A:352:THR:O	1:A:355:GLU:N	2.37	0.58
1:B:353:ILE:HD12	1:B:356:ARG:HD2	1.85	0.58
1:A:154:ILE:HA	1:A:180:VAL:O	2.02	0.58
1:A:67:THR:CG2	1:A:254:LYS:HD3	2.34	0.58
1:B:134:PHE:O	1:B:135:GLN:C	2.46	0.57
1:A:108:LYS:C	1:A:127:PRO:HG3	2.29	0.57
1:A:352:THR:O	1:A:353:ILE:C	2.45	0.57
1:B:58:ARG:HD3	1:B:287:ALA:HB1	1.86	0.57
1:B:292:SER:C	1:B:294:PHE:H	2.12	0.57
1:A:222:ALA:O	1:A:223:GLU:CD	2.48	0.57
1:A:34:PRO:HB2	1:A:37:ILE:HB	1.86	0.57
1:B:400:LYS:O	1:B:404:LEU:HG	2.03	0.57
1:A:270:ILE:HG22	1:A:392:THR:HG23	1.87	0.57
1:B:81:LYS:HB2	1:B:154:ILE:HD13	1.85	0.57
1:B:274:ARG:O	1:B:278:ARG:HG3	2.05	0.57
1:B:315:VAL:HG11	1:B:341:SER:HB3	1.87	0.57
1:B:359:ARG:O	1:B:363:GLU:HG3	2.05	0.56
1:B:64:ILE:HG22	1:B:253:PHE:HD1	1.71	0.56
1:B:306:MET:HE1	1:B:387:PHE:HB3	1.88	0.56
1:B:323:LEU:HD22	1:B:402:ILE:HD11	1.87	0.56
1:B:266:THR:HG22	1:B:268:SER:H	1.71	0.55
1:B:82:SER:O	1:B:86:LYS:HG2	2.05	0.55
1:B:214:ASN:O	1:B:215:THR:C	2.49	0.55
1:B:306:MET:CE	1:B:387:PHE:HB3	2.36	0.55
1:B:299:LEU:O	1:B:300:GLU:C	2.49	0.55
1:B:22:TYR:CE1	1:B:32:ILE:HG13	2.41	0.55
1:B:389:ASP:O	1:B:393:GLU:HG3	2.07	0.55
1:A:209:ARG:O	1:A:213:VAL:HG23	2.07	0.55
1:B:265:ILE:C	1:B:399:LEU:HD21	2.33	0.54
1:A:153:ILE:HG22	1:A:159:PHE:CE1	2.43	0.54
1:B:70:ASN:HD22	1:B:122:VAL:HG22	1.67	0.54
1:B:192:GLU:O	1:B:193:ASP:C	2.50	0.54
1:B:15:LEU:HD21	1:B:53:VAL:HG22	1.89	0.54
1:A:256:GLN:HG2	1:A:276:PHE:CD1	2.43	0.54
1:A:270:ILE:HD11	1:A:399:LEU:HD22	1.89	0.54
1:B:115:HIS:HB3	1:B:118:MET:O	2.07	0.54
1:B:286:PHE:O	1:B:290:LEU:HG	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:ALA:HB1	1:B:126:LEU:CD1	2.37	0.54
1:B:89:ARG:NH1	1:B:113:TYR:HB3	2.23	0.54
1:B:301:THR:O	1:B:305:SER:OG	2.25	0.54
1:B:19:PHE:CD2	1:B:283:LEU:HD11	2.43	0.53
1:B:69:LEU:HD12	1:B:149:ASP:CG	2.34	0.53
1:A:89:ARG:NH1	1:A:91:ILE:HD11	2.22	0.53
1:A:144:LYS:HB2	1:A:147:GLU:CD	2.33	0.53
1:A:110:ARG:HB3	1:A:126:LEU:HD22	1.89	0.53
1:B:352:THR:HG23	1:B:355:GLU:H	1.73	0.53
1:A:242:LEU:O	1:A:246:LEU:HG	2.09	0.53
1:A:60:MET:SD	1:A:283:LEU:HD21	2.49	0.53
1:A:44:ASN:HB3	1:A:49:ASN:O	2.09	0.53
1:B:22:TYR:CZ	1:B:34:PRO:HG3	2.44	0.53
1:B:24:LYS:O	1:B:27:GLU:HG2	2.09	0.53
1:A:17:SER:O	1:A:21:GLU:HG3	2.09	0.52
1:A:44:ASN:O	1:A:47:LYS:HG2	2.09	0.52
1:B:63:GLU:OE1	1:B:253:PHE:CD2	2.63	0.52
1:A:111:HIS:HD2	1:A:112:PRO:HD2	1.74	0.52
1:B:14:ASP:C	1:B:16:SER:H	2.16	0.52
1:B:64:ILE:HD11	1:B:280:LYS:HD2	1.90	0.52
1:B:243:MET:HA	1:B:246:LEU:HD12	1.92	0.52
1:A:222:ALA:C	1:A:223:GLU:CD	2.78	0.52
1:A:270:ILE:CG2	1:A:392:THR:HG23	2.40	0.52
1:B:299:LEU:O	1:B:302:LEU:N	2.42	0.52
1:A:239:PHE:O	1:A:243:MET:HG2	2.10	0.52
1:A:259:MET:HE1	1:A:276:PHE:HB2	1.92	0.52
1:A:195:LYS:HB3	1:A:198:THR:OG1	2.09	0.52
1:A:238:ASP:O	1:A:241:VAL:HG12	2.11	0.51
1:A:274:ARG:HA	1:A:388:LEU:HD11	1.93	0.51
1:A:20:ILE:HG22	1:A:24:LYS:HE3	1.91	0.51
1:B:161:LYS:O	1:B:164:ILE:CG1	2.43	0.51
1:A:131:SER:C	1:A:133:ASP:H	2.18	0.51
1:A:375:ASN:ND2	1:A:378:ARG:H	2.08	0.51
1:B:200:ASP:O	1:B:201:ARG:C	2.51	0.51
