



# Full wwPDB X-ray Structure Validation Report ⓘ

May 15, 2020 – 03:38 pm BST

PDB ID : 3V00  
Title : Studies of a constitutively active G-alpha subunit provide insights into the mechanism of G protein activation.  
Authors : Singh, G.; Cerione, R.A.  
Deposited on : 2011-12-07  
Resolution : 2.90 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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.

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.11  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.11

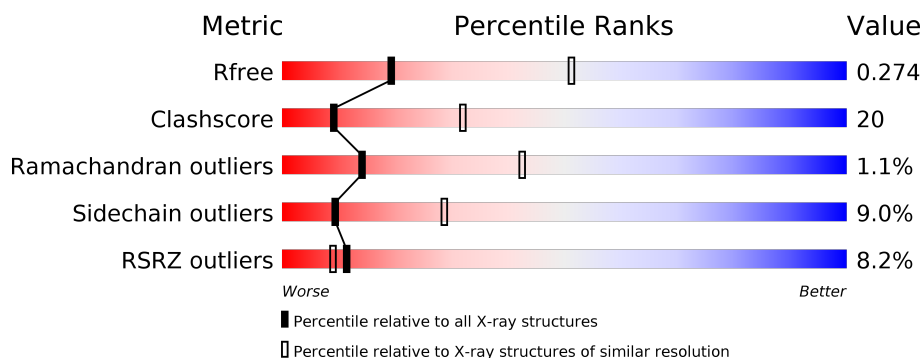
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	356	<div> <div>9%</div> <div>62%</div> <div>33%</div> <div>• •</div> </div>
1	B	356	<div> <div>8%</div> <div>57%</div> <div>34%</div> <div>5%</div> <div>•</div> </div>
1	C	356	<div> <div>7%</div> <div>61%</div> <div>33%</div> <div>5%</div> <div>• •</div> </div>

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 8788 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	353	Total	C	N	O	S	0	0	0
			2834	1789	478	546	21			
1	B	342	Total	C	N	O	S	0	0	0
			2762	1748	461	533	20			
1	A	351	Total	C	N	O	S	0	0	0
			2813	1777	472	543	21			

There are 27 discrepancies between the modelled and reference sequences:

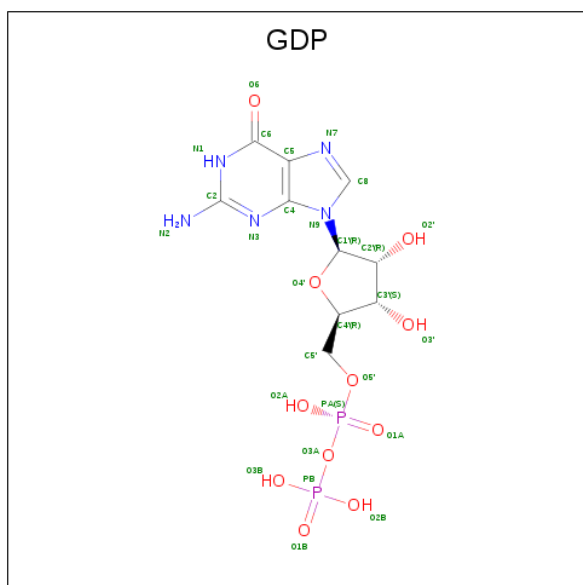
Chain	Residue	Modelled	Actual	Comment	Reference
C	-5	HIS	-	EXPRESSION TAG	UNP P04695
C	-4	HIS	-	EXPRESSION TAG	UNP P04695
C	-3	HIS	-	EXPRESSION TAG	UNP P04695
C	-2	HIS	-	EXPRESSION TAG	UNP P04695
C	-1	HIS	-	EXPRESSION TAG	UNP P04695
C	0	HIS	-	EXPRESSION TAG	UNP P04695
C	56	PRO	GLY	ENGINEERED MUTATION	UNP P04695
C	244	HIS	LYS	ENGINEERED MUTATION	UNP P10824
C	247	ASN	ASP	ENGINEERED MUTATION	UNP P10824
B	-5	HIS	-	EXPRESSION TAG	UNP P04695
B	-4	HIS	-	EXPRESSION TAG	UNP P04695
B	-3	HIS	-	EXPRESSION TAG	UNP P04695
B	-2	HIS	-	EXPRESSION TAG	UNP P04695
B	-1	HIS	-	EXPRESSION TAG	UNP P04695
B	0	HIS	-	EXPRESSION TAG	UNP P04695
B	56	PRO	GLY	ENGINEERED MUTATION	UNP P04695
B	244	HIS	LYS	ENGINEERED MUTATION	UNP P10824
B	247	ASN	ASP	ENGINEERED MUTATION	UNP P10824
A	-5	HIS	-	EXPRESSION TAG	UNP P04695
A	-4	HIS	-	EXPRESSION TAG	UNP P04695
A	-3	HIS	-	EXPRESSION TAG	UNP P04695
A	-2	HIS	-	EXPRESSION TAG	UNP P04695

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	HIS	-	EXPRESSION TAG	UNP P04695
A	0	HIS	-	EXPRESSION TAG	UNP P04695
A	56	PRO	GLY	ENGINEERED MUTATION	UNP P04695
A	244	HIS	LYS	ENGINEERED MUTATION	UNP P10824
A	247	ASN	ASP	ENGINEERED MUTATION	UNP P10824

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ).



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

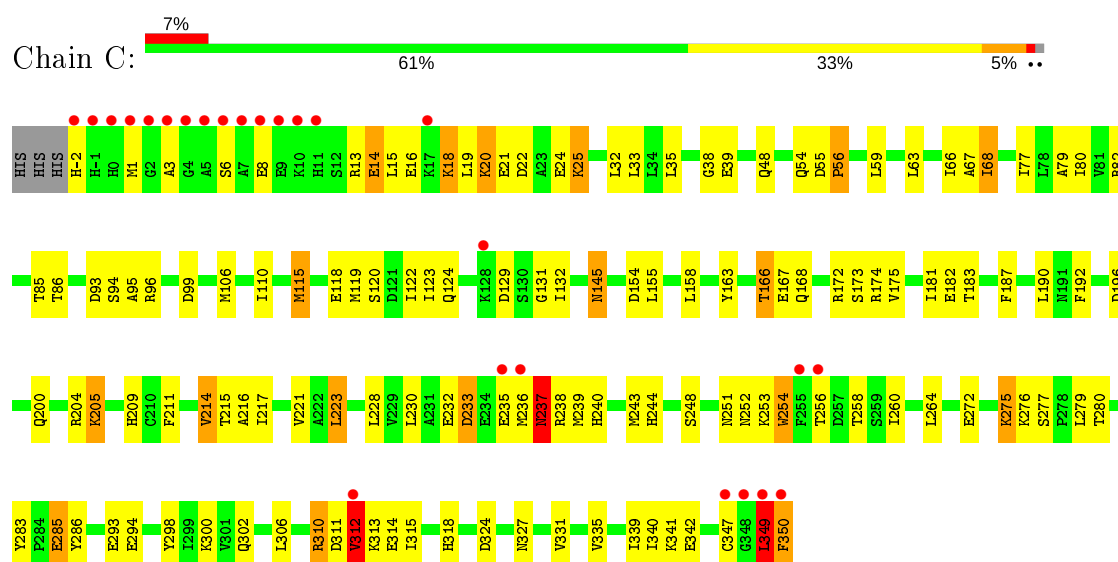
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	89	Total	O	0	0
			89	89		
3	B	108	Total	O	0	0
			108	108		
3	A	98	Total	O	0	0
			98	98		

