



# wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 5, 2016 – 11:20 AM EDT

PDB ID : 5HCI  
Title : GPN-loop GTPase Npa3 in complex with GDP  
Authors : Niesser, J.; Wagner, F.R.; Kostrewa, D.; Muehlbacher, W.; Cramer, P.  
Deposited on : 2016-01-04  
Resolution : 2.30 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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

<http://wwpdb.org/validation/2016/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 : 1.7.1 (RC1), CSD as537be (2016)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20027939  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20027939

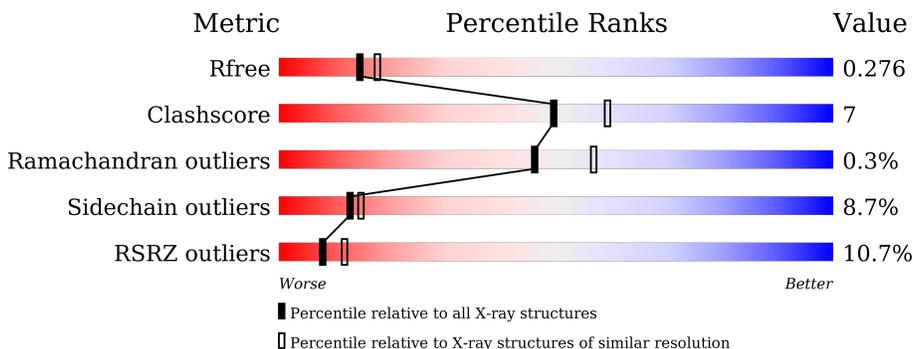
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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))
$R_{free}$	91344	3852 (2.30-2.30)
Clashscore	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (2.30-2.30)
RSRZ outliers	91569	3857 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	261	 4% 81% 15% ..
1	B	261	 14% 75% 17% 5% ..
1	C	261	 12% 72% 19% 6% ..
1	D	261	 8% 84% 12% ...
1	E	261	 7% 81% 15% ..
1	F	261	 17% 82% 12% .. 5%

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:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
4	GOL	C	303	-	-	-	X
4	GOL	E	303	-	-	-	X
4	GOL	E	304	-	-	-	X

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 12383 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 GPN-loop GTPase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	257	2032	1300	324	391	17	0	0	0
1	B	258	2042	1306	327	392	17	0	0	0
1	C	246	1937	1238	309	374	16	0	0	0
1	D	258	2042	1306	327	392	17	0	0	0
1	E	259	2052	1312	330	393	17	0	0	0
1	F	249	1959	1252	314	377	16	0	0	0

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LEU	deletion	UNP P47122
A	?	-	ASN	deletion	UNP P47122
A	?	-	GLY	deletion	UNP P47122
A	?	-	ASP	deletion	UNP P47122
A	?	-	ASN	deletion	UNP P47122
A	?	-	GLY	deletion	UNP P47122
A	?	-	LEU	deletion	UNP P47122
A	?	-	GLY	deletion	UNP P47122
A	?	-	SER	deletion	UNP P47122
A	265	LYS	-	expression tag	UNP P47122
A	266	HIS	-	expression tag	UNP P47122
A	267	HIS	-	expression tag	UNP P47122
A	268	HIS	-	expression tag	UNP P47122
A	269	HIS	-	expression tag	UNP P47122
A	270	HIS	-	expression tag	UNP P47122
A	271	HIS	-	expression tag	UNP P47122
B	?	-	LEU	deletion	UNP P47122

