Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2025 – 04:18 PM JST

PDB ID	:	8YP2
Title	:	the crystal structure of inactive Magnaporthe grisea oxidoreductase in complex with NADP and Glycerol
Authors	:	Huang, X.; Jiang, H.; Tang, D.; Lin, S.
Deposited on	:	2024-03-15
Resolution	:	2.91 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:

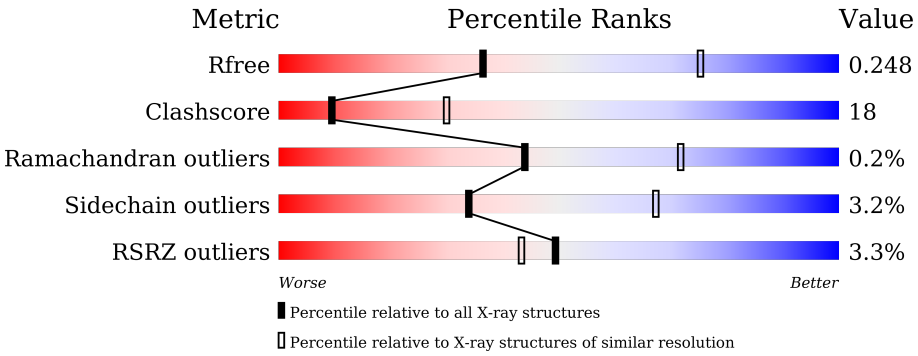
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.91 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}	164625	2797 (2.94-2.90)
Clashscore	180529	3049 (2.94-2.90)
Ramachandran outliers	177936	2981 (2.94-2.90)
Sidechain outliers	177891	2983 (2.94-2.90)
RSRZ outliers	164620	2799 (2.94-2.90)

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 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 <=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	332	3% 68% 28%
1	B	332	2% 69% 23% 5%
1	C	332	4% 58% 36%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 7879 atoms, of which 99 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 NADP-dependent oxidoreductase domain-containing protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	326	Total	C	N	O	S	5	1	0
			2585	1645	445	486	9			
1	B	314	Total	C	N	O	S	0	0	0
			2493	1587	431	468	7			
1	C	320	Total	C	N	O	S	0	0	0
			2536	1613	438	478	7			

There are 69 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP A0A6P8AP13
A	4	ALA	SER	conflict	UNP A0A6P8AP13
A	7	ALA	SER	conflict	UNP A0A6P8AP13
A	38	ALA	SER	conflict	UNP A0A6P8AP13
A	56	PHE	TYR	conflict	UNP A0A6P8AP13
A	57	ALA	TYR	conflict	UNP A0A6P8AP13
A	103	ASP	GLU	conflict	UNP A0A6P8AP13
A	110	ARG	LYS	conflict	UNP A0A6P8AP13
A	145	HIS	LYS	conflict	UNP A0A6P8AP13
A	186	VAL	ILE	conflict	UNP A0A6P8AP13
A	252	MET	LEU	conflict	UNP A0A6P8AP13
A	290	GLU	ASP	conflict	UNP A0A6P8AP13
A	292	ASP	ASN	conflict	UNP A0A6P8AP13
A	294	GLN	GLU	conflict	UNP A0A6P8AP13
A	322	GLU	ASP	conflict	UNP A0A6P8AP13
A	325	LEU	-	expression tag	UNP A0A6P8AP13
A	326	GLU	-	expression tag	UNP A0A6P8AP13
A	327	HIS	-	expression tag	UNP A0A6P8AP13
A	328	HIS	-	expression tag	UNP A0A6P8AP13
A	329	HIS	-	expression tag	UNP A0A6P8AP13
A	330	HIS	-	expression tag	UNP A0A6P8AP13
A	331	HIS	-	expression tag	UNP A0A6P8AP13
A	332	HIS	-	expression tag	UNP A0A6P8AP13

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1	MET	-	initiating methionine	UNP A0A6P8AP13
B	4	ALA	SER	conflict	UNP A0A6P8AP13
B	7	ALA	SER	conflict	UNP A0A6P8AP13
B	38	ALA	SER	conflict	UNP A0A6P8AP13
B	56	PHE	TYR	conflict	UNP A0A6P8AP13
B	57	ALA	TYR	conflict	UNP A0A6P8AP13
B	103	ASP	GLU	conflict	UNP A0A6P8AP13
B	110	ARG	LYS	conflict	UNP A0A6P8AP13
B	145	HIS	LYS	conflict	UNP A0A6P8AP13
B	186	VAL	ILE	conflict	UNP A0A6P8AP13
B	252	MET	LEU	conflict	UNP A0A6P8AP13
B	290	GLU	ASP	conflict	UNP A0A6P8AP13
B	292	ASP	ASN	conflict	UNP A0A6P8AP13
B	294	GLN	GLU	conflict	UNP A0A6P8AP13
B	322	GLU	ASP	conflict	UNP A0A6P8AP13
B	325	LEU	-	expression tag	UNP A0A6P8AP13
B	326	GLU	-	expression tag	UNP A0A6P8AP13
B	327	HIS	-	expression tag	UNP A0A6P8AP13
B	328	HIS	-	expression tag	UNP A0A6P8AP13
B	329	HIS	-	expression tag	UNP A0A6P8AP13
B	330	HIS	-	expression tag	UNP A0A6P8AP13
B	331	HIS	-	expression tag	UNP A0A6P8AP13
B	332	HIS	-	expression tag	UNP A0A6P8AP13
C	1	MET	-	initiating methionine	UNP A0A6P8AP13
C	4	ALA	SER	conflict	UNP A0A6P8AP13
C	7	ALA	SER	conflict	UNP A0A6P8AP13
C	38	ALA	SER	conflict	UNP A0A6P8AP13
C	56	PHE	TYR	conflict	UNP A0A6P8AP13
C	57	ALA	TYR	conflict	UNP A0A6P8AP13
C	103	ASP	GLU	conflict	UNP A0A6P8AP13
C	110	ARG	LYS	conflict	UNP A0A6P8AP13
C	145	HIS	LYS	conflict	UNP A0A6P8AP13
C	186	VAL	ILE	conflict	UNP A0A6P8AP13
C	252	MET	LEU	conflict	UNP A0A6P8AP13
C	290	GLU	ASP	conflict	UNP A0A6P8AP13
C	292	ASP	ASN	conflict	UNP A0A6P8AP13
C	294	GLN	GLU	conflict	UNP A0A6P8AP13
C	322	GLU	ASP	conflict	UNP A0A6P8AP13
C	325	LEU	-	expression tag	UNP A0A6P8AP13
C	326	GLU	-	expression tag	UNP A0A6P8AP13
C	327	HIS	-	expression tag	UNP A0A6P8AP13
C	328	HIS	-	expression tag	UNP A0A6P8AP13