1:B:209:ARG:O	1:B:213:VAL:HG23	2.10	0.51
1:A:85:ILE:HG22	1:A:89:ARG:HD2	1.92	0.51
1:A:324:ALA:HB1	1:A:329:ILE:CG2	2.38	0.51
1:A:387:PHE:O	1:A:388:LEU:C	2.54	0.51
1:A:110:ARG:HH12	1:A:144:LYS:HZ2	1.58	0.51
1:B:121:VAL:HG21	1:B:261:SER:HB3	1.93	0.51
1:B:152:ILE:HG22	1:B:154:ILE:HG23	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:288:ASP:O	1:B:295:LEU:HD11	2.11	0.51
1:B:306:MET:HE1	1:B:391:VAL:HG13	1.92	0.51
1:B:158:ARG:HG2	1:B:211:ASN:HB3	1.91	0.50
1:B:383:LEU:O	1:B:386:TYR:HB3	2.11	0.50
1:A:72:ALA:HB1	1:A:126:LEU:HD11	1.94	0.50
1:B:26:CYS:O	1:B:275:ASN:HB3	2.11	0.50
1:B:339:ILE:HB	1:B:394:ASP:CG	2.36	0.50
1:B:181:ARG:NH2	1:B:187:ASP:OD2	2.31	0.50
1:A:352:THR:HB	1:A:355:GLU:HG3	1.93	0.50
1:A:392:THR:O	1:A:396:LYS:HG3	2.11	0.50
1:A:85:ILE:HG22	1:A:89:ARG:CD	2.42	0.50
1:A:145:PHE:CE1	1:A:170:ILE:HG23	2.41	0.50
1:A:140:LEU:HD22	1:A:145:PHE:HD1	1.77	0.50
1:B:353:ILE:HG23	1:B:354:GLN:HE21	1.76	0.49
1:A:170:ILE:CG2	1:A:175:LYS:HB2	2.42	0.49
1:A:72:ALA:HB1	1:A:126:LEU:CD1	2.42	0.49
1:A:222:ALA:HB1	1:A:223:GLU:OE1	2.11	0.49
1:B:80:GLY:HA2	2:B:501:GDP:O1A	2.12	0.49
1:A:137:LYS:O	1:A:138:THR:C	2.55	0.49
1:A:154:ILE:HG12	1:A:180:VAL:HB	1.95	0.49
1:B:149:ASP:OD2	1:B:254:LYS:HE3	2.12	0.49
1:B:324:ALA:O	1:B:325:ARG:C	2.56	0.49
1:A:373:PRO:HG3	1:A:382:TYR:CD2	2.47	0.49
1:A:333:ASP:O	1:A:334:GLN:C	2.55	0.49
1:B:89:ARG:HG2	1:B:123:PHE:CE1	2.48	0.49
1:A:223:GLU:HG2	1:A:223:GLU:O	2.13	0.49
1:A:43:ILE:HA	1:A:46:LYS:HE2	1.94	0.48
1:A:170:ILE:HG22	1:A:175:LYS:HB2	1.94	0.48
1:B:21:GLU:O	1:B:25:GLU:HG2	2.14	0.48
1:B:70:ASN:ND2	1:B:122:VAL:HG21	2.28	0.48
1:B:216:PHE:CE1	1:B:224:PRO:HG3	2.48	0.48
1:A:274:ARG:O	1:A:278:ARG:HG3	2.14	0.48
1:A:265:ILE:HG13	1:A:266:THR:N	2.27	0.48
1:B:310:ARG:NH2	1:B:315:VAL:O	2.47	0.48
1:B:43:ILE:HG13	1:B:44:ASN:N	2.27	0.48
1:B:70:ASN:HD22	1:B:122:VAL:HG23	1.72	0.48
1:B:164:ILE:HG22	1:B:216:PHE:CE1	2.49	0.48
1:B:391:VAL:O	1:B:392:THR:C	2.56	0.48
1:B:364:PHE:O	1:B:368:ASN:ND2	2.40	0.48
1:A:252:VAL:HA	1:A:255:ARG:HD2	1.96	0.48
1:B:110:ARG:HB3	1:B:126:LEU:HD22	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:ILE:CD1	1:A:219:ASN:HB3	2.44	0.47
1:B:118:MET:HE1	1:B:257:ASN:HA	1.96	0.47
1:A:57:VAL:CG1	1:A:287:ALA:HB2	2.44	0.47
1:A:161:LYS:HB3	1:A:219:ASN:ND2	2.29	0.47
1:A:266:THR:HG22	1:A:268:SER:H	1.79	0.47
1:A:71:VAL:HG13	1:A:150:PHE:CE2	2.49	0.47
1:B:184:VAL:O	1:B:188:LEU:HD13	2.14	0.47
1:B:200:ASP:O	1:B:204:VAL:HG23	2.15	0.47
1:B:239:PHE:HB3	1:B:240:PRO:CD	2.38	0.47
1:B:365:CYS:O	1:B:370:TYR:N	2.40	0.47
1:A:38:ILE:HG23	1:A:286:PHE:HE1	1.79	0.47
1:A:73:LEU:CD1	1:A:123:PHE:HB3	2.45	0.47
1:A:229:ILE:HD12	1:A:239:PHE:CZ	2.49	0.47
1:A:42:GLU:HB3	1:A:46:LYS:HZ3	1.79	0.47
1:A:310:ARG:HE	1:A:315:VAL:HG23	1.80	0.47
1:B:310:ARG:O	1:B:311:THR:C	2.58	0.47
1:A:33:ILE:HB	1:A:35:HIS:CE1	2.50	0.47
1:A:79:SER:HB3	1:A:154:ILE:HG22	1.97	0.47
1:A:274:ARG:O	1:A:388:LEU:HD21	2.16	0.46
1:B:310:ARG:O	1:B:313:PHE:O	2.33	0.46
1:A:269:VAL:CG2	1:A:270:ILE:N	2.78	0.46