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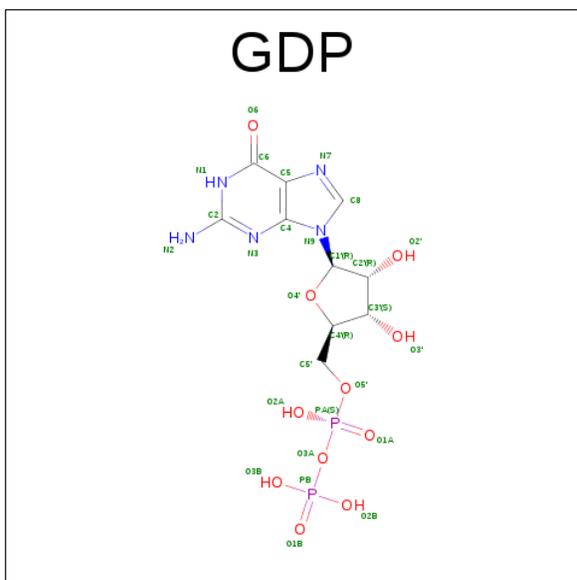
Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	ASN	deletion	UNP P47122
B	?	-	GLY	deletion	UNP P47122
B	?	-	ASP	deletion	UNP P47122
B	?	-	ASN	deletion	UNP P47122
B	?	-	GLY	deletion	UNP P47122
B	?	-	LEU	deletion	UNP P47122
B	?	-	GLY	deletion	UNP P47122
B	?	-	SER	deletion	UNP P47122
B	265	LYS	-	expression tag	UNP P47122
B	266	HIS	-	expression tag	UNP P47122
B	267	HIS	-	expression tag	UNP P47122
B	268	HIS	-	expression tag	UNP P47122
B	269	HIS	-	expression tag	UNP P47122
B	270	HIS	-	expression tag	UNP P47122
B	271	HIS	-	expression tag	UNP P47122
C	?	-	LEU	deletion	UNP P47122
C	?	-	ASN	deletion	UNP P47122
C	?	-	GLY	deletion	UNP P47122
C	?	-	ASP	deletion	UNP P47122
C	?	-	ASN	deletion	UNP P47122
C	?	-	GLY	deletion	UNP P47122
C	?	-	LEU	deletion	UNP P47122
C	?	-	GLY	deletion	UNP P47122
C	?	-	SER	deletion	UNP P47122
C	265	LYS	-	expression tag	UNP P47122
C	266	HIS	-	expression tag	UNP P47122
C	267	HIS	-	expression tag	UNP P47122
C	268	HIS	-	expression tag	UNP P47122
C	269	HIS	-	expression tag	UNP P47122
C	270	HIS	-	expression tag	UNP P47122
C	271	HIS	-	expression tag	UNP P47122
D	?	-	LEU	deletion	UNP P47122
D	?	-	ASN	deletion	UNP P47122
D	?	-	GLY	deletion	UNP P47122
D	?	-	ASP	deletion	UNP P47122
D	?	-	ASN	deletion	UNP P47122
D	?	-	GLY	deletion	UNP P47122
D	?	-	LEU	deletion	UNP P47122
D	?	-	GLY	deletion	UNP P47122
D	?	-	SER	deletion	UNP P47122
D	265	LYS	-	expression tag	UNP P47122
D	266	HIS	-	expression tag	UNP P47122