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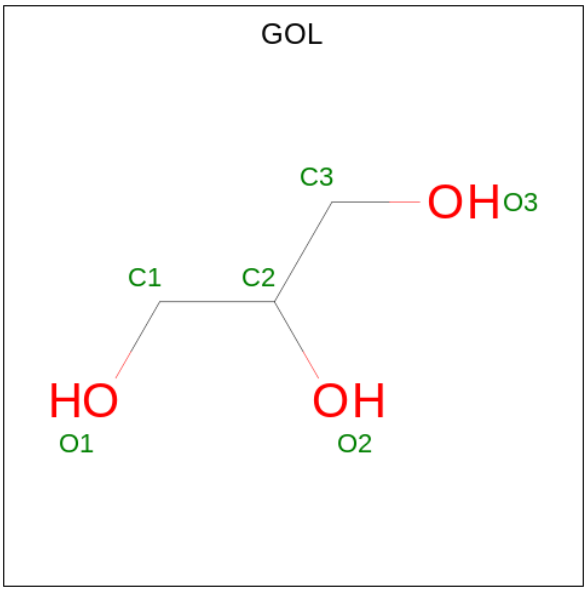
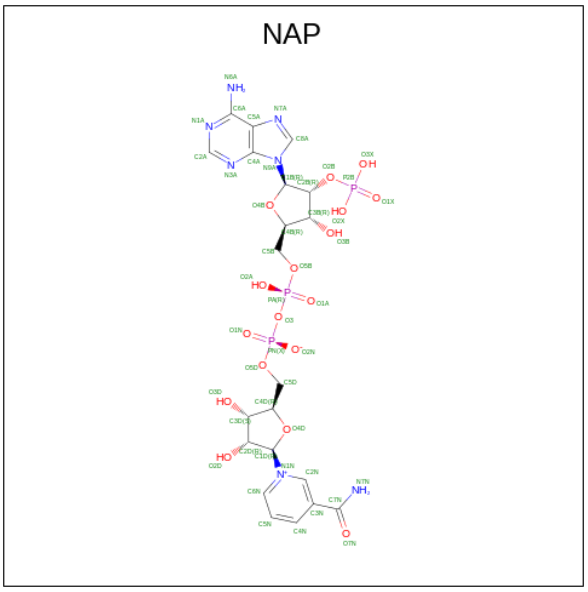
Chain	Residue	Modelled	Actual	Comment	Reference
C	329	HIS	-	expression tag	UNP A0A6P8AP13
C	330	HIS	-	expression tag	UNP A0A6P8AP13
C	331	HIS	-	expression tag	UNP A0A6P8AP13
C	332	HIS	-	expression tag	UNP A0A6P8AP13

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	C	1	Total	C	H	O	0	0
			14	3	8	3		

- Molecule 3 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	H	N	O	P	0	0
			73	21	25	7	17	3		
3	B	1	Total	C	H	N	O	P	0	0
			73	21	25	7	17	3		
3	C	1	Total	C	H	N	O	P	0	0
			73	21	25	7	17	3		

- Molecule 4 is water.

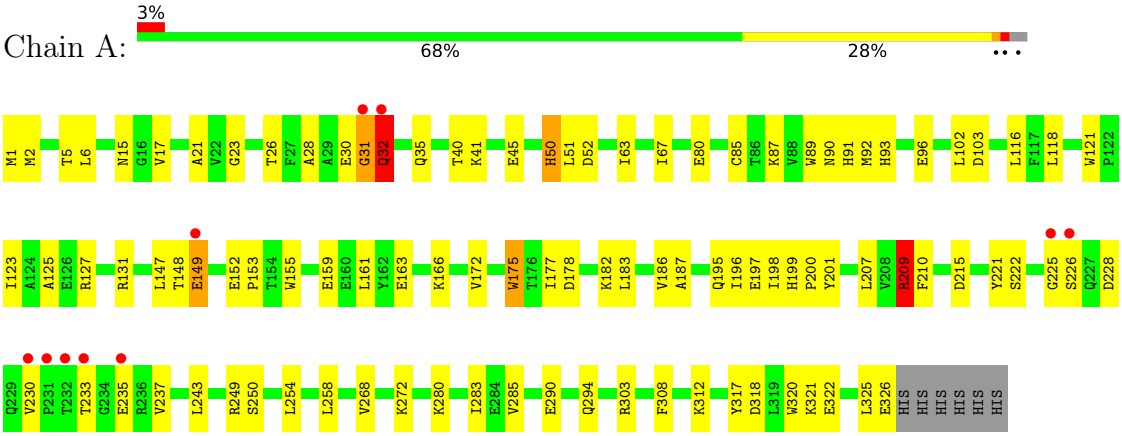
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	O	0	0
			2	2		
4	B	2	Total	O	0	0
			2	2		