1:A:339:ILE:HG13	1:A:342:PRO:CD	2.45	0.46
1:B:374:LYS:HE2	1:A:217:ARG:NH1	2.30	0.46
1:A:50:ILE:HD11	1:A:290:LEU:CD1	2.43	0.46
1:B:141:GLU:C	1:B:143:MET:N	2.67	0.46
1:B:398:LEU:C	1:B:400:LYS:N	2.73	0.46
1:A:156:ALA:CB	1:A:183:GLN:HG3	2.45	0.46
1:A:156:ALA:O	1:A:181:ARG:NH2	2.48	0.46
1:B:183:GLN:HA	2:B:501:GDP:C6	2.50	0.46
1:B:247:ILE:HD11	1:B:262:LEU:CD2	2.46	0.46
1:B:159:PHE:O	1:B:215:THR:HG21	2.15	0.46
1:A:23:LEU:O	1:A:27:GLU:HG3	2.16	0.46
1:A:380:ILE:O	1:A:384:LYS:HG3	2.15	0.46
1:A:85:ILE:CG2	1:A:89:ARG:HD2	2.45	0.46
1:B:63:GLU:O	1:B:67:THR:HG23	2.15	0.46
1:B:150:PHE:CE1	1:B:250:LEU:HD21	2.51	0.46
1:B:308:PHE:O	1:B:309:TYR:C	2.59	0.46
1:A:156:ALA:HB1	1:A:183:GLN:HG3	1.98	0.46
1:B:13:GLN:O	1:B:17:SER:HB2	2.16	0.45
1:A:45:MET:SD	1:A:50:ILE:HB	2.57	0.45
1:A:359:ARG:O	1:A:363:GLU:HG3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:363:GLU:O	1:A:364:PHE:C	2.59	0.45
1:B:329:ILE:HG22	1:B:331:GLN:H	1.82	0.45
1:B:43:ILE:HG13	1:B:44:ASN:ND2	2.31	0.45
1:B:306:MET:HE2	1:B:391:VAL:CG1	2.45	0.45
1:B:40:SER:O	1:B:41:ILE:C	2.60	0.45
1:B:172:ILE:C	1:B:174:LYS:H	2.24	0.45
1:B:71:VAL:HG13	1:B:150:PHE:CE2	2.52	0.45
1:B:114:GLU:HG2	1:B:122:VAL:HG12	1.98	0.45
1:B:306:MET:HE2	1:B:391:VAL:HG11	1.98	0.45
1:A:223:GLU:N	1:A:224:PRO:HD3	2.32	0.45
1:A:310:ARG:HG2	1:A:315:VAL:CG2	2.46	0.45
1:A:375:ASN:HD22	1:A:378:ARG:H	1.63	0.45
1:B:265:ILE:O	1:B:399:LEU:HD21	2.16	0.45
1:A:67:THR:HG22	1:A:254:LYS:HD3	1.97	0.45
1:A:332:VAL:O	1:A:333:ASP:C	2.60	0.45
1:B:32:ILE:HG13	1:B:32:ILE:O	2.17	0.45
1:B:353:ILE:C	1:B:356:ARG:HG2	2.42	0.45
1:A:274:ARG:CG	1:A:388:LEU:HG	2.45	0.45
1:B:306:MET:CE	1:B:391:VAL:CG1	2.95	0.44
1:B:299:LEU:HD23	1:B:299:LEU:HA	1.85	0.44
1:B:129:THR:O	1:B:130:GLY:C	2.60	0.44
1:B:172:ILE:C	1:B:174:LYS:N	2.74	0.44
1:B:63:GLU:O	1:B:64:ILE:C	2.59	0.44
1:A:274:ARG:NH2	1:A:275:ASN:HD21	2.09	0.44
1:A:375:ASN:HD21	1:A:378:ARG:HG2	1.82	0.44
1:B:262:LEU:HD12	1:B:262:LEU:C	2.42	0.44
1:A:89:ARG:HH22	1:A:95:GLU:CD	2.25	0.44
1:B:332:VAL:O	1:B:335:VAL:N	2.50	0.44
1:A:77:THR:HG23	2:A:501:GDP:O2B	2.18	0.44
1:A:19:PHE:HE1	1:A:37:ILE:HG23	1.83	0.44
1:B:185:ASP:OD1	2:B:501:GDP:N2	2.49	0.43
1:A:183:GLN:HG2	2:A:501:GDP:C5	2.53	0.43
1:B:393:GLU:O	1:B:396:LYS:HB2	2.18	0.43
1:A:295:LEU:HD12	1:A:295:LEU:HA	1.80	0.43
1:A:349:ASP:OD1	1:A:349:ASP:N	2.47	0.43
1:B:114:GLU:O	1:B:115:HIS:C	2.61	0.43
1:A:376:HIS:O	1:A:377:CYS:C	2.61	0.43
1:B:166:LEU:O	1:B:170:ILE:HG13	2.18	0.43
1:B:300:GLU:O	1:B:304:LYS:HG3	2.19	0.43
1:B:36:GLU:O	1:B:39:THR:HB	2.19	0.43
1:B:210:LEU:O	1:B:214:ASN:ND2	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:216:PHE:CD2	1:A:224:PRO:HG2	2.52	0.43
1:B:376:HIS:CE1	1:B:380:ILE:HD11	2.53	0.43
1:B:110:ARG:HB2	1:B:126:LEU:HD23	2.01	0.43
1:B:14:ASP:C	1:B:16:SER:N	2.75	0.43
1:A:168:LYS:O	1:A:172:ILE:HG12	2.18	0.43
1:A:243:MET:HA	1:A:246:LEU:HD12	1.99	0.43
1:B:110:ARG:HD2	1:B:124:TRP:CZ3	2.54	0.42
1:A:239:PHE:CB	1:A:240:PRO:HD3	2.49	0.42
1:A:260:PHE:HA	1:A:273:LYS:CE	2.40	0.42
1:B:214:ASN:N	1:B:214:ASN:HD22	2.16	0.42