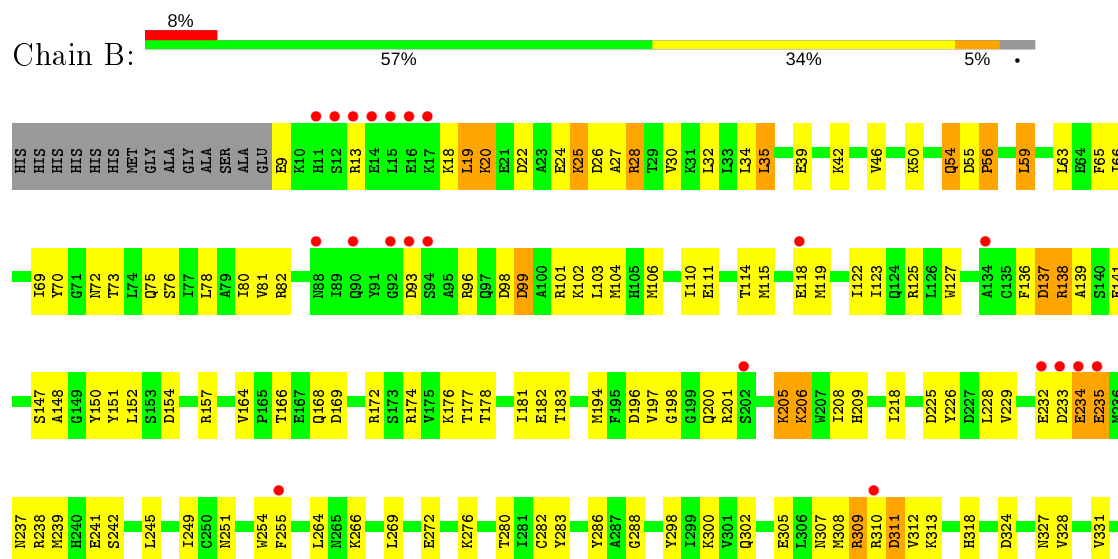
### 3 Residue-property plots

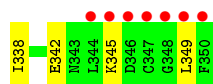
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are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

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

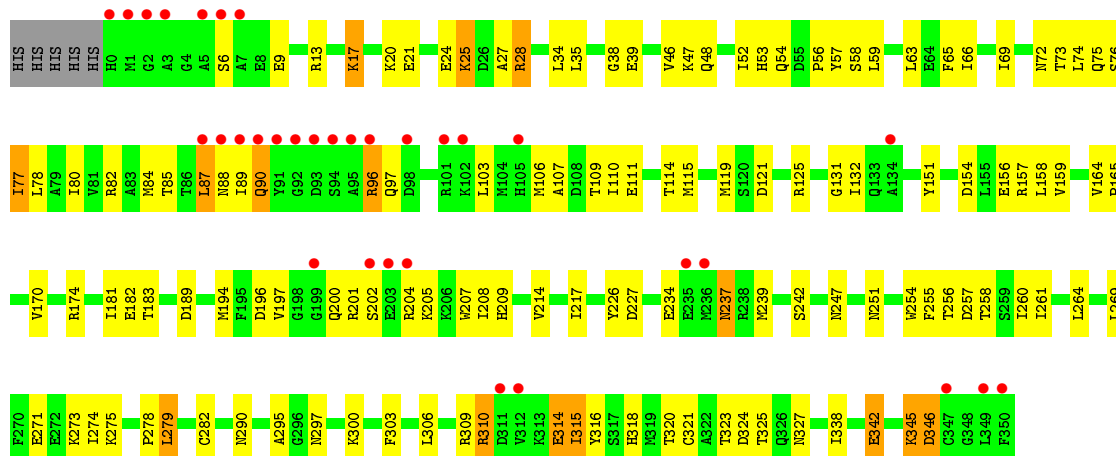


- Molecule 1: Guanine nucleotide-binding protein G(t) subunit alpha-1/ Guanine nucleotide-binding protein G(i) subunit alpha-1 chimeric protein





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



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	93.17Å 93.17Å 380.58Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.74 – 2.90 39.73 – 2.70	Depositor EDS
% Data completeness (in resolution range)	97.4 (39.74-2.90) 95.5 (39.73-2.70)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.53 (at 2.69Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.221 , 0.272 0.227 , 0.274	Depositor DCC
$R_{free}$ test set	4723 reflections (10.05%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	73.8	Xtriage
Anisotropy	0.116	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 88.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	8788	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	92.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.36% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: 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	0.35	0/2861	0.51	0/3849
1	B	0.39	0/2809	0.54	0/3780
1	C	0.40	1/2884 (0.0%)	0.57	1/3879 (0.0%)
All	All	0.38	1/8554 (0.0%)	0.54	1/11508 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	233	ASP	CB-CG	5.11	1.62	1.51

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	349	LEU	CA-CB-CG	5.98	129.05	115.30

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	2813	0	2786	109	0
1	B	2762	0	2740	119	0
1	C	2834	0	2793	121	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	28	0	12	1	0
2	B	28	0	12	4	0
2	C	28	0	12	3	0
3	A	98	0	0	2	0
3	B	108	0	0	6	0
3	C	89	0	0	3	0
All	All	8788	0	8355	337	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 20.