3 Residue-property plots (i)

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

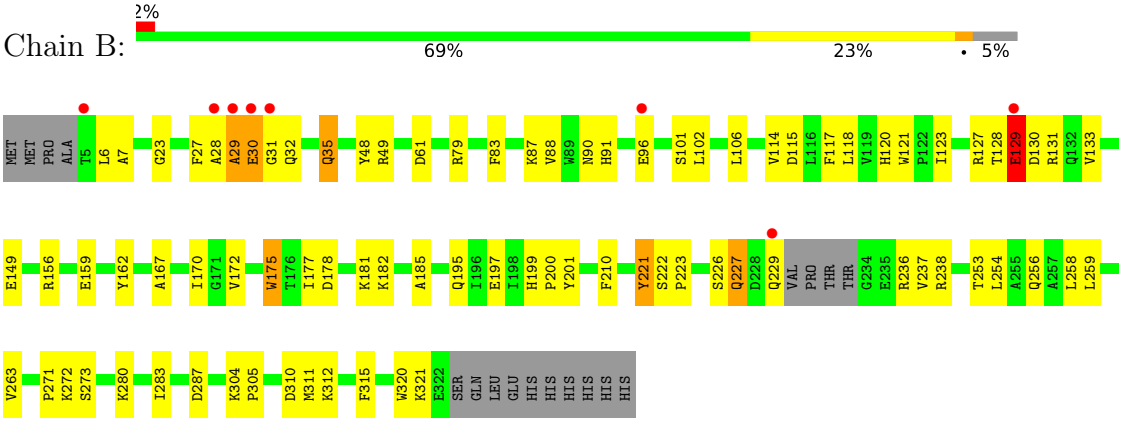
• Molecule 1: NADP-dependent oxidoreductase domain-containing protein

Chain A:



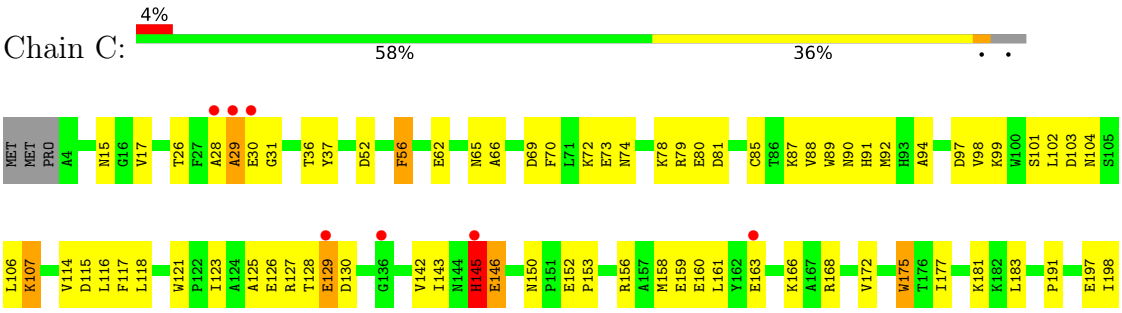
• Molecule 1: NADP-dependent oxidoreductase domain-containing protein

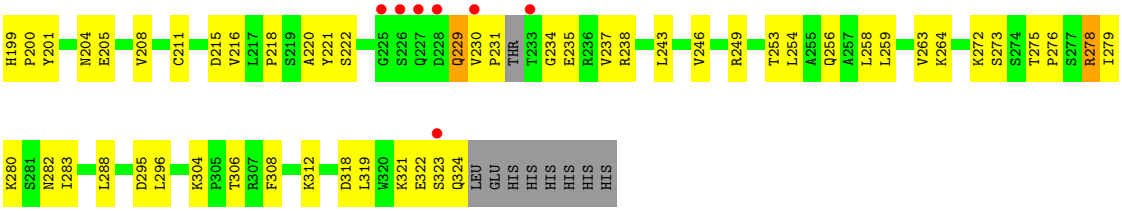
Chain B:



• Molecule 1: NADP-dependent oxidoreductase domain-containing protein

Chain C:




H199
P200
Y201
N204
E205
V208
C211
D215
V216
L217
P218
S219
A220
Y221
S222
G225
S226
Q227
D228
Q229
V230
P231
THR
T233
G234
E235
R236
V237
R238
L243
V246
R249
T253
L254
A255
Q256
A257
L258
L259
V263
K264
K272
S273
S274
T275
P276
S277
R278
I279
K280
S281
N282
I283
L288
D295
L296
K304
P305
T306
R307
F308
K312
D318
L319
W320
K321
E322
S323
Q324
LEU
GLU
HIS
HIS
HIS
HIS
HIS
HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	64.76Å 110.78Å 171.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.83 – 2.91 46.83 – 2.91	Depositor EDS
% Data completeness (in resolution range)	95.6 (46.83-2.91) 95.7 (46.83-2.91)	Depositor EDS
R_{merge}	0.40	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.60 (at 2.91Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.203 , 0.248 0.203 , 0.248	Depositor DCC
R_{free} test set	25838 reflections (7.28%)	wwPDB-VP
Wilson B-factor (Å^2)	38.0	Xtriage
Anisotropy	1.042	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 52.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	7879	wwPDB-VP
Average B, all atoms (Å^2)	42.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.45% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: GOL, NAP