1:A:327:TRP:N	1:A:327:TRP:CD1	2.87	0.42
1:B:72:ALA:HB1	1:B:126:LEU:HD12	2.00	0.42
1:A:26:CYS:O	1:A:275:ASN:HB3	2.19	0.42
1:A:26:CYS:C	1:A:28:LYS:N	2.78	0.42
1:B:188:LEU:O	1:B:189:ARG:C	2.62	0.42
1:A:351:GLU:CD	1:A:356:ARG:HB2	2.45	0.42
1:B:204:VAL:O	1:B:208:ILE:HG13	2.20	0.42
1:B:307:LYS:O	1:B:308:PHE:C	2.60	0.42
1:A:129:THR:HG23	1:A:163:ASP:OD1	2.19	0.42
1:A:81:LYS:O	1:A:85:ILE:HG13	2.20	0.42
1:A:110:ARG:CZ	1:A:144:LYS:HG2	2.50	0.42
1:A:145:PHE:O	1:A:145:PHE:CG	2.72	0.42
1:B:72:ALA:HB1	1:B:126:LEU:HD11	2.01	0.42
1:B:110:ARG:CB	1:B:126:LEU:CD2	2.97	0.42
1:A:137:LYS:HG2	1:A:138:THR:N	2.35	0.42
1:A:341:SER:N	1:A:342:PRO:CD	2.82	0.42
1:B:270:ILE:HD11	1:B:399:LEU:HD22	2.02	0.42
1:A:209:ARG:O	1:A:210:LEU:C	2.63	0.42
1:A:332:VAL:O	1:A:335:VAL:N	2.49	0.42
1:B:19:PHE:CG	1:B:283:LEU:HD11	2.55	0.41
1:A:164:ILE:HD13	1:A:219:ASN:HB3	2.00	0.41
1:A:154:ILE:HG22	1:A:155:SER:N	2.34	0.41
1:B:352:THR:O	1:B:353:ILE:C	2.63	0.41
1:B:378:ARG:NH2	1:B:382:TYR:OH	2.54	0.41
1:A:140:LEU:HD23	1:A:140:LEU:HA	1.94	0.41
1:B:76:GLU:OE1	1:B:160:LYS:HE3	2.20	0.41
1:A:154:ILE:CG2	1:A:155:SER:N	2.84	0.41
1:A:202:GLU:O	1:A:206:GLN:HG3	2.20	0.41
1:A:238:ASP:O	1:A:239:PHE:C	2.64	0.41
1:A:307:LYS:O	1:A:311:THR:HG23	2.19	0.41
1:B:18:SER:HB3	1:B:37:ILE:HD11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:81:LYS:CA	1:B:154:ILE:CD1	2.98	0.41
1:B:188:LEU:HD21	1:B:201:ARG:HG3	2.02	0.41
1:A:44:ASN:O	1:A:49:ASN:N	2.53	0.41
1:A:141:GLU:O	1:A:142:LYS:C	2.63	0.41
1:B:307:LYS:HA	1:B:307:LYS:HD3	1.83	0.41
1:B:353:ILE:HD11	1:B:357:LEU:HD21	2.03	0.41
1:A:38:ILE:HG23	1:A:286:PHE:CE1	2.55	0.41
1:A:171:GLY:C	1:A:173:MET:O	2.64	0.41
1:A:229:ILE:HB	1:A:239:PHE:CD1	2.56	0.41
1:A:278:ARG:HG3	1:A:388:LEU:HD21	2.03	0.41
1:B:25:GLU:HB2	1:B:32:ILE:HD11	2.03	0.41
1:B:214:ASN:C	1:B:216:PHE:N	2.79	0.41
1:B:217:ARG:C	1:B:218:GLU:O	2.61	0.41
1:B:292:SER:C	1:B:294:PHE:N	2.76	0.41
1:B:306:MET:CE	1:B:391:VAL:HG13	2.51	0.41
1:B:331:GLN:HE21	1:B:331:GLN:HB2	1.72	0.41
1:A:109:GLU:N	1:A:127:PRO:HG3	2.35	0.41
1:A:252:VAL:HA	1:A:255:ARG:CD	2.51	0.41
1:B:247:ILE:HG12	1:B:258:PHE:HD2	1.86	0.40
1:A:38:ILE:HG12	1:A:286:PHE:CZ	2.52	0.40
1:A:351:GLU:OE1	1:A:356:ARG:NH1	2.53	0.40
1:B:146:TYR:CE1	1:B:147:GLU:HG2	2.55	0.40
1:B:221:ILE:HG22	1:B:222:ALA:N	2.32	0.40
1:A:151:PHE:O	1:A:177:PHE:HA	2.21	0.40
1:B:18:SER:CB	1:B:37:ILE:HD11	2.51	0.40
1:A:387:PHE:O	1:A:390:MET:N	2.54	0.40
1:B:309:TYR:O	1:B:310:ARG:C	2.64	0.40
1:A:19:PHE:CD1	1:A:37:ILE:HG12	2.57	0.40
1:A:51:GLN:O	1:A:55:SER:OG	2.31	0.40
1:B:247:ILE:HG12	1:B:258:PHE:CD2	2.57	0.40
1:A:278:ARG:HG2	1:A:388:LEU:HD23	2.03	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	378/416 (91%)	343 (91%)	35 (9%)	0	100	100
1	B	377/416 (91%)	330 (88%)	47 (12%)	0	100	100
All	All	755/832 (91%)	673 (89%)	82 (11%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	327/382 (86%)	297 (91%)	30 (9%)	8	31
1	B	321/382 (84%)	291 (91%)	30 (9%)	8	31
All	All	648/764 (85%)	588 (91%)	60 (9%)	8	31