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Chain	Residue	Modelled	Actual	Comment	Reference
D	267	HIS	-	expression tag	UNP P47122
D	268	HIS	-	expression tag	UNP P47122
D	269	HIS	-	expression tag	UNP P47122
D	270	HIS	-	expression tag	UNP P47122
D	271	HIS	-	expression tag	UNP P47122
E	?	-	LEU	deletion	UNP P47122
E	?	-	ASN	deletion	UNP P47122
E	?	-	GLY	deletion	UNP P47122
E	?	-	ASP	deletion	UNP P47122
E	?	-	ASN	deletion	UNP P47122
E	?	-	GLY	deletion	UNP P47122
E	?	-	LEU	deletion	UNP P47122
E	?	-	GLY	deletion	UNP P47122
E	?	-	SER	deletion	UNP P47122
E	265	LYS	-	expression tag	UNP P47122
E	266	HIS	-	expression tag	UNP P47122
E	267	HIS	-	expression tag	UNP P47122
E	268	HIS	-	expression tag	UNP P47122
E	269	HIS	-	expression tag	UNP P47122
E	270	HIS	-	expression tag	UNP P47122
E	271	HIS	-	expression tag	UNP P47122
F	?	-	LEU	deletion	UNP P47122
F	?	-	ASN	deletion	UNP P47122
F	?	-	GLY	deletion	UNP P47122
F	?	-	ASP	deletion	UNP P47122
F	?	-	ASN	deletion	UNP P47122
F	?	-	GLY	deletion	UNP P47122
F	?	-	LEU	deletion	UNP P47122
F	?	-	GLY	deletion	UNP P47122
F	?	-	SER	deletion	UNP P47122
F	265	LYS	-	expression tag	UNP P47122
F	266	HIS	-	expression tag	UNP P47122
F	267	HIS	-	expression tag	UNP P47122
F	268	HIS	-	expression tag	UNP P47122
F	269	HIS	-	expression tag	UNP P47122
F	270	HIS	-	expression tag	UNP P47122
F	271	HIS	-	expression tag	UNP P47122

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>11</sub>P<sub>2</sub>).

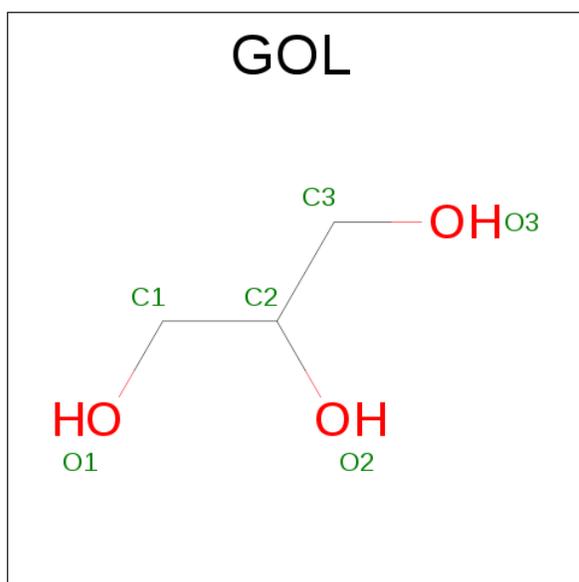


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	C	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	D	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	E	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	F	1	Total	C	N	O	P	0	0
		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

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
3	D	1	Total	Mg	0	0
			1	1		
3	E	1	Total	Mg	0	0
			1	1		
3	B	1	Total	Mg	0	0
			1	1		
3	C	1	Total	Mg	0	0
			1	1		
3	A	1	Total	Mg	0	0
			1	1		
3	F	1	Total	Mg	0	0
			1	1		

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	E	1	Total C O 6 3 3	0	0
4	E	1	Total C O 6 3 3	0	0

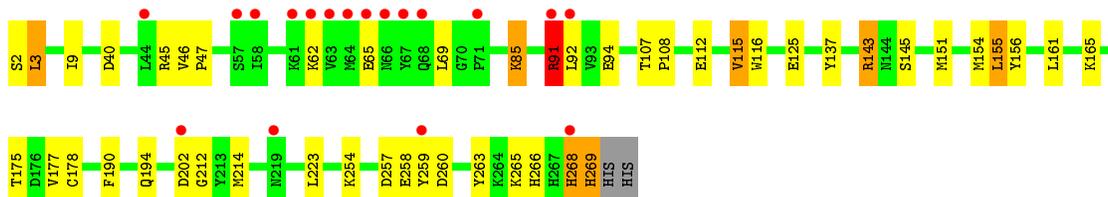
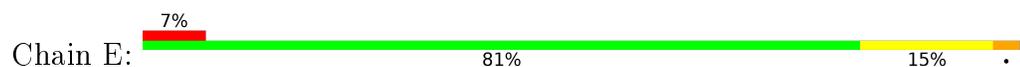
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	33	Total O 33 33	0	0
5	B	30	Total O 30 30	0	0
5	C	16	Total O 16 16	0	0
5	D	16	Total O 16 16	0	0
5	E	21	Total O 21 21	0	0
5	F	5	Total O 5 5	0	0