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	0.33	2/2649 (0.1%)	0.89	9/3603 (0.2%)
1	B	0.33	1/2554 (0.0%)	0.58	5/3470 (0.1%)
1	C	0.45	5/2598 (0.2%)	0.64	3/3532 (0.1%)
All	All	0.37	8/7801 (0.1%)	0.72	17/10605 (0.2%)

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	A	0	4
1	B	0	1
1	C	0	1
All	All	0	6

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	107	LYS	CE-NZ	8.40	1.70	1.49
1	C	129	GLU	CB-CG	8.03	1.67	1.52
1	B	129	GLU	CB-CG	-8.00	1.36	1.52
1	C	107	LYS	CB-CG	-7.31	1.32	1.52
1	A	32	GLN	CG-CD	6.48	1.66	1.51
1	A	149	GLU	CD-OE2	5.78	1.32	1.25
1	C	107	LYS	CD-CE	5.51	1.65	1.51
1	C	129	GLU	CG-CD	5.16	1.59	1.51

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	149	GLU	OE1-CD-OE2	-28.55	89.04	123.30
1	A	149	GLU	CG-CD-OE1	19.02	156.34	118.30
1	A	31	GLY	C-N-CA	-15.58	82.75	121.70
1	A	149	GLU	CG-CD-OE2	-15.06	88.18	118.30
1	B	128	THR	C-N-CA	-8.09	101.47	121.70
1	A	209	ARG	CG-CD-NE	-7.63	95.77	111.80
1	C	107	LYS	CB-CG-CD	-7.61	91.83	111.60
1	A	32	GLN	CB-CA-C	7.05	124.49	110.40
1	A	148	THR	C-N-CA	-6.75	104.82	121.70
1	A	149	GLU	CB-CG-CD	-6.44	96.81	114.20
1	B	29	ALA	C-N-CA	6.42	137.74	121.70
1	B	30	GLU	CA-CB-CG	-6.33	99.46	113.40
1	B	129	GLU	CA-CB-CG	6.16	126.94	113.40
1	C	29	ALA	C-N-CA	6.09	136.94	121.70
1	C	145	HIS	N-CA-CB	-5.46	100.78	110.60
1	B	129	GLU	CB-CG-CD	-5.11	100.40	114.20
1	A	32	GLN	N-CA-C	-5.08	97.29	111.00

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	149	GLU	Sidechain
1	A	209	ARG	Sidechain
1	A	32	GLN	Sidechain,Peptide
1	B	129	GLU	Peptide
1	C	128	THR	Peptide

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	2585	0	2536	79	0
1	B	2493	0	2441	74	0
1	C	2536	0	2487	122	0
2	A	6	8	8	1	0
2	B	6	8	8	1	0
2	C	6	8	8	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	48	25	23	5	0
3	B	48	25	23	8	0
3	C	48	25	23	11	0
4	A	2	0	0	0	0
4	B	2	0	0	1	0
All	All	7780	99	7557	270	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 18.