All (337) 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:87:LEU:HD12	1:A:88:ASN:N	1.49	1.27
1:A:87:LEU:CD1	1:A:88:ASN:H	1.61	1.13
1:C:68:ILE:HD11	1:C:173:SER:HB2	1.36	1.08
1:A:87:LEU:CD1	1:A:88:ASN:N	2.17	1.05
1:C:349:LEU:O	1:C:350:PHE:HB2	1.52	1.03
1:A:84:MET:HG3	1:A:89:ILE:HG12	1.40	1.00
1:A:197:VAL:HG11	1:A:208:ILE:HD11	1.45	0.98
1:B:176:LYS:HE2	3:B:538:HOH:O	1.66	0.94
1:C:311:ASP:HB3	1:C:314:GLU:HB2	1.50	0.90
1:C:18:LYS:HA	1:C:18:LYS:NZ	1.87	0.90
1:C:236:MET:HB2	1:C:240:HIS:CB	2.04	0.88
1:C:18:LYS:HA	1:C:18:LYS:HZ3	1.37	0.86
1:C:236:MET:HB2	1:C:240:HIS:HB2	1.58	0.86
1:A:25:LYS:O	1:A:25:LYS:HD3	1.76	0.85
1:A:63:LEU:O	1:A:66:ILE:HG12	1.74	0.85
1:A:87:LEU:HD13	1:A:88:ASN:H	1.40	0.83
1:A:87:LEU:HD12	1:A:88:ASN:H	1.24	0.82
1:B:309:ARG:O	1:B:313:LYS:HG2	1.79	0.82
1:B:266:LYS:HD3	1:B:269:LEU:HD12	1.63	0.80
1:A:279:LEU:HD23	1:A:295:ALA:HB1	1.65	0.78
1:A:48:GLN:O	1:A:52:ILE:HG12	1.82	0.78
1:A:73:THR:HG22	1:A:151:TYR:HB3	1.66	0.77
1:B:25:LYS:HE2	1:B:25:LYS:N	2.01	0.76
1:B:18:LYS:HA	1:B:18:LYS:HE2	1.68	0.75
1:A:72:ASN:HD21	1:A:174:ARG:H	1.36	0.74
1:A:321:CYS:H	1:A:327:ASN:ND2	1.86	0.73
1:C:80:ILE:HG21	1:C:132:ILE:HG23	1.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:33:LEU:HD12	1:C:217:ILE:CD1	2.18	0.72
1:B:99:ASP:OD2	1:B:125:ARG:NH2	2.22	0.72
1:B:20:LYS:HE3	1:B:20:LYS:HA	1.72	0.72
1:A:96:ARG:HD2	1:A:96:ARG:N	2.05	0.72
1:B:50:LYS:HA	1:B:54:GLN:HG2	1.71	0.71
1:C:341:LYS:HE3	1:B:255:PHE:HE2	1.57	0.70
1:C:302:GLN:O	1:C:306:LEU:HD13	1.90	0.69
1:C:25:LYS:O	1:C:25:LYS:HD2	1.93	0.69
1:C:68:ILE:HD11	1:C:173:SER:CB	2.21	0.69
1:B:39:GLU:N	2:B:401:GDP:O1B	2.20	0.69
1:C:228:LEU:HD12	1:C:238:ARG:HD3	1.75	0.69
1:B:324:ASP:O	1:B:328:VAL:HG23	1.93	0.68
1:C:236:MET:HB2	1:C:240:HIS:HB3	1.74	0.68
1:C:276:LYS:NZ	3:C:559:HOH:O	2.26	0.68
1:B:25:LYS:HE2	1:B:25:LYS:H	1.59	0.67
1:B:201:ARG:HD3	1:B:241:GLU:OE2	1.95	0.67
1:B:206:LYS:H	1:B:206:LYS:HD2	1.60	0.67
1:C:145:ASN:H	1:C:145:ASN:ND2	1.92	0.66
1:B:54:GLN:HE21	1:B:54:GLN:HA	1.59	0.66
1:A:84:MET:SD	1:A:132:ILE:HD13	2.35	0.66
1:B:251:ASN:HD21	1:B:308:MET:H	1.44	0.66
1:B:249:ILE:HG23	1:B:254:TRP:HZ2	1.61	0.66
1:B:119:MET:O	1:B:123:ILE:HG13	1.96	0.66
1:A:84:MET:O	1:A:89:ILE:HG21	1.96	0.65
1:C:200:GLN:OE1	1:C:200:GLN:HA	1.94	0.65
1:A:217:ILE:HD11	1:A:254:TRP:CZ2	2.31	0.65
1:C:68:ILE:CD1	1:C:173:SER:HB2	2.22	0.65
1:C:285:GLU:CD	1:C:285:GLU:H	1.99	0.64
1:B:307:ASN:HD21	1:B:313:LYS:HD3	1.62	0.64
1:B:50:LYS:HA	1:B:54:GLN:CG	2.27	0.64
1:B:239:MET:HG2	1:B:282:CYS:SG	2.38	0.63
1:A:47:LYS:HG2	1:A:57:TYR:OH	1.99	0.63
1:C:232:GLU:O	1:C:233:ASP:HB2	1.98	0.63
1:B:318:HIS:CE1	1:B:331:VAL:HG22	2.33	0.63
1:C:166:THR:HG22	1:C:168:GLN:H	1.62	0.63
1:C:235:GLU:OE2	1:C:235:GLU:N	2.30	0.63
1:B:127:TRP:CE3	1:B:152:LEU:HD23	2.34	0.63
1:C:237:ASN:HD21	1:C:240:HIS:HD2	1.47	0.62
1:C:253:LYS:HB3	1:C:253:LYS:NZ	2.14	0.62
1:B:327:ASN:O	1:B:331:VAL:HG23	1.99	0.62
1:C:349:LEU:O	1:C:349:LEU:HD22	2.00	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:310:ARG:NE	1:A:310:ARG:HA	2.15	0.61
1:B:245:LEU:O	1:B:249:ILE:HG12	2.00	0.61
1:A:20:LYS:O	1:A:24:GLU:HG3	1.99	0.61
1:A:217:ILE:HD11	1:A:254:TRP:HZ2	1.64	0.61
1:C:341:LYS:HD3	1:C:341:LYS:C	2.19	0.61
1:A:90:GLN:O	1:A:131:GLY:HA2	1.99	0.61
1:A:315:ILE:HD12	1:A:338:ILE:CG2	2.30	0.61
1:A:65:PHE:O	1:A:69:ILE:HG13	2.00	0.61
1:B:42:LYS:O	1:B:46:VAL:HG23	2.01	0.61
1:B:75:GLN:HG2	3:B:510:HOH:O	1.98	0.61
1:B:206:LYS:O	1:B:209:HIS:HD2	1.84	0.60
1:B:28:ARG:O	1:B:28:ARG:NE	2.34	0.60
1:A:316:TYR:OH	1:A:318:HIS:HD2	1.84	0.60
1:C:106:MET:HE1	1:C:118:GLU:HG3	1.83	0.60
1:A:25:LYS:HE3	1:A:27:ALA:HB3	1.84	0.59
1:B:63:LEU:O	1:B:66:ILE:HG13	2.03	0.59
1:A:278:PRO:HA	1:A:290:ASN:OD1	2.01	0.59
1:A:321:CYS:SG	1:A:323:THR:HG22	2.41	0.59
1:C:214:VAL:O	1:C:258:THR:HG22	2.02	0.59
1:B:66:ILE:HG22	1:B:70:TYR:CE2	2.37	0.59
1:C:349:LEU:O	1:C:350:PHE:CB	2.36	0.59
1:C:39:GLU:H	2:C:401:GDP:PB	2.26	0.59
1:C:110:ILE:HD13	1:C:119:MET:CE	2.33	0.59
1:C:237:ASN:N	1:C:237:ASN:HD22	2.01	0.59
1:C:145:ASN:HD22	1:C:145:ASN:H	1.51	0.58
1:A:227:ASP:OD2	1:A:273:LYS:HE2	2.03	0.58
1:B:69:ILE:HG23	1:B:151:TYR:CE1	2.39	0.58
1:C:14:GLU:OE1	1:C:14:GLU:HA	2.03	0.58
1:C:33:LEU:HD12	1:C:217:ILE:HD11	1.86	0.58
1:C:145:ASN:HA	1:C:174:ARG:NH1	2.19	0.58
1:B:82:ARG:HG2	3:B:549:HOH:O	2.04	0.58
1:A:87:LEU:HD12	1:A:87:LEU:C	2.21	0.57
1:C:96:ARG:HG3	1:C:129:ASP:OD1	2.03	0.57
1:A:346:ASP:OD2	1:A:346:ASP:N	2.38	0.57
1:C:154:ASP:O	1:C:158:LEU:HD13	2.04	0.57
1:C:237:ASN:HD21	1:C:240:HIS:CD2	2.23	0.57
1:A:73:THR:CG2	1:A:151:TYR:HB3	2.35	0.57
1:A:300:LYS:NZ	1:A:300:LYS:HB3	2.21	0.56
1:C:254:TRP:O	1:C:254:TRP:CD1	2.58	0.56
1:C:244:HIS:CE1	3:C:583:HOH:O	2.58	0.56
1:C:272:GLU:O	1:C:275:LYS:HG3	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:181:ILE:HB	1:A:196:ASP:HB3	1.86	0.56
1:C:341:LYS:HE3	1:B:255:PHE:CE2	2.39	0.56
1:C:18:LYS:HA	1:C:18:LYS:HZ2	1.70	0.56
1:B:93:ASP:HB2	1:B:96:ARG:HG2	1.87	0.55
1:C:20:LYS:C	1:C:20:LYS:HD2	2.27	0.55
1:B:26:ASP:O	1:B:27:ALA:HB3	2.07	0.55
1:C:279:LEU:HG	1:C:279:LEU:O	2.06	0.55
1:A:38:GLY:O	1:A:39:GLU:HB2	2.07	0.55
1:B:122:ILE:HD13	1:B:125:ARG:HH22	1.72	0.55
1:C:300:LYS:CE	1:B:310:ARG:HH21	2.21	0.55
1:B:42:LYS:HE3	1:B:198:GLY:HA2	1.89	0.54
1:B:99:ASP:HB3	1:B:122:ILE:HG23	1.89	0.54
1:C:232:GLU:HA	1:C:232:GLU:OE1	2.07	0.54
1:B:225:ASP:OD2	1:B:238:ARG:HD2	2.07	0.54
1:C:68:ILE:HD13	1:C:175:VAL:HG23	1.88	0.54
1:C:209:HIS:NE2	1:C:252:ASN:ND2	2.55	0.54
1:B:137:ASP:N	1:B:137:ASP:OD1	2.39	0.54
1:C:341:LYS:HD3	1:C:341:LYS:O	2.08	0.54
1:C:300:LYS:HE3	1:B:310:ARG:HH21	1.72	0.54
1:C:119:MET:O	1:C:123:ILE:HG13	2.08	0.54
1:B:266:LYS:HD3	1:B:269:LEU:CD1	2.35	0.53
1:A:111:GLU:OE2	1:A:111:GLU:HA	2.09	0.53
1:C:236:MET:O	1:C:237:ASN:O	2.26	0.53
1:A:34:LEU:O	1:A:35:LEU:HD12	2.09	0.53
1:B:35:LEU:HD23	1:B:249:ILE:HD12	1.90	0.53
1:C:22:ASP:O	1:C:25:LYS:HB3	2.08	0.53
1:B:309:ARG:HD2	1:B:309:ARG:N	2.24	0.53
1:B:338:ILE:CD1	1:A:309:ARG:HD3	2.39	0.53
1:A:321:CYS:H	1:A:327:ASN:HD22	1.57	0.52
1:A:111:GLU:O	1:A:114:THR:HG22	2.09	0.52
1:A:52:ILE:CD1	1:A:325:THR:HG23	2.40	0.52
1:B:118:GLU:O	1:B:122:ILE:HG12	2.10	0.52
1:C:99:ASP:HB3	1:C:122:ILE:HG23	1.92	0.52
1:A:154:ASP:O	1:A:158:LEU:HD13	2.10	0.52
1:A:242:SER:HG	1:A:303:PHE:HZ	1.57	0.52
1:A:261:ILE:HG23	1:A:316:TYR:HB3	1.91	0.52
1:B:150:TYR:CE1	1:B:172:ARG:HG3	2.45	0.52
1:C:21:GLU:HA	1:C:24:GLU:HB2	1.92	0.52
1:C:260:ILE:HD11	1:C:315:ILE:HD12	1.91	0.52
1:A:156:GLU:HA	1:A:159:VAL:HG12	1.92	0.52
1:C:190:LEU:HD11	1:C:340:ILE:HG22	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:96:ARG:H	1:A:96:ARG:HD2	1.74	0.51
1:A:314:GLU:OE2	1:A:314:GLU:N	2.44	0.51
1:C:115:MET:CE	1:C:155:LEU:HD11	2.40	0.51
1:C:293:GLU:OE1	1:B:300:LYS:NZ	2.44	0.51
1:C:298:TYR:O	1:C:302:GLN:HG2	2.10	0.51
1:B:205:LYS:HB3	1:B:208:ILE:HG12	1.93	0.51
1:B:305:GLU:HG2	1:B:310:ARG:NH1	2.26	0.51
1:B:65:PHE:O	1:B:69:ILE:HG13	2.11	0.51
1:B:309:ARG:HG2	1:B:313:LYS:HD3	1.92	0.51
1:B:311:ASP:N	1:B:311:ASP:OD2	2.32	0.51
1:B:75:GLN:HA	1:B:78:LEU:HD12	1.92	0.51
1:C:166:THR:HG22	1:C:168:GLN:N	2.26	0.51
1:B:110:ILE:HD12	1:B:119:MET:HE1	1.92	0.50
1:B:181:ILE:HG12	1:B:196:ASP:HB3	1.92	0.50
1:B:234:GLU:O	1:B:235:GLU:CB	2.59	0.50
1:B:234:GLU:O	1:B:235:GLU:HB2	2.10	0.50
1:B:59:LEU:HD12	1:B:164:VAL:HG21	1.94	0.50
1:A:82:ARG:O	1:A:85:THR:HG22	2.12	0.50
1:C:204:ARG:O	1:C:204:ARG:HD3	2.12	0.50