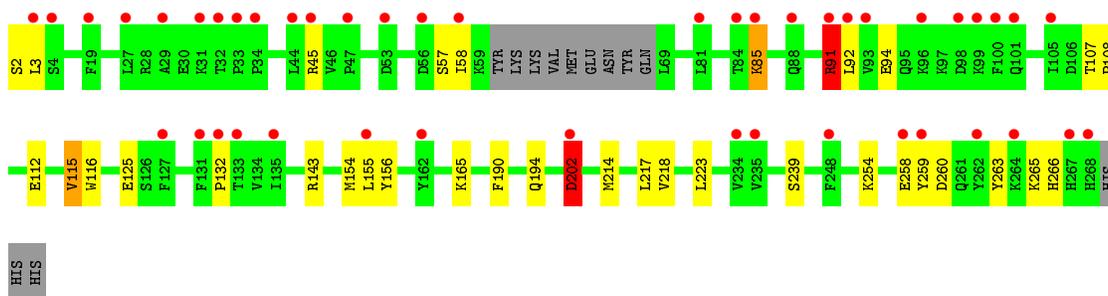
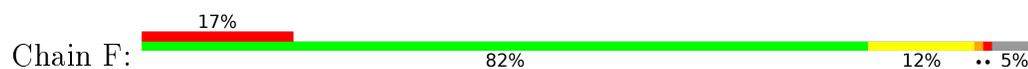




- Molecule 1: GPN-loop GTPase 1



- Molecule 1: GPN-loop GTPase 1



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	107.99Å 119.18Å 347.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.25 – 2.30 49.15 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.7 (45.25-2.30) 99.8 (49.15-2.30)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.06	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.50 (at 2.29Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, $R_{free}$	0.238 , 0.276 0.239 , 0.276	Depositor DCC
$R_{free}$ test set	1986 reflections (2.00%)	DCC
Wilson B-factor (Å <sup>2</sup> )	54.6	Xtrriage
Anisotropy	0.533	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 54.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.42$ , $\langle L^2 \rangle = 0.24$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	12383	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	82.0	wwPDB-VP

Xtrriage'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.*

<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, GOL, MG

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	0.55	0/2075	0.65	2/2806 (0.1%)
1	B	0.58	0/2086	0.90	7/2821 (0.2%)
1	C	0.62	1/1977 (0.1%)	0.70	2/2673 (0.1%)
1	D	0.40	0/2086	0.60	3/2821 (0.1%)
1	E	0.57	0/2097	0.68	3/2836 (0.1%)
1	F	0.38	0/2000	0.58	1/2705 (0.0%)
All	All	0.52	1/12321 (0.0%)	0.69	18/16662 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1
1	D	0	1
1	F	0	1
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	73	GLY	N-CA	-5.39	1.38	1.46

The worst 5 of 18 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	45	ARG	NE-CZ-NH1	-20.10	110.25	120.30
1	B	45	ARG	NE-CZ-NH2	19.68	130.14	120.30
1	E	91	ARG	NE-CZ-NH1	10.69	125.64	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	45	ARG	CD-NE-CZ	9.86	137.40	123.60
1	D	91	ARG	NE-CZ-NH1	9.20	124.90	120.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	72	ASN	Peptide
1	D	202	ASP	Peptide
1	F	202	ASP	Peptide

## 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	2032	0	2009	22	1
1	B	2042	0	2016	58	0
1	C	1937	0	1914	52	0
1	D	2042	0	2016	20	0
1	E	2052	0	2023	26	1
1	F	1959	0	1933	22	0
2	A	28	0	12	0	0
2	B	28	0	12	0	0
2	C	28	0	12	1	0
2	D	28	0	12	0	0
2	E	28	0	12	0	0
2	F	28	0	12	1	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
4	A	6	0	8	1	0
4	C	6	0	8	0	0
4	E	12	0	16	1	0
5	A	33	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	30	0	0	2	0
5	C	16	0	0	0	0
5	D	16	0	0	1	0
5	E	21	0	0	3	0
5	F	5	0	0	0	0
All	All	12383	0	12015	173	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 7.