All (270) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:107:LYS:CE	1:C:107:LYS:NZ	1.70	1.53
3:C:402:NAP:O4B	3:C:402:NAP:C1B	1.63	1.19
1:B:30:GLU:O	1:B:30:GLU:HG2	1.51	1.09
1:B:127:ARG:NH1	1:B:129:GLU:HB2	1.70	1.06
1:C:230:VAL:HG22	1:C:306:THR:HG21	1.37	1.02
1:A:30:GLU:O	1:A:32:GLN:HB2	1.61	1.00
1:C:322:GLU:HG2	1:C:323:SER:H	1.31	0.93
1:B:127:ARG:HH12	1:B:129:GLU:HB2	1.28	0.90
1:B:28:ALA:HB2	1:B:272:LYS:HE3	1.52	0.89
1:A:163:GLU:HB3	1:C:145:HIS:CD2	2.08	0.88
1:C:91:HIS:HB2	1:C:127:ARG:HB3	1.56	0.88
1:C:102:LEU:HD23	1:C:161:LEU:HD22	1.55	0.88
1:C:146:GLU:O	1:C:150:ASN:HB2	1.75	0.86
1:A:41:LYS:O	1:A:45:GLU:HG3	1.77	0.84
1:A:233:THR:OG1	1:A:235:GLU:OE2	1.93	0.84
1:C:29:ALA:HB1	1:C:31:GLY:N	1.95	0.82
1:A:235:GLU:OE1	1:A:303:ARG:NH1	2.13	0.81
1:A:163:GLU:HB3	1:C:145:HIS:HD2	1.44	0.81
1:C:222:SER:HA	3:C:402:NAP:O3	1.81	0.80
1:C:322:GLU:HG2	1:C:323:SER:N	1.95	0.79
1:A:87:LYS:HG2	1:A:118:LEU:HB2	1.65	0.78
1:B:28:ALA:HB2	1:B:272:LYS:CE	2.14	0.77
1:B:222:SER:HA	3:B:402:NAP:O3	1.85	0.76
1:A:163:GLU:CB	1:C:145:HIS:HD2	1.98	0.76
1:A:230:VAL:HG23	1:A:235:GLU:O	1.85	0.75
1:C:104:ASN:HA	1:C:107:LYS:CE	2.17	0.75
1:C:90:ASN:OD1	1:C:121:TRP:HB2	1.88	0.74
1:B:31:GLY:O	1:C:304:LYS:HD2	1.88	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:102:LEU:HD23	1:A:161:LEU:HD22	1.71	0.72
1:C:103:ASP:OD2	1:C:166:LYS:NZ	2.22	0.72
1:A:222:SER:HB3	1:A:225:GLY:O	1.91	0.71
1:C:318:ASP:HB3	1:C:321:LYS:HE2	1.73	0.71
1:C:159:GLU:O	1:C:163:GLU:HG3	1.92	0.70
1:C:229:GLN:HG2	1:C:230:VAL:N	2.06	0.70
1:A:172:VAL:HB	1:A:175:TRP:CE3	2.27	0.70
1:B:87:LYS:HG2	1:B:118:LEU:HB2	1.74	0.70
1:C:106:LEU:CD2	1:C:114:VAL:HG13	2.22	0.70
1:C:243:LEU:HD13	1:C:258:LEU:HD21	1.73	0.69
1:B:200:PRO:HG2	1:B:258:LEU:HD22	1.73	0.69
1:C:106:LEU:HD21	1:C:114:VAL:HG13	1.74	0.68
1:A:85:CYS:HB2	1:A:116:LEU:HB3	1.74	0.68
1:A:91:HIS:HB2	1:A:127:ARG:HB3	1.75	0.68
1:B:32:GLN:O	1:B:35:GLN:HG3	1.93	0.67
1:B:272:LYS:HD2	1:B:273:SER:N	2.08	0.67
1:C:275:THR:HB	1:C:278:ARG:HG3	1.77	0.67
1:C:28:ALA:CB	1:C:29:ALA:HB2	2.26	0.65
1:A:163:GLU:CG	1:C:145:HIS:HD2	2.09	0.65
3:C:402:NAP:N3A	3:C:402:NAP:H2B	2.11	0.65
1:B:229:GLN:O	1:B:236:ARG:HG2	1.96	0.65
1:A:92:MET:HE1	1:A:131:ARG:CB	2.27	0.65
1:A:23:GLY:HA2	1:A:50:HIS:HB3	1.77	0.65
1:C:172:VAL:HB	1:C:175:TRP:CE3	2.33	0.64
1:A:92:MET:HE1	1:A:131:ARG:HB3	1.79	0.64
1:B:172:VAL:HB	1:B:175:TRP:CE3	2.31	0.64
1:B:88:VAL:HG23	1:B:101:SER:CB	2.28	0.64
1:B:280:LYS:O	1:B:283:ILE:HG22	1.97	0.64
1:C:278:ARG:HB3	3:C:402:NAP:C2A	2.27	0.64
1:C:278:ARG:HD2	3:C:402:NAP:C6A	2.28	0.64
1:C:143:ILE:HB	1:C:145:HIS:CE1	2.33	0.64
1:C:276:PRO:O	1:C:280:LYS:HG3	1.97	0.64
1:C:28:ALA:HB1	1:C:29:ALA:HA	1.80	0.64
1:C:238:ARG:HG2	1:C:254:LEU:HD12	1.79	0.64
1:A:103:ASP:OD2	1:A:166:LYS:NZ	2.32	0.63
1:B:129:GLU:HA	1:B:131:ARG:H	1.64	0.63
1:A:222:SER:HA	3:A:402:NAP:O1A	1.99	0.62
1:B:222:SER:H	3:B:402:NAP:H51N	1.64	0.62
1:C:104:ASN:HA	1:C:107:LYS:HE2	1.82	0.62
1:B:30:GLU:O	1:B:30:GLU:CG	2.40	0.62
1:C:28:ALA:HB1	1:C:29:ALA:CA	2.30	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:102:LEU:CD2	1:C:161:LEU:HD22	2.30	0.61