1:A:90:GLN:O	1:A:131:GLY:CA	2.60	0.49
1:C:243:MET:HB3	1:C:306:LEU:HD21	1.94	0.49
1:C:230:LEU:HG	1:C:230:LEU:O	2.11	0.49
1:C:335:VAL:HG23	1:B:308:MET:HE3	1.94	0.49
1:B:30:VAL:HG12	1:B:32:LEU:CD1	2.43	0.49
1:C:286:TYR:OH	1:C:294:GLU:HG2	2.12	0.49
1:B:168:GLN:HA	1:B:168:GLN:NE2	2.27	0.49
1:B:39:GLU:HA	2:B:401:GDP:C5'	2.43	0.49
1:A:110:ILE:HG22	1:A:111:GLU:H	1.77	0.49
1:A:201:ARG:O	1:A:202:SER:HB2	2.13	0.49
1:B:76:SER:O	1:B:80:ILE:HG13	2.11	0.49
1:A:80:ILE:HG21	1:A:132:ILE:HG23	1.95	0.48
1:C:129:ASP:OD2	1:C:131:GLY:N	2.39	0.48
1:B:59:LEU:O	1:B:63:LEU:HG	2.13	0.48
1:B:82:ARG:CG	3:B:549:HOH:O	2.59	0.48
1:C:166:THR:CG2	1:C:167:GLU:N	2.75	0.48
1:C:254:TRP:O	1:C:254:TRP:HD1	1.96	0.48
1:B:197:VAL:HG12	1:B:197:VAL:O	2.13	0.48
1:C:280:THR:HA	1:C:283:TYR:O	2.14	0.48
1:A:114:THR:OG1	1:A:115:MET:N	2.47	0.48
1:B:63:LEU:HD21	1:B:164:VAL:HG22	1.96	0.48
1:A:300:LYS:HZ3	1:A:300:LYS:HB3	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:166:THR:O	1:B:169:ASP:HB2	2.13	0.48
1:C:163:TYR:N	3:C:529:HOH:O	2.47	0.48
1:A:13:ARG:HD3	3:A:557:HOH:O	2.14	0.47
1:B:114:THR:O	1:B:115:MET:HE2	2.14	0.47
1:C:310:ARG:HG3	1:C:310:ARG:HH21	1.79	0.47
1:A:275:LYS:HE2	1:A:275:LYS:HA	1.96	0.47
1:B:103:LEU:HD12	1:B:122:ILE:HB	1.96	0.47
1:C:38:GLY:O	1:C:39:GLU:HB2	2.13	0.47
1:A:314:GLU:OE2	1:A:314:GLU:CA	2.62	0.47
1:A:342:GLU:HB3	3:A:549:HOH:O	2.15	0.47
1:A:56:PRO:O	1:A:57:TYR:C	2.53	0.47
1:C:260:ILE:HG12	1:C:315:ILE:HD13	1.96	0.47
1:A:110:ILE:HG22	1:A:111:GLU:N	2.29	0.47
1:A:174:ARG:C	1:A:174:ARG:HD2	2.34	0.47
1:C:172:ARG:HA	2:C:401:GDP:O2'	2.15	0.47
1:A:17:LYS:O	1:A:21:GLU:HG2	2.15	0.46
1:A:28:ARG:HA	1:A:28:ARG:HD2	1.70	0.46
1:C:311:ASP:HB3	1:C:314:GLU:CB	2.36	0.46
1:B:72:ASN:ND2	1:B:174:ARG:H	2.13	0.46
1:B:55:ASP:O	1:B:56:PRO:O	2.32	0.46
1:C:223:LEU:CD1	1:C:264:LEU:HB3	2.46	0.46
1:C:48:GLN:OE1	1:C:48:GLN:HA	2.15	0.46
1:A:34:LEU:HD11	1:A:194:MET:HE1	1.96	0.46
1:B:110:ILE:HG22	1:B:111:GLU:N	2.31	0.46
1:C:18:LYS:CA	1:C:18:LYS:NZ	2.70	0.46
1:B:269:LEU:HD21	2:B:401:GDP:N2	2.31	0.46
1:B:309:ARG:HB2	1:B:312:VAL:CG2	2.45	0.46
1:C:181:ILE:HB	1:C:196:ASP:HB3	1.96	0.46
1:B:174:ARG:HB2	2:B:401:GDP:O3'	2.16	0.46
1:A:200:GLN:HG2	1:A:205:LYS:HB2	1.98	0.46
1:C:256:THR:O	1:C:258:THR:HG23	2.15	0.46
1:B:18:LYS:CE	1:B:18:LYS:HA	2.43	0.46
1:C:18:LYS:C	1:C:20:LYS:H	2.18	0.46
1:C:215:THR:HG21	1:C:339:ILE:HG23	1.97	0.46
1:C:33:LEU:HD12	1:C:217:ILE:HD13	1.96	0.46
1:B:237:ASN:C	1:B:239:MET:N	2.68	0.45
1:A:239:MET:HG2	1:A:282:CYS:SG	2.57	0.45
1:C:32:LEU:CD2	1:C:216:ALA:HB3	2.46	0.45
1:A:297:ASN:O	1:A:300:LYS:HB3	2.17	0.45
1:A:87:LEU:O	1:A:88:ASN:CB	2.64	0.45
1:B:272:GLU:HG3	3:B:509:HOH:O	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:275:LYS:HG3	1:C:276:LYS:HD2	1.99	0.45
1:B:34:LEU:HD12	1:B:218:ILE:HB	1.98	0.45
1:B:286:TYR:CZ	1:B:288:GLY:HA3	2.52	0.45
1:B:298:TYR:O	1:B:302:GLN:HG2	2.16	0.45
1:C:230:LEU:H	1:C:230:LEU:HD23	1.82	0.45
1:B:30:VAL:HG12	1:B:32:LEU:HD13	2.00	0.44
1:A:269:LEU:HD21	2:A:401:GDP:N2	2.33	0.44
1:B:338:ILE:HD12	1:A:309:ARG:HD3	1.99	0.44
1:B:106:MET:O	1:B:110:ILE:HG13	2.17	0.44
1:B:82:ARG:HB2	3:B:549:HOH:O	2.17	0.44
1:A:182:GLU:HG2	1:A:183:THR:N	2.32	0.44
1:B:136:PHE:O	1:B:139:ALA:HB2	2.17	0.44
1:C:182:GLU:HG2	1:C:183:THR:N	2.33	0.44
1:A:260:ILE:O	1:A:314:GLU:HG3	2.18	0.44
1:B:28:ARG:O	1:B:28:ARG:CD	2.65	0.44
1:C:248:SER:HA	1:C:251:ASN:HB3	2.00	0.44
1:A:103:LEU:O	1:A:107:ALA:N	2.48	0.44
1:C:312:VAL:C	1:C:313:LYS:HG2	2.38	0.44
1:C:327:ASN:O	1:C:331:VAL:HG13	2.18	0.44
1:C:324:ASP:C	1:C:324:ASP:OD2	2.56	0.44
1:A:315:ILE:HD12	1:A:338:ILE:HG23	1.99	0.44
1:A:324:ASP:OD2	1:A:324:ASP:C	2.55	0.43
1:A:315:ILE:HD12	1:A:338:ILE:HG21	2.00	0.43
1:B:13:ARG:HA	1:B:13:ARG:HD2	1.72	0.43
1:C:56:PRO:HB3	1:C:167:GLU:OE1	2.18	0.43
1:C:237:ASN:ND2	1:C:240:HIS:HD2	2.14	0.43
1:B:182:GLU:HG2	1:B:183:THR:N	2.33	0.43
1:B:34:LEU:HD22	1:B:194:MET:CE	2.48	0.43
1:C:300:LYS:HE3	1:B:310:ARG:HD3	2.00	0.43
1:A:237:ASN:H	1:A:237:ASN:ND2	2.16	0.43
1:B:20:LYS:CE	1:B:20:LYS:HA	2.45	0.43
1:B:225:ASP:O	1:B:228:LEU:HG	2.19	0.43
1:A:271:GLU:O	1:A:274:ILE:HG22	2.18	0.43
1:A:53:HIS:O	1:A:54:GLN:HG2	2.19	0.43
1:C:187:PHE:HB3	1:C:192:PHE:HE1	1.84	0.43
1:C:63:LEU:O	1:C:66:ILE:HG12	2.18	0.43
1:A:226:TYR:O	1:A:282:CYS:HB2	2.19	0.43
1:B:234:GLU:OE2	1:B:234:GLU:HA	2.18	0.43
1:A:183:THR:O	1:A:183:THR:HG23	2.18	0.43
1:A:46:VAL:HG22	1:A:194:MET:HE2	2.00	0.43
1:B:138:ARG:O	1:B:141:GLU:OE2	2.37	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:345:LYS:HB3	1:A:345:LYS:HE3	1.86	0.43
1:B:81:VAL:HG23	1:B:82:ARG:N	2.34	0.43
1:C:79:ALA:O	1:C:82:ARG:HG3	2.19	0.43
1:A:17:LYS:HB3	1:A:17:LYS:HE3	1.90	0.43
1:A:157:ARG:HH11	1:A:157:ARG:HG2	1.83	0.43
1:B:69:ILE:O	1:B:73:THR:OG1	2.25	0.43
1:B:82:ARG:HD3	1:B:104:MET:HE1	2.00	0.43
1:C:120:SER:O	1:C:124:GLN:HB2	2.19	0.43
1:C:187:PHE:HB3	1:C:192:PHE:CE1	2.54	0.42
1:C:66:ILE:HD12	1:C:67:ALA:N	2.34	0.42
1:C:82:ARG:C	1:C:82:ARG:HD2	2.39	0.42
1:A:87:LEU:HD12	1:A:88:ASN:CA	2.40	0.42
1:B:54:GLN:CA	1:B:54:GLN:HE21	2.21	0.42
1:C:221:VAL:CG1	1:C:239:MET:HE1	2.49	0.42
1:A:194:MET:HE3	1:A:194:MET:HB3	1.90	0.42
1:A:121:ASP:O	1:A:125:ARG:HB2	2.19	0.42
1:B:309:ARG:HG2	1:B:313:LYS:CD	2.49	0.42
1:C:204:ARG:O	1:C:204:ARG:CG	2.67	0.42
1:C:318:HIS:HD2	1:B:308:MET:CE	2.32	0.42
1:A:320:THR:HA	1:A:327:ASN:HD21	1.84	0.42
1:C:106:MET:CE	1:C:118:GLU:HG3	2.50	0.42
1:C:77:ILE:HG12	1:C:123:ILE:HG23	2.01	0.42
1:A:58:SER:O	1:A:59:LEU:C	2.58	0.42
1:B:305:GLU:HG2	1:B:310:ARG:HH12	1.84	0.42
1:B:147:SER:O	1:B:148:ALA:C	2.58	0.42
1:A:255:PHE:O	1:A:258:THR:OG1	2.20	0.42
1:B:22:ASP:O	1:B:24:GLU:N	2.51	0.42
1:A:256:THR:O	1:A:257:ASP:CB	2.68	0.42
1:C:115:MET:HE2	1:C:155:LEU:HD11	2.01	0.42
1:C:68:ILE:HD13	1:C:175:VAL:CG2	2.50	0.42
1:A:74:LEU:HD12	1:A:78:LEU:HD13	2.02	0.42
1:A:73:THR:O	1:A:77:ILE:CD1	2.67	0.42
1:B:226:TYR:HB3	1:B:239:MET:CE	2.50	0.42
1:C:205:LYS:H	1:C:205:LYS:HD3	1.85	0.42
1:A:34:LEU:HD23	1:A:34:LEU:HA	1.83	0.41
1:A:247:ASN:O	1:A:251:ASN:ND2	2.52	0.41
1:A:73:THR:O	1:A:77:ILE:HD11	2.21	0.41
1:B:280:THR:HA	1:B:283:TYR:O	2.20	0.41
1:A:106:MET:O	1:A:109:THR:HG22	2.19	0.41
1:B:19:LEU:HB2	1:B:20:LYS:H	1.70	0.41
1:C:253:LYS:HB3	1:C:253:LYS:HZ3	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:39:GLU:HA	2:C:401:GDP:O3A	2.20	0.41
1:C:55:ASP:O	1:C:56:PRO:O	2.37	0.41
1:C:318:HIS:HD2	1:B:308:MET:HE2	1.85	0.41
1:A:164:VAL:HA	1:A:165:PRO:HD3	1.91	0.41
1:A:65:PHE:CE2	1:A:170:VAL:HG13	2.55	0.41
1:A:72:ASN:O	1:A:76:SER:HB2	2.21	0.41
1:A:214:VAL:HG13	1:A:214:VAL:O	2.19	0.41
1:A:316:TYR:OH	1:A:318:HIS:CD2	2.69	0.41
1:B:168:GLN:HA	1:B:168:GLN:HE21	1.86	0.41
1:C:82:ARG:NH2	1:C:86:THR:HG21	2.35	0.41
1:A:73:THR:HG22	1:A:151:TYR:CB	2.45	0.41
1:A:207:TRP:C	1:A:209:HIS:N	2.71	0.41
1:B:251:ASN:HA	1:B:309:ARG:HH11	1.86	0.41
1:B:34:LEU:HB3	1:B:196:ASP:HA	2.03	0.41
1:C:93:ASP:O	1:C:95:ALA:N	2.54	0.41
1:A:110:ILE:HD12	1:A:119:MET:HE1	2.03	0.40
1:A:207:TRP:C	1:A:209:HIS:H	2.25	0.40
1:B:154:ASP:OD2	1:B:157:ARG:NH2	2.52	0.40
1:B:177:THR:OG1	1:B:178:THR:N	2.54	0.40
1:B:264:LEU:HD22	1:B:264:LEU:N	2.35	0.40
1:A:274:ILE:HG13	1:A:290:ASN:O	2.20	0.40
1:C:300:LYS:HE3	1:B:310:ARG:CD	2.51	0.40
1:C:80:ILE:CG2	1:C:132:ILE:HG23	2.47	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	349/356 (98%)	311 (89%)	36 (10%)	2 (1%)	25	58
1	B	340/356 (96%)	301 (88%)	38 (11%)	1 (0%)	41	71