All (60) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	25	GLU
1	B	37	ILE
1	B	41	ILE
1	B	50	ILE
1	B	56	THR
1	B	86	LYS
1	B	91	ILE
1	B	114	GLU
1	B	145	PHE
1	B	152	ILE
1	B	170	ILE
1	B	176	GLU
1	B	180	VAL
1	B	198	THR
1	B	215	THR

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Mol	Chain	Res	Type
1	B	219	ASN
1	B	221	ILE
1	B	235	CYS
1	B	241	VAL
1	B	283	LEU
1	B	284	GLU
1	B	321	GLN
1	B	331	GLN
1	B	335	VAL
1	B	348	THR
1	B	362	GLN
1	B	371	LEU
1	B	389	ASP
1	B	401	GLU
1	B	402	ILE
1	A	30	ILE
1	A	36	GLU
1	A	37	ILE
1	A	38	ILE
1	A	40	SER
1	A	41	ILE
1	A	45	MET
1	A	51	GLN
1	A	55	SER
1	A	63	GLU
1	A	77	THR
1	A	110	ARG
1	A	118	MET
1	A	129	THR
1	A	137	LYS
1	A	144	LYS
1	A	164	ILE
1	A	193	ASP
1	A	202	GLU
1	A	226	ILE
1	A	229	ILE
1	A	239	PHE
1	A	269	VAL
1	A	283	LEU
1	A	297	SER
1	A	299	LEU
1	A	315	VAL