1:C:198:ILE:HD12	1:C:220:ALA:HB2	1.82	0.61
1:C:158:MET:HA	1:C:161:LEU:HD12	1.82	0.61
1:A:31:GLY:O	1:A:32:GLN:CB	2.33	0.61
1:A:32:GLN:H	1:A:35:GLN:HB2	1.66	0.61
1:A:92:MET:HE2	1:A:127:ARG:HD3	1.83	0.60
1:A:325:LEU:O	1:A:326:GLU:HB2	2.01	0.60
1:A:80:GLU:OE1	1:A:80:GLU:N	2.28	0.59
1:C:87:LYS:HG2	1:C:118:LEU:HB2	1.84	0.59
1:A:2:MET:HB3	1:A:5:THR:HB	1.84	0.59
1:A:182:LYS:O	1:A:186:VAL:HG22	2.02	0.59
1:B:253:THR:HG23	1:B:256:GLN:OE1	2.02	0.59
1:A:92:MET:HE1	1:A:131:ARG:HG2	1.84	0.58
1:C:26:THR:OG1	1:C:52:ASP:O	2.21	0.58
1:C:72:LYS:O	1:C:72:LYS:HG2	2.02	0.58
1:C:197:GLU:HB2	1:C:221:TYR:CE1	2.39	0.58
1:A:230:VAL:HG22	1:A:308:PHE:CZ	2.38	0.58
1:B:227:GLN:HB3	3:B:402:NAP:H4B	1.85	0.58
1:C:229:GLN:OE1	1:C:234:GLY:HA2	2.04	0.58
1:C:312:LYS:HD3	1:C:318:ASP:CG	2.23	0.58
1:A:200:PRO:HG2	1:A:258:LEU:HD22	1.86	0.57
1:A:90:ASN:OD1	1:A:121:TRP:HB2	2.04	0.57
1:C:238:ARG:NH1	3:C:402:NAP:H8A	2.19	0.57
1:A:155:TRP:O	1:A:159:GLU:HG3	2.04	0.57
1:B:177:ILE:O	1:B:181:LYS:HG3	2.05	0.57
1:B:61:ASP:N	1:B:61:ASP:OD2	2.38	0.57
1:C:143:ILE:CG2	1:C:145:HIS:ND1	2.68	0.57
1:B:27:PHE:CE2	1:B:29:ALA:HB3	2.40	0.56
1:B:259:LEU:O	1:B:263:VAL:HG23	2.05	0.56
1:C:17:VAL:HG13	1:C:168:ARG:NH2	2.19	0.56
1:C:36:THR:HB	1:C:62:GLU:OE1	2.05	0.56
1:A:197:GLU:HB2	1:A:221:TYR:CE1	2.40	0.56
1:B:91:HIS:HB2	1:B:127:ARG:HB3	1.89	0.55
1:B:48:TYR:O	1:B:49:ARG:NH1	2.39	0.55
1:A:96:GLU:CD	1:A:96:GLU:H	2.08	0.55
1:B:129:GLU:CA	1:B:131:ARG:H	2.18	0.55
1:C:253:THR:HG23	1:C:256:GLN:OE1	2.05	0.55
1:B:199:HIS:CE1	1:B:201:TYR:HB2	2.41	0.55
1:B:88:VAL:HG23	1:B:101:SER:HB3	1.87	0.55
1:A:63:ILE:O	1:A:67:ILE:HG13	2.06	0.54
1:C:280:LYS:O	1:C:283:ILE:HG22	2.06	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:92:MET:HE1	1:A:131:ARG:CG	2.38	0.54
1:B:129:GLU:C	1:B:131:ARG:H	2.09	0.54
1:C:159:GLU:O	1:C:163:GLU:CG	2.55	0.54
1:A:312:LYS:HD3	1:A:318:ASP:CG	2.28	0.54
1:C:28:ALA:HB1	1:C:29:ALA:HB2	1.90	0.54
1:C:94:ALA:HB3	1:C:97:ASP:OD2	2.08	0.54
1:C:28:ALA:HB3	1:C:29:ALA:HB2	1.90	0.53
1:A:163:GLU:CG	1:C:145:HIS:CD2	2.91	0.53
1:B:127:ARG:NH1	1:B:131:ARG:HG3	2.23	0.53
1:C:156:ARG:O	1:C:160:GLU:HG3	2.08	0.53
1:B:304:LYS:HG3	1:B:305:PRO:HD2	1.90	0.53
1:C:272:LYS:HB3	3:C:402:NAP:H52N	1.90	0.53
1:A:163:GLU:HG2	1:C:145:HIS:HD2	1.73	0.52
1:B:114:VAL:O	1:B:167:ALA:HA	2.09	0.52
1:C:28:ALA:HB1	1:C:29:ALA:CB	2.39	0.52
1:C:126:GLU:HG3	1:C:142:VAL:HG12	1.91	0.52
1:C:319:LEU:HD12	1:C:319:LEU:O	2.09	0.52
1:C:78:LYS:HG2	1:C:81:ASP:OD2	2.09	0.52
1:B:88:VAL:HG23	1:B:101:SER:OG	2.10	0.52
1:C:85:CYS:HB2	1:C:116:LEU:HB3	1.91	0.52
1:B:90:ASN:OD1	1:B:121:TRP:HB2	2.10	0.51
1:B:310:ASP:HA	1:B:320:TRP:HZ3	1.74	0.51
1:B:23:GLY:O	1:B:271:PRO:HD2	2.10	0.51
1:B:272:LYS:O	3:B:402:NAP:H8A	2.10	0.51
1:C:183:LEU:HD23	1:C:191:PRO:HG3	1.92	0.51
1:C:115:ASP:OD2	1:C:168:ARG:NH1	2.42	0.51
1:C:143:ILE:HG22	1:C:145:HIS:ND1	2.25	0.51
1:A:243:LEU:HD13	1:A:258:LEU:HD21	1.93	0.50
1:C:273:SER:HA	3:C:402:NAP:O1X	2.10	0.50
1:C:230:VAL:HB	1:C:235:GLU:O	2.10	0.50
1:A:290:GLU:O	1:A:294:GLN:HG2	2.12	0.50
1:A:312:LYS:HG3	1:A:318:ASP:HA	1.93	0.50
1:B:129:GLU:C	1:B:131:ARG:N	2.65	0.50