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	351/356 (99%)	325 (93%)	18 (5%)	8 (2%)	6	23
All	All	1040/1068 (97%)	937 (90%)	92 (9%)	11 (1%)	14	42

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	3	ALA
1	C	6	SER
1	C	237	ASN
1	B	56	PRO
1	A	6	SER
1	A	234	GLU
1	C	56	PRO
1	C	310	ARG
1	C	19	LEU
1	C	94	SER
1	C	312	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	309/316 (98%)	287 (93%)	22 (7%)	14	40
1	B	306/316 (97%)	277 (90%)	29 (10%)	8	26
1	C	311/316 (98%)	279 (90%)	32 (10%)	7	22
All	All	926/948 (98%)	843 (91%)	83 (9%)	9	29

All (83) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	-2	HIS
1	C	1	MET
1	C	8	GLU
1	C	13	ARG

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Mol	Chain	Res	Type
1	C	14	GLU
1	C	15	LEU
1	C	16	GLU
1	C	18	LYS
1	C	20	LYS
1	C	25	LYS
1	C	35	LEU
1	C	54	GLN
1	C	59	LEU
1	C	68	ILE
1	C	85	THR
1	C	115	MET
1	C	145	ASN
1	C	166	THR
1	C	205	LYS
1	C	211	PHE
1	C	214	VAL
1	C	223	LEU
1	C	237	ASN
1	C	254	TRP
1	C	275	LYS
1	C	277	SER
1	C	285	GLU
1	C	312	VAL
1	C	342	GLU
1	C	347	CYS
1	C	349	LEU
1	C	350	PHE
1	B	9	GLU
1	B	19	LEU
1	B	20	LYS
1	B	25	LYS
1	B	28	ARG
1	B	35	LEU
1	B	54	GLN
1	B	59	LEU
1	B	98	ASP
1	B	99	ASP
1	B	101	ARG
1	B	102	LYS
1	B	137	ASP
1	B	138	ARG