The worst 5 of 173 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:B:91:ARG:HG3	1:D:202:ASP:HB3	1.23	1.13
1:C:202:ASP:O	1:C:213:TYR:N	1.85	1.07
1:C:91:ARG:HG3	1:F:202:ASP:HB3	1.48	0.94
1:B:143:ARG:NH2	5:B:401:HOH:O	2.01	0.92
1:C:91:ARG:CG	1:F:202:ASP:HB3	2.08	0.82

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)
1:A:257:ASP:O	1:E:91:ARG:NH2[5_455]	2.13	0.07

## 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	255/261 (98%)	251 (98%)	4 (2%)	0	100 100
1	B	256/261 (98%)	250 (98%)	4 (2%)	2 (1%)	24 27

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	242/261 (93%)	236 (98%)	5 (2%)	1 (0%)	39	48
1	D	256/261 (98%)	252 (98%)	4 (2%)	0	100	100
1	E	257/261 (98%)	252 (98%)	4 (2%)	1 (0%)	39	48
1	F	245/261 (94%)	241 (98%)	4 (2%)	0	100	100
All	All	1511/1566 (96%)	1482 (98%)	25 (2%)	4 (0%)	46	57

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	212	GLY
1	C	212	GLY
1	B	213	TYR
1	E	212	GLY

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	231/235 (98%)	211 (91%)	20 (9%)	13	15
1	B	232/235 (99%)	209 (90%)	23 (10%)	10	11
1	C	221/235 (94%)	203 (92%)	18 (8%)	15	18
1	D	232/235 (99%)	211 (91%)	21 (9%)	12	13
1	E	233/235 (99%)	212 (91%)	21 (9%)	12	14
1	F	223/235 (95%)	206 (92%)	17 (8%)	16	20
All	All	1372/1410 (97%)	1252 (91%)	120 (9%)	13	15

5 of 120 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	143	ARG
1	D	72	ASN
1	F	112	GLU

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Mol	Chain	Res	Type
1	C	154	MET
1	C	260	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	194	GLN
1	F	194	GLN
1	D	194	GLN
1	B	201	GLN
1	C	250	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

Of 16 ligands modelled in this entry, 6 are monoatomic - leaving 10 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$
2	GDP	A	301	3	24,30,30	1.14	2 (8%)	26,47,47	2.22	8 (30%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	GOL	A	303	-	5,5,5	0.32	0	5,5,5	0.60	0
2	GDP	B	301	3	24,30,30	1.20	2 (8%)	26,47,47	2.13	7 (26%)
2	GDP	C	301	-	24,30,30	1.31	2 (8%)	26,47,47	1.87	4 (15%)
4	GOL	C	303	-	5,5,5	0.35	0	5,5,5	0.29	0
2	GDP	D	301	3	24,30,30	1.25	2 (8%)	26,47,47	1.91	5 (19%)
2	GDP	E	301	3	24,30,30	1.28	2 (8%)	26,47,47	2.19	8 (30%)
4	GOL	E	303	-	5,5,5	0.32	0	5,5,5	0.22	0
4	GOL	E	304	-	5,5,5	0.34	0	5,5,5	0.57	0
2	GDP	F	301	3	24,30,30	1.16	2 (8%)	26,47,47	2.00	5 (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	A	301	3	-	0/12/32/32	0/3/3/3
4	GOL	A	303	-	-	0/4/4/4	0/0/0/0
2	GDP	B	301	3	-	0/12/32/32	0/3/3/3
2	GDP	C	301	-	-	0/12/32/32	0/3/3/3
4	GOL	C	303	-	-	0/4/4/4	0/0/0/0
2	GDP	D	301	3	-	0/12/32/32	0/3/3/3
2	GDP	E	301	3	-	0/12/32/32	0/3/3/3
4	GOL	E	303	-	-	0/4/4/4	0/0/0/0
4	GOL	E	304	-	-	0/4/4/4	0/0/0/0
2	GDP	F	301	3	-	0/12/32/32	0/3/3/3