1:C:204:ASN:O	1:C:208:VAL:HG23	2.12	0.50
1:C:238:ARG:CG	1:C:254:LEU:HD12	2.42	0.50
1:C:69:ASP:O	1:C:73:GLU:HG3	2.12	0.49
1:B:273:SER:HA	3:B:402:NAP:O1X	2.11	0.49
1:A:85:CYS:HA	1:A:116:LEU:O	2.12	0.49
1:C:30:GLU:O	1:C:30:GLU:HG2	2.11	0.49
1:A:201:TYR:CD2	1:A:237:VAL:HG22	2.48	0.49
1:C:99:LYS:NZ	1:C:160:GLU:OE1	2.31	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:246:VAL:HG11	1:C:296:LEU:HG	1.94	0.49
1:C:211:CYS:HB3	1:C:216:VAL:O	2.12	0.49
1:B:226:SER:O	1:B:227:GLN:HG2	2.13	0.48
1:C:238:ARG:HH11	3:C:402:NAP:H8A	1.77	0.48
1:A:31:GLY:O	1:A:32:GLN:HB2	2.12	0.48
1:A:272:LYS:O	3:A:402:NAP:H8A	2.12	0.48
1:B:28:ALA:CB	1:B:272:LYS:HE3	2.34	0.48
1:C:56:PHE:HD2	1:C:56:PHE:O	1.96	0.48
1:A:201:TYR:CG	1:A:237:VAL:HG22	2.49	0.48
1:A:152:GLU:HB3	1:A:153:PRO:HD3	1.95	0.48
1:B:201:TYR:CG	1:B:237:VAL:HG22	2.49	0.48
1:C:90:ASN:HB3	1:C:123:ILE:O	2.13	0.48
1:B:7:ALA:HB2	1:B:283:ILE:O	2.13	0.48
1:C:143:ILE:CG2	1:C:145:HIS:CE1	2.97	0.48
1:A:221:TYR:HB2	3:A:402:NAP:O4D	2.14	0.48
1:C:70:PHE:O	1:C:74:ASN:ND2	2.35	0.48
1:A:163:GLU:HG2	1:C:145:HIS:CD2	2.49	0.47
1:C:88:VAL:HG23	1:C:101:SER:CB	2.44	0.47
1:C:17:VAL:HG13	1:C:168:ARG:HH22	1.78	0.47
1:A:28:ALA:HB1	1:A:30:GLU:HG2	1.95	0.47
1:B:88:VAL:O	1:B:120:HIS:HB2	2.14	0.47
1:B:238:ARG:HA	1:B:254:LEU:HD21	1.97	0.47
1:B:127:ARG:NH1	1:B:129:GLU:HA	2.30	0.47
1:B:127:ARG:NH1	1:B:129:GLU:CB	2.58	0.47
1:C:282:ASN:OD1	3:C:402:NAP:H2A	2.14	0.47
1:B:83:PHE:HA	1:B:115:ASP:OD2	2.15	0.47
1:B:127:ARG:HH11	1:B:129:GLU:HA	1.80	0.47
1:B:162:TYR:HB2	1:B:170:ILE:HD13	1.96	0.47
1:A:230:VAL:HG22	1:A:308:PHE:HZ	1.80	0.46
1:A:226:SER:C	1:A:228:ASP:H	2.19	0.46
1:A:230:VAL:HB	1:A:235:GLU:H	1.80	0.46
1:B:199:HIS:HE1	1:B:201:TYR:HB2	1.80	0.46
1:B:201:TYR:CD2	1:B:237:VAL:HG22	2.51	0.46
1:A:26:THR:OG1	1:A:52:ASP:O	2.26	0.46
1:A:280:LYS:O	1:A:283:ILE:HG22	2.15	0.46
1:A:40:THR:HG23	1:A:51:LEU:HD21	1.97	0.46
1:A:91:HIS:HA	1:A:125:ALA:O	2.16	0.46
1:B:311:MET:HB2	1:B:315:PHE:CE1	2.51	0.46
1:B:6:LEU:HD21	1:B:287:ASP:HA	1.97	0.45
1:C:275:THR:HB	1:C:278:ARG:CG	2.46	0.45
1:C:107:LYS:HE2	1:C:107:LYS:HB2	1.55	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:201:TYR:CG	1:C:237:VAL:HG22	2.51	0.45
1:C:249:ARG:NH2	1:C:295:ASP:OD2	2.50	0.45
1:B:149:GLU:O	1:B:182:LYS:NZ	2.45	0.45
1:C:126:GLU:HG3	1:C:142:VAL:CG1	2.47	0.45
1:C:273:SER:OG	1:C:278:ARG:HB2	2.17	0.45
1:A:209:ARG:O	1:A:210:PHE:C	2.54	0.45
1:C:92:MET:SD	1:C:97:ASP:HB3	2.57	0.45
1:C:177:ILE:O	1:C:181:LYS:HG3	2.17	0.45
1:C:98:VAL:HG12	1:C:161:LEU:HD11	2.00	0.44
1:C:208:VAL:HG13	1:C:218:PRO:HG2	2.00	0.44
1:C:143:ILE:CB	1:C:145:HIS:CE1	3.00	0.44
1:B:254:LEU:O	1:B:258:LEU:HG	2.17	0.44
1:C:229:GLN:O	1:C:231:PRO:HD3	2.18	0.43
1:C:205:GLU:OE1	1:C:205:GLU:HA	2.18	0.43
1:C:230:VAL:HB	1:C:235:GLU:H	1.83	0.43
1:B:195:GLN:HE22	3:B:402:NAP:H2N	1.83	0.43
1:B:312:LYS:HE2	1:B:312:LYS:HB2	1.76	0.43
1:C:56:PHE:HD1	1:C:89:TRP:CD2	2.37	0.43
1:C:91:HIS:HA	1:C:125:ALA:O	2.19	0.43
1:C:29:ALA:HB1	1:C:31:GLY:CA	2.48	0.43
1:A:254:LEU:HD13	1:A:254:LEU:C	2.38	0.43
1:A:89:TRP:CG	1:A:90:ASN:N	2.87	0.43
1:A:196:ILE:HG13	1:A:198:ILE:CG1	2.48	0.43