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Mol	Chain	Res	Type
1	B	200	GLN
1	B	205	LYS
1	B	206	LYS
1	B	229	VAL
1	B	232	GLU
1	B	233	ASP
1	B	234	GLU
1	B	235	GLU
1	B	242	SER
1	B	276	LYS
1	B	309	ARG
1	B	311	ASP
1	B	342	GLU
1	B	345	LYS
1	B	349	LEU
1	A	9	GLU
1	A	17	LYS
1	A	25	LYS
1	A	28	ARG
1	A	75	GLN
1	A	77	ILE
1	A	87	LEU
1	A	90	GLN
1	A	96	ARG
1	A	97	GLN
1	A	189	ASP
1	A	204	ARG
1	A	237	ASN
1	A	264	LEU
1	A	279	LEU
1	A	306	LEU
1	A	310	ARG
1	A	314	GLU
1	A	315	ILE
1	A	342	GLU
1	A	345	LYS
1	A	346	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	145	ASN

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Mol	Chain	Res	Type
1	C	237	ASN
1	C	240	HIS
1	C	302	GLN
1	C	343	ASN
1	B	54	GLN
1	B	72	ASN
1	B	209	HIS
1	B	244	HIS
1	B	247	ASN
1	B	251	ASN
1	B	252	ASN
1	B	290	ASN
1	B	307	ASN
1	B	326	GLN
1	B	343	ASN
1	A	72	ASN
1	A	90	GLN
1	A	124	GLN
1	A	184	GLN
1	A	237	ASN
1	A	302	GLN
1	A	307	ASN
1	A	318	HIS
1	A	327	ASN

### 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 carbohydrates in this entry.

### 5.6 Ligand geometry ⓘ

3 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	C	401	-	24,30,30	1.64	5 (20%)	31,47,47	1.93	6 (19%)
2	GDP	B	401	-	24,30,30	1.65	5 (20%)	31,47,47	1.96	6 (19%)
2	GDP	A	401	-	24,30,30	1.66	5 (20%)	31,47,47	1.97	6 (19%)

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	C	401	-	-	3/12/32/32	0/3/3/3
2	GDP	B	401	-	-	3/12/32/32	0/3/3/3
2	GDP	A	401	-	-	3/12/32/32	0/3/3/3

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	GDP	C6-C5	-4.67	1.33	1.41
2	A	401	GDP	C6-C5	-4.62	1.33	1.41
2	C	401	GDP	C6-C5	-4.58	1.33	1.41
2	A	401	GDP	C6-N1	3.35	1.38	1.33
2	C	401	GDP	C6-N1	3.32	1.38	1.33
2	B	401	GDP	C6-N1	3.27	1.38	1.33
2	A	401	GDP	C5-C4	-2.98	1.33	1.40
2	B	401	GDP	C5-C4	-2.94	1.33	1.40
2	C	401	GDP	C5-C4	-2.93	1.33	1.40
2	A	401	GDP	O4'-C1'	2.48	1.44	1.41
2	C	401	GDP	O4'-C1'	2.44	1.44	1.41
2	B	401	GDP	O4'-C1'	2.36	1.44	1.41
2	A	401	GDP	C2-N1	2.35	1.39	1.35
2	B	401	GDP	C2-N1	2.34	1.39	1.35
2	C	401	GDP	C2-N1	2.28	1.39	1.35

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	401	GDP	N3-C2-N1	-6.43	118.65	127.22
2	A	401	GDP	N3-C2-N1	-6.35	118.75	127.22
2	C	401	GDP	N3-C2-N1	-6.28	118.85	127.22
2	A	401	GDP	C5-C6-N1	-5.24	116.27	123.43
2	B	401	GDP	C5-C6-N1	-5.15	116.39	123.43
2	C	401	GDP	C5-C6-N1	-5.14	116.41	123.43
2	B	401	GDP	C6-N1-C2	3.49	121.48	115.93
2	A	401	GDP	C6-N1-C2	3.48	121.46	115.93
2	C	401	GDP	C6-N1-C2	3.43	121.38	115.93
2	B	401	GDP	N2-C2-N3	3.12	122.88	117.79
2	C	401	GDP	N2-C2-N3	3.09	122.82	117.79
2	A	401	GDP	N2-C2-N3	3.06	122.77	117.79
2	B	401	GDP	C2-N3-C4	2.87	118.64	115.36
2	A	401	GDP	C2-N3-C4	2.81	118.57	115.36
2	C	401	GDP	C2-N3-C4	2.78	118.54	115.36
2	A	401	GDP	C4-C5-N7	-2.64	106.64	109.40
2	B	401	GDP	C4-C5-N7	-2.57	106.72	109.40
2	C	401	GDP	C4-C5-N7	-2.47	106.83	109.40

There are no chirality outliers.

All (9) torsion outliers are listed below:

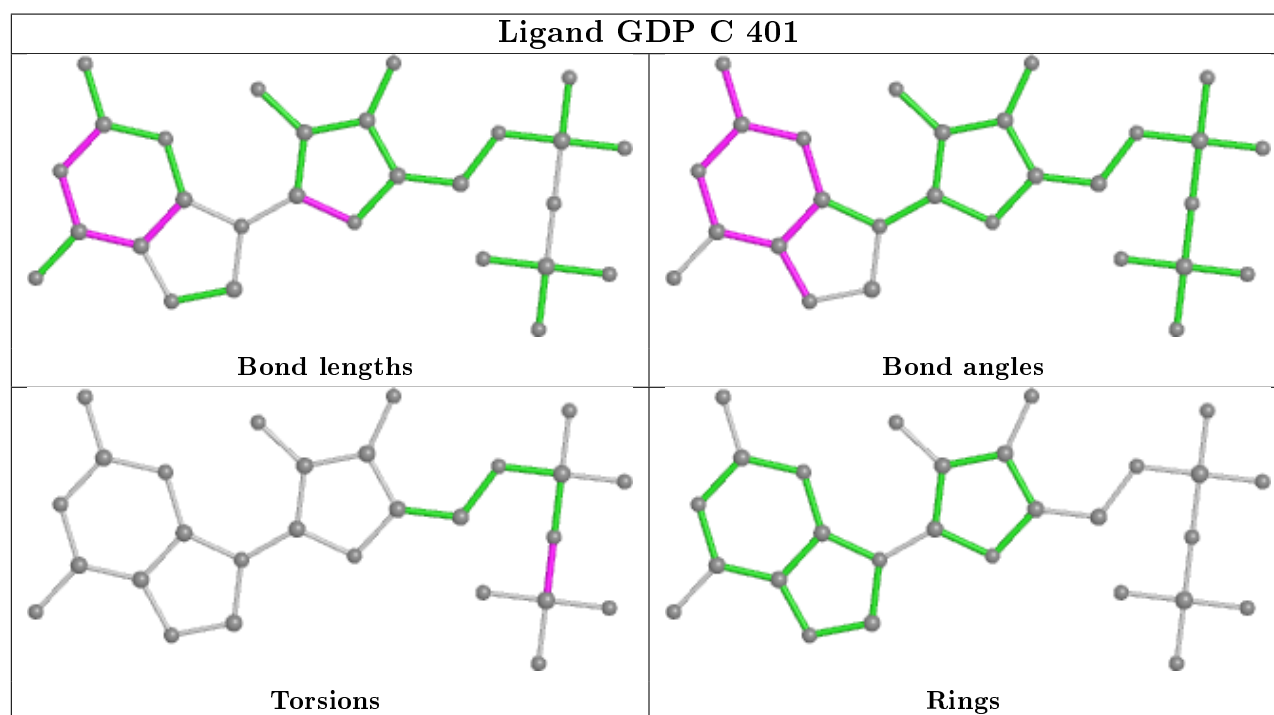
Mol	Chain	Res	Type	Atoms
2	C	401	GDP	PA-O3A-PB-O2B
2	B	401	GDP	PA-O3A-PB-O2B
2	A	401	GDP	PA-O3A-PB-O2B
2	C	401	GDP	PA-O3A-PB-O3B
2	B	401	GDP	PA-O3A-PB-O3B
2	A	401	GDP	PA-O3A-PB-O3B
2	C	401	GDP	PA-O3A-PB-O1B
2	B	401	GDP	PA-O3A-PB-O1B
2	A	401	GDP	PA-O3A-PB-O1B

There are no ring outliers.