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Mol	Chain	Res	Type
1	A	352	THR
1	A	365	CYS
1	A	399	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	44	ASN
1	B	70	ASN
1	B	111	HIS
1	B	214	ASN
1	B	231	ASN
1	B	236	HIS
1	B	264	ASN
1	B	275	ASN
1	B	331	GLN
1	B	361	ASN
1	B	376	HIS
1	A	35	HIS
1	A	44	ASN
1	A	54	ASN
1	A	70	ASN
1	A	111	HIS
1	A	219	ASN
1	A	233	ASN
1	A	257	ASN
1	A	275	ASN
1	A	375	ASN
1	A	376	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](#)

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	GDP	A	501	-	29,30,30	0.58	0	45,47,47	0.60	0
2	GDP	B	501	-	29,30,30	0.76	0	45,47,47	1.36	6 (13%)

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
2	GDP	A	501	-	-	5/16/32/32	0/3/3/3
2	GDP	B	501	-	-	3/16/32/32	0/3/3/3

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	GDP	C5-C4-N3	-4.36	121.45	128.39
2	B	501	GDP	C2-N3-C4	3.63	118.56	112.30
2	B	501	GDP	C6-C5-N7	2.47	134.79	130.29
2	B	501	GDP	N9-C4-N3	2.44	130.83	125.95
2	B	501	GDP	C4-C5-N7	-2.26	107.10	110.67
2	B	501	GDP	C3'-C2'-C1'	2.04	105.32	101.46

There are no chirality outliers.

All (8) torsion outliers are listed below:

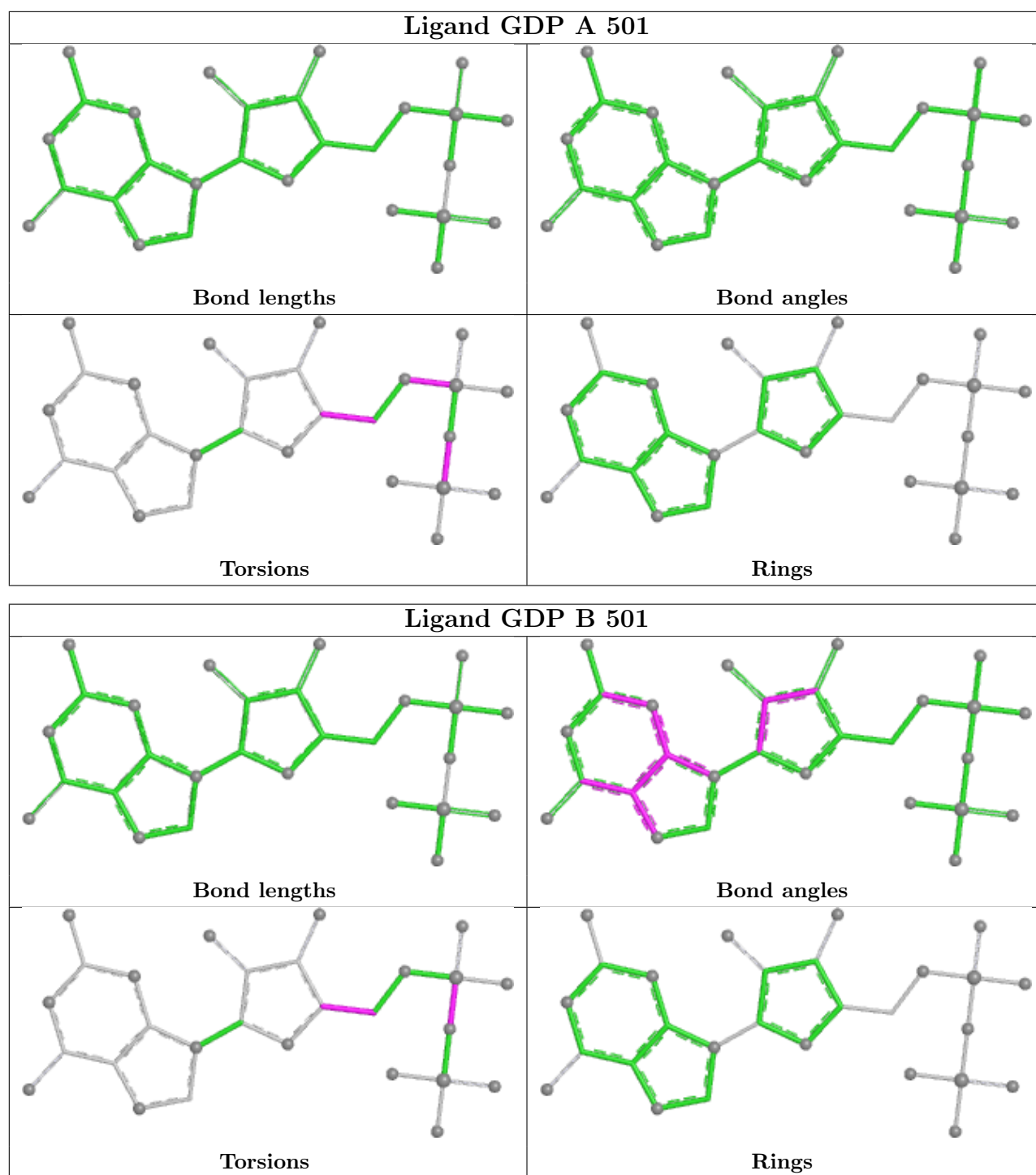
Mol	Chain	Res	Type	Atoms
2	A	501	GDP	C5'-O5'-PA-O3A
2	A	501	GDP	C3'-C4'-C5'-O5'
2	A	501	GDP	O4'-C4'-C5'-O5'
2	A	501	GDP	PA-O3A-PB-O2B
2	A	501	GDP	C5'-O5'-PA-O1A
2	B	501	GDP	O4'-C4'-C5'-O5'
2	B	501	GDP	PB-O3A-PA-O1A
2	B	501	GDP	PB-O3A-PA-O2A