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	301	GDP	C5-C4	2.69	1.46	1.40
2	C	301	GDP	C5-C4	2.88	1.47	1.40
2	A	301	GDP	C5-C4	2.93	1.47	1.40
2	B	301	GDP	C5-C4	3.10	1.47	1.40
2	F	301	GDP	C5-C4	3.17	1.47	1.40

The worst 5 of 37 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	301	GDP	C5-C6-N1	-5.43	116.42	123.52
2	B	301	GDP	C5-C6-N1	-5.27	116.63	123.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	301	GDP	C5-C6-N1	-4.50	117.65	123.52
2	E	301	GDP	N3-C2-N1	-4.43	121.53	127.56
2	C	301	GDP	N3-C2-N1	-4.18	121.88	127.56

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	303	GOL	1	0
2	C	301	GDP	1	0
4	E	303	GOL	1	0
2	F	301	GDP	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

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

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	257/261 (98%)	0.39	11 (4%) 39 48	42, 60, 106, 198	0
1	B	258/261 (98%)	1.01	37 (14%) 4 6	44, 69, 146, 237	0
1	C	246/261 (94%)	0.86	31 (12%) 5 8	48, 72, 158, 280	0
1	D	258/261 (98%)	0.63	21 (8%) 15 21	56, 83, 135, 186	0
1	E	259/261 (99%)	0.50	18 (6%) 20 27	44, 63, 127, 211	0
1	F	249/261 (95%)	1.19	45 (18%) 2 3	55, 104, 146, 195	0
All	All	1527/1566 (97%)	0.76	163 (10%) 8 12	42, 74, 141, 280	0

The worst 5 of 163 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	220	SER	14.8
1	D	67	TYR	11.2
1	B	223	LEU	10.0
1	C	223	LEU	9.8
1	D	63	VAL	9.0

### 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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
4	GOL	E	303	6/6	0.59	0.46	4.87	91,102,106,108	0
4	GOL	C	303	6/6	0.73	0.22	3.88	90,102,119,125	0
4	GOL	E	304	6/6	0.86	0.26	3.42	69,98,110,124	0
2	GDP	E	301	28/28	0.95	0.20	0.62	54,61,86,110	0
2	GDP	A	301	28/28	0.98	0.18	0.26	57,59,77,79	0
2	GDP	C	301	28/28	0.93	0.16	-0.01	45,66,77,84	0
2	GDP	B	301	28/28	0.97	0.14	-0.87	51,53,63,65	0
3	MG	B	302	1/1	0.94	0.12	-1.14	52,52,52,52	0
2	GDP	D	301	28/28	0.96	0.11	-1.38	55,68,91,136	0
2	GDP	F	301	28/28	0.93	0.13	-1.70	71,93,103,114	0
3	MG	C	302	1/1	0.96	0.19	-	63,63,63,63	0
3	MG	A	302	1/1	0.94	0.24	-	55,55,55,55	0
3	MG	D	302	1/1	0.93	0.06	-	65,65,65,65	0
4	GOL	A	303	6/6	0.64	0.48	-	104,119,129,129	0
3	MG	E	302	1/1	0.97	0.07	-	61,61,61,61	0
3	MG	F	302	1/1	0.97	0.21	-	85,85,85,85	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.