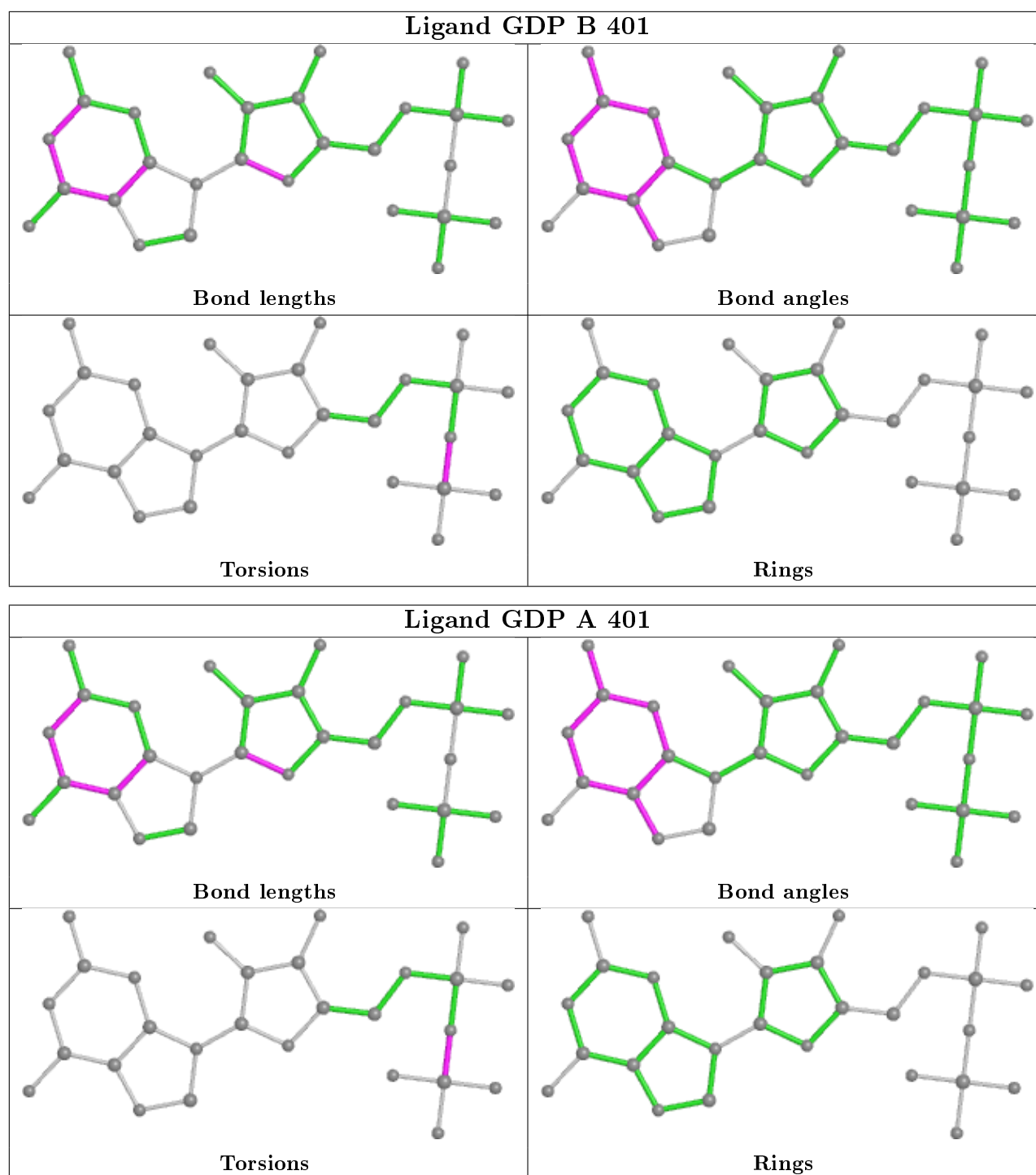
3 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	401	GDP	3	0
2	B	401	GDP	4	0
2	A	401	GDP	1	0

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







## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	351/356 (98%)	0.30	33 (9%) 8 6	48, 96, 169, 194	0
1	B	342/356 (96%)	0.19	28 (8%) 11 9	36, 81, 159, 193	0
1	C	353/356 (99%)	0.05	25 (7%) 16 12	35, 74, 163, 195	0
All	All	1046/1068 (97%)	0.18	86 (8%) 11 9	35, 84, 165, 195	0

All (86) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	202	SER	10.2
1	B	350	PHE	9.2
1	C	6	SER	8.4
1	A	88	ASN	7.8
1	B	347	CYS	7.8
1	C	-1	HIS	7.3
1	C	1	MET	7.3
1	C	3	ALA	7.0
1	C	0	HIS	7.0
1	A	312	VAL	6.2
1	A	349	LEU	6.1
1	C	350	PHE	6.0
1	B	349	LEU	6.0
1	C	2	GLY	5.8
1	B	348	GLY	5.7
1	B	12	SER	5.7
1	A	236	MET	5.6
1	A	90	GLN	5.6
1	A	96	ARG	5.5
1	A	6	SER	5.4
1	A	235	GLU	5.4
1	B	233	ASP	5.3
1	A	134	ALA	5.1

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Mol	Chain	Res	Type	RSRZ
1	C	11	HIS	5.0
1	C	7	ALA	4.8
1	C	4	GLY	4.7
1	A	202	SER	4.7
1	C	5	ALA	4.5
1	B	13	ARG	4.5
1	B	16	GLU	4.4
1	A	87	LEU	4.4
1	B	17	LYS	4.3
1	B	93	ASP	4.3
1	B	15	LEU	4.3
1	A	1	MET	4.3
1	B	234	GLU	4.2
1	A	91	TYR	4.1
1	C	348	GLY	4.1
1	A	350	PHE	4.1
1	A	204	ARG	4.0
1	C	349	LEU	3.8
1	B	118	GLU	3.7
1	A	203	GLU	3.7
1	A	7	ALA	3.7
1	B	92	GLY	3.7
1	C	10	LYS	3.6
1	A	92	GLY	3.6
1	B	14	GLU	3.6
1	A	3	ALA	3.5
1	A	347	CYS	3.5
1	C	347	CYS	3.5
1	B	11	HIS	3.4
1	B	346	ASP	3.4
1	A	105	HIS	3.4
1	A	0	HIS	3.3
1	C	255	PHE	3.3
1	A	95	ALA	3.3
1	C	236	MET	3.2
1	A	5	ALA	3.2
1	C	9	GLU	3.1
1	A	89	ILE	3.0
1	C	235	GLU	2.9
1	B	235	GLU	2.9
1	C	8	GLU	2.9
1	A	311	ASP	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	-2	HIS	2.9
1	B	255	PHE	2.9
1	A	93	ASP	2.8
1	C	17	LYS	2.6
1	A	2	GLY	2.6
1	B	90	GLN	2.6
1	B	310	ARG	2.5
1	B	232	GLU	2.5
1	A	98	ASP	2.4
1	B	134	ALA	2.3
1	B	94	SER	2.2
1	B	344	LEU	2.2
1	B	345	LYS	2.2
1	A	94	SER	2.2
1	C	256	THR	2.2
1	A	101	ARG	2.2
1	C	312	VAL	2.1
1	B	88	ASN	2.1
1	C	128	LYS	2.0
1	A	102	LYS	2.0
1	A	199	GLY	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 6.4 Ligands ⓘ

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, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