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	GDP	2	0
2	B	501	GDP	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

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	382/416 (91%)	1.07	48 (12%) 8 7	13, 39, 75, 94	0
1	B	381/416 (91%)	1.14	68 (17%) 4 3	12, 41, 85, 105	0
All	All	763/832 (91%)	1.10	116 (15%) 5 5	12, 40, 80, 105	0

All (116) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	403	CYS	4.9
1	B	314	GLY	4.7
1	A	45	MET	4.4
1	B	335	VAL	4.3
1	B	105	ASP	4.3
1	A	90	GLY	4.0
1	A	38	ILE	4.0
1	B	333	ASP	3.9
1	A	130	GLY	3.9
1	B	334	GLN	3.9
1	B	202	GLU	3.9
1	A	183	GLN	3.9
1	B	399	LEU	3.8
1	A	116	PRO	3.7
1	B	233	ASN	3.6
1	B	332	VAL	3.6
1	A	133	ASP	3.6
1	A	222	ALA	3.5
1	A	402	ILE	3.5
1	B	403	CYS	3.5
1	A	262	LEU	3.4
1	B	402	ILE	3.4
1	B	237	TYR	3.3
1	A	200	ASP	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	96	GLY	3.2
1	A	159	PHE	3.2
1	A	173	MET	3.2
1	B	136	PRO	3.2
1	B	308	PHE	3.1
1	B	375	ASN	3.1
1	B	298	ASP	2.9
1	B	134	PHE	2.9
1	B	236	HIS	2.9
1	A	329	ILE	2.9
1	B	320	LEU	2.9
1	A	92	GLY	2.9
1	B	329	ILE	2.8
1	B	240	PRO	2.8
1	B	347	PRO	2.8
1	B	129	THR	2.8
1	A	80	GLY	2.7
1	B	323	LEU	2.7
1	B	143	MET	2.7
1	B	351	GLU	2.7
1	A	388	LEU	2.7
1	B	147	GLU	2.7
1	B	349	ASP	2.7
1	A	95	GLU	2.7
1	A	93	HIS	2.7
1	B	352	THR	2.6
1	A	213	VAL	2.6
1	B	354	GLN	2.6
1	A	214	ASN	2.6
1	B	299	LEU	2.6
1	A	223	GLU	2.6
1	B	35	HIS	2.6
1	B	355	GLU	2.6
1	B	322	ARG	2.6
1	B	336	ARG	2.6
1	B	266	THR	2.6
1	A	360	TYR	2.5
1	B	15	LEU	2.5
1	A	41	ILE	2.5
1	A	50	ILE	2.5
1	B	155	SER	2.5
1	B	199	PHE	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	13	GLN	2.4
1	B	120	ASN	2.4
1	B	327	TRP	2.4
1	B	318	ALA	2.4
1	B	315	VAL	2.4
1	A	47	LYS	2.4
1	B	223	GLU	2.4
1	A	42	GLU	2.4
1	A	327	TRP	2.4
1	B	219	ASN	2.3
1	A	46	LYS	2.3
1	A	44	ASN	2.3
1	A	265	ILE	2.3
1	B	345	PHE	2.3
1	A	259	MET	2.3
1	B	262	LEU	2.3
1	B	263	PRO	2.3
1	B	118	MET	2.2
1	A	84	PHE	2.2
1	A	239	PHE	2.2
1	A	158	ARG	2.2
1	A	40	SER	2.2
1	B	57	VAL	2.2
1	B	34	PRO	2.2
1	B	194	PHE	2.2
1	B	87	THR	2.2
1	B	172	ILE	2.2
1	A	32	ILE	2.2
1	A	328	GLU	2.2
1	A	110	ARG	2.2
1	A	113	TYR	2.1
1	B	253	PHE	2.1
1	B	198	THR	2.1
1	B	254	LYS	2.1
1	B	377	CYS	2.1
1	A	237	TYR	2.1
1	B	313	PHE	2.1
1	A	341	SER	2.1
1	B	265	ILE	2.1
1	B	350	GLU	2.1
1	B	394	ASP	2.1
1	B	259	MET	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	251	PRO	2.0
1	A	225	PRO	2.0
1	A	350	GLU	2.0
1	B	371	LEU	2.0
1	B	404	LEU	2.0
1	A	331	GLN	2.0
1	B	132	GLU	2.0
1	B	405	ARG	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](#)