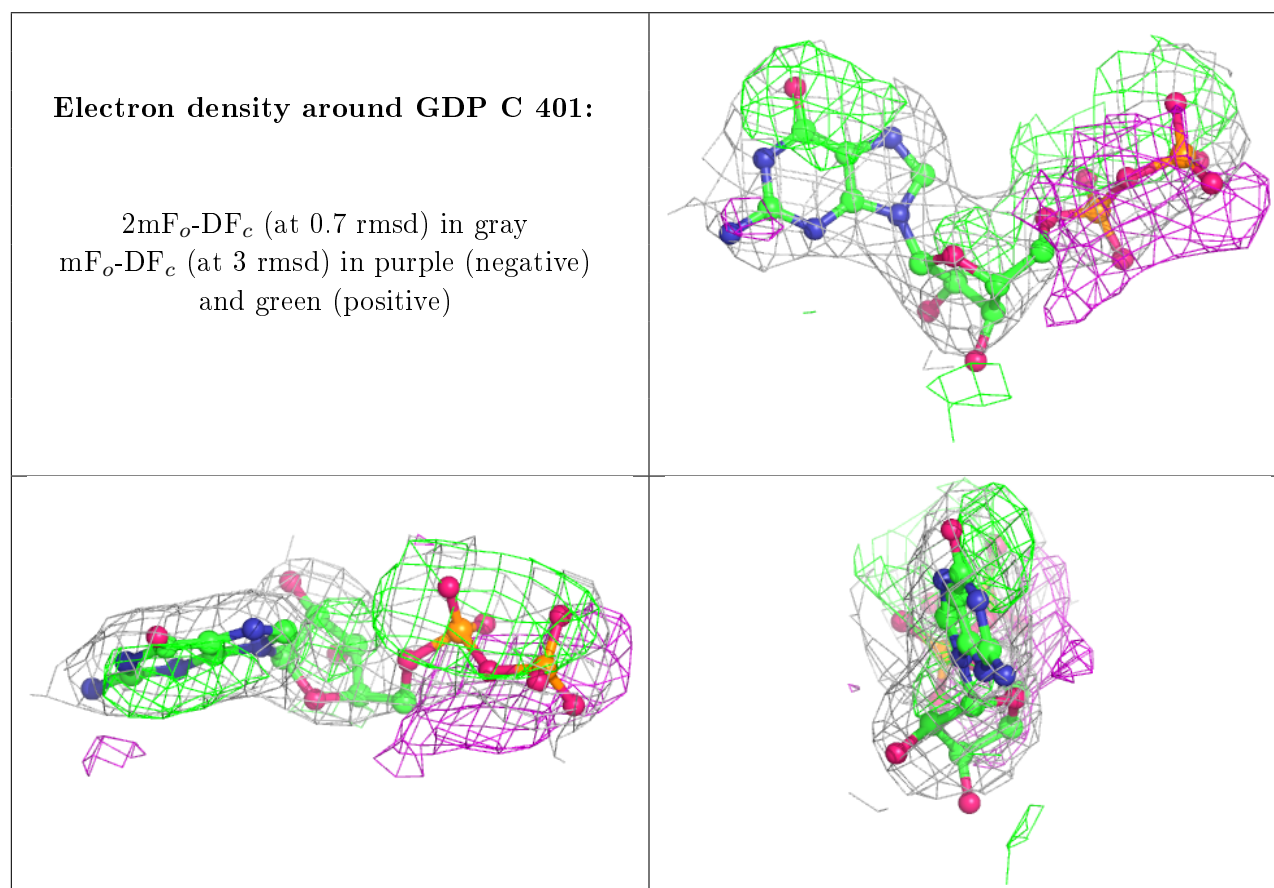
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	GDP	C	401	28/28	0.90	0.27	17,61,99,127	0
2	GDP	B	401	28/28	0.94	0.23	38,63,92,102	0

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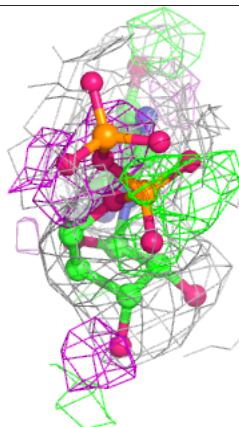
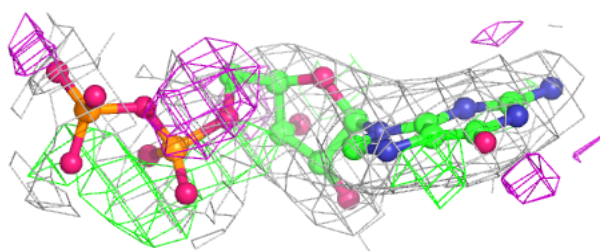
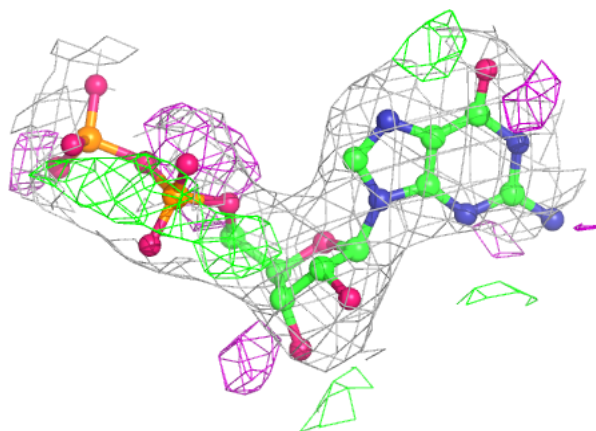
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	GDP	A	401	28/28	0.96	0.20	44,73,98,102	0

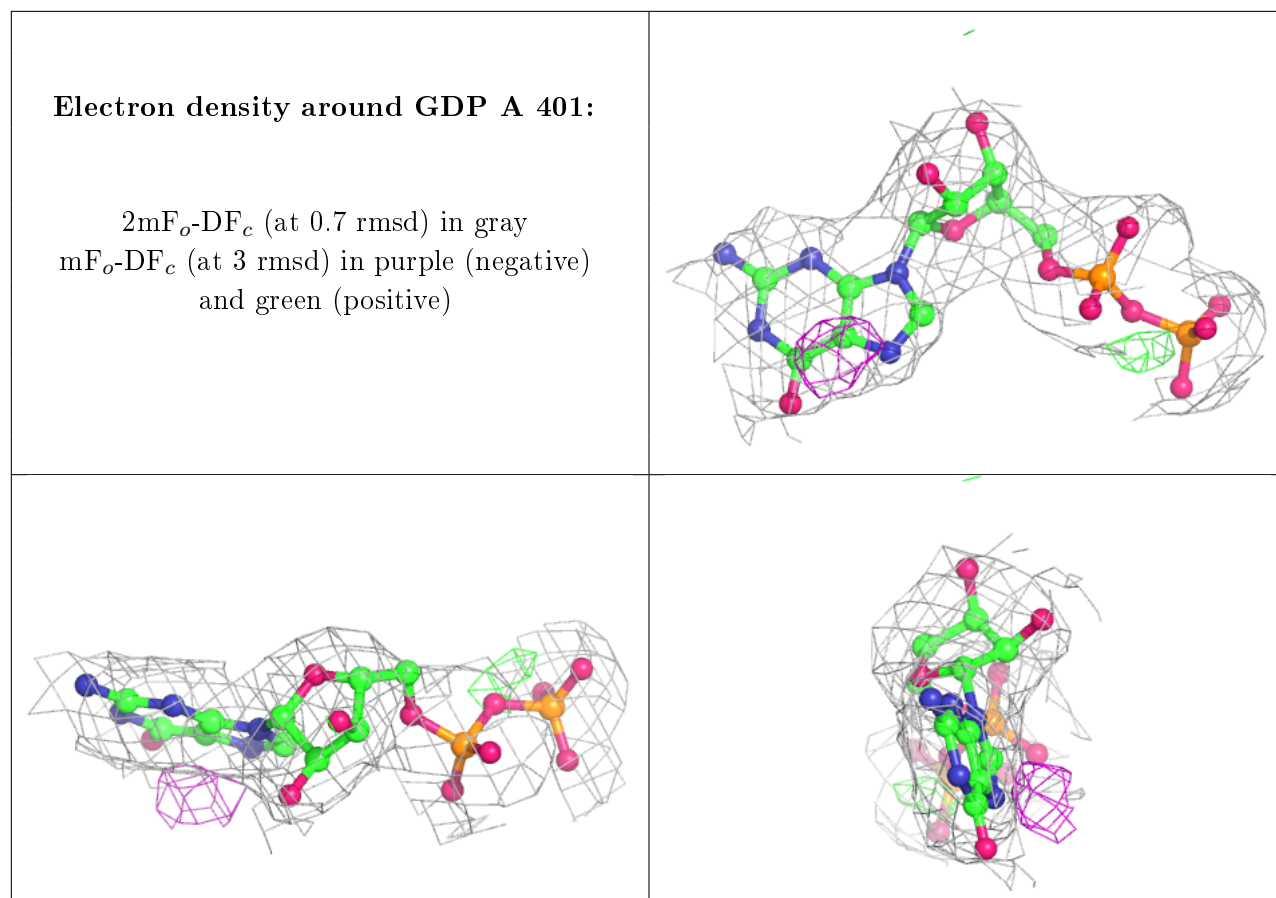
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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



**Electron density around GDP B 401:**

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





## 6.5 Other polymers ⓘ

There are no such residues in this entry.