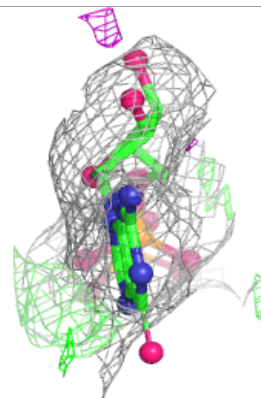
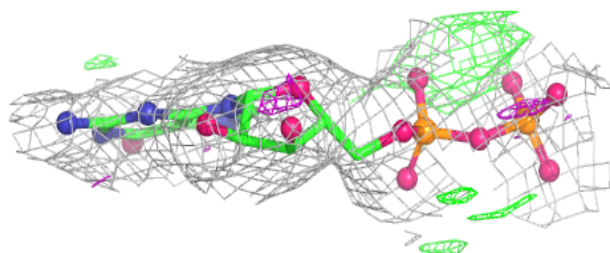
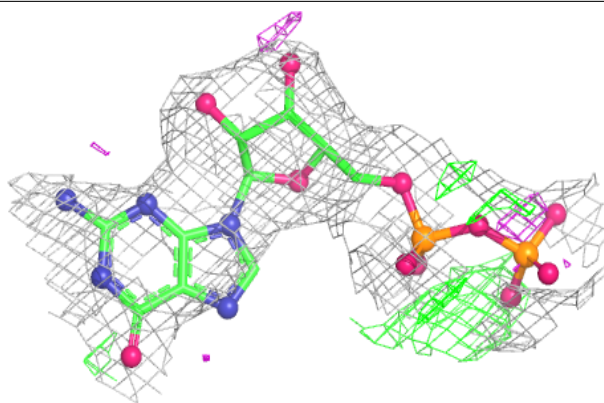
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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
2	GDP	A	501	28/28	0.88	0.14	0,16,54,58	0
2	GDP	B	501	28/28	0.94	0.10	0,0,0,0	0

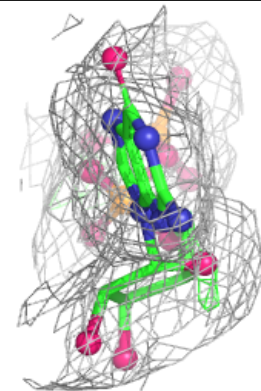
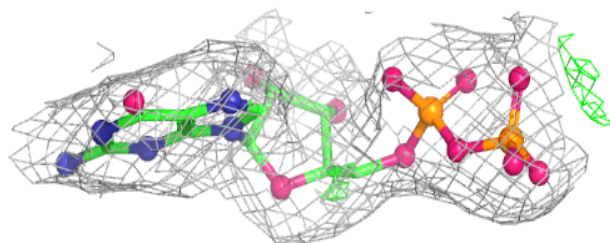
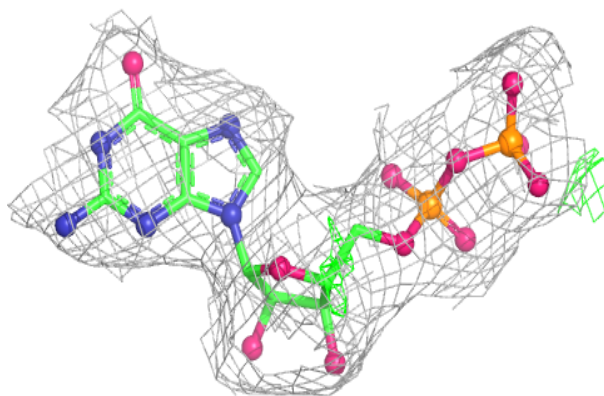
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around GDP A 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 ⓘ

There are no such residues in this entry.