1:B:117:PHE:C	1:B:118:LEU:HD23	2.39	0.43
1:A:249:ARG:HG3	1:A:250:SER:N	2.33	0.43
1:A:177:ILE:HG13	1:A:207:LEU:HD13	2.01	0.43
1:C:37:TYR:CE2	1:C:66:ALA:HA	2.54	0.43
1:C:102:LEU:HD13	1:C:117:PHE:CD2	2.54	0.43
1:C:273:SER:O	1:C:279:ILE:HD11	2.19	0.43
1:A:225:GLY:O	1:A:226:SER:HB3	2.18	0.42
1:A:235:GLU:CD	1:A:303:ARG:HH12	2.19	0.42
1:B:28:ALA:HB2	1:B:272:LYS:HE2	1.99	0.42
1:C:85:CYS:HA	1:C:116:LEU:O	2.19	0.42
1:C:152:GLU:HB3	1:C:153:PRO:HD3	2.01	0.42
1:B:133:VAL:O	1:C:324:GLN:NE2	2.44	0.42
1:B:227:GLN:OE1	3:B:402:NAP:O1N	2.37	0.42
1:A:123:ILE:HD13	1:A:317:TYR:HD2	1.84	0.42
1:B:106:LEU:HD21	1:B:114:VAL:HG13	2.00	0.42
1:B:182:LYS:O	1:B:185:ALA:HB3	2.20	0.42
1:A:15:ASN:OD1	1:A:17:VAL:HG23	2.19	0.42
1:C:89:TRP:CG	1:C:90:ASN:N	2.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:92:MET:CE	1:A:131:ARG:HB3	2.47	0.42
1:B:87:LYS:NZ	4:B:501:HOH:O	2.50	0.42
1:B:156:ARG:NH1	1:B:159:GLU:OE1	2.53	0.42
1:C:15:ASN:OD1	1:C:17:VAL:HG23	2.19	0.42
1:B:102:LEU:HD22	1:B:117:PHE:CD2	2.54	0.42
1:A:21:ALA:O	1:A:268:VAL:HG13	2.20	0.41
1:B:6:LEU:HD21	1:B:287:ASP:CA	2.50	0.41
1:C:28:ALA:HA	1:C:30:GLU:OE1	2.19	0.41
1:A:320:TRP:O	1:A:322:GLU:N	2.50	0.41
1:C:143:ILE:HG21	1:C:145:HIS:CE1	2.56	0.41
1:C:199:HIS:HB2	1:C:200:PRO:CD	2.50	0.41
1:A:196:ILE:HD12	1:A:207:LEU:HD23	2.02	0.41
1:B:177:ILE:HG23	1:B:210:PHE:CD2	2.55	0.41
1:C:30:GLU:O	1:C:30:GLU:CG	2.68	0.41
1:C:259:LEU:O	1:C:263:VAL:HG23	2.21	0.41
1:A:283:ILE:HD12	1:A:283:ILE:HA	1.87	0.41
1:C:28:ALA:CB	1:C:29:ALA:CA	2.97	0.41
1:A:183:LEU:O	1:A:187:ALA:N	2.52	0.41
1:A:199:HIS:HB2	1:A:200:PRO:CD	2.50	0.41
1:C:92:MET:O	1:C:98:VAL:HG23	2.20	0.41
1:A:147:LEU:HD12	1:A:147:LEU:HA	1.81	0.41
2:A:401:GOL:H2	3:A:402:NAP:C4N	2.50	0.41
1:C:115:ASP:HA	1:C:168:ARG:HB2	2.03	0.41
1:B:102:LEU:HB2	1:B:117:PHE:CE2	2.56	0.41
1:B:197:GLU:HB2	1:B:221:TYR:CE1	2.55	0.41
2:B:401:GOL:H2	3:B:402:NAP:C4N	2.51	0.41
1:A:195:GLN:OE1	3:A:402:NAP:H2N	2.20	0.41
1:B:90:ASN:HB3	1:B:123:ILE:O	2.21	0.41
1:C:306:THR:HG22	1:C:308:PHE:CE2	2.56	0.41
1:B:222:SER:N	1:B:223:PRO:CD	2.84	0.40
1:C:106:LEU:HD23	1:C:114:VAL:HG13	2.01	0.40
1:C:278:ARG:HD2	3:C:402:NAP:N1A	2.36	0.40
1:A:6:LEU:HD12	1:A:285:VAL:HG12	2.03	0.40
1:A:172:VAL:HB	1:A:175:TRP:CD2	2.54	0.40
1:C:78:LYS:HD2	1:C:80:GLU:HB2	2.03	0.40
1:C:200:PRO:HG2	1:C:258:LEU:HD22	2.02	0.40
1:C:264:LYS:HE3	1:C:288:LEU:O	2.22	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	325/332 (98%)	313 (96%)	12 (4%)	0	100	100
1	B	310/332 (93%)	300 (97%)	9 (3%)	1 (0%)	37	65
1	C	316/332 (95%)	301 (95%)	14 (4%)	1 (0%)	37	65
All	All	951/996 (96%)	914 (96%)	35 (4%)	2 (0%)	44	72

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	129	GLU
1	B	130	ASP

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	274/281 (98%)	267 (97%)	7 (3%)	41	72
1	B	263/281 (94%)	254 (97%)	9 (3%)	32	65
1	C	269/281 (96%)	259 (96%)	10 (4%)	29	62
All	All	806/843 (96%)	780 (97%)	26 (3%)	34	67

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET

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Mol	Chain	Res	Type
1	A	50	HIS
1	A	93	HIS
1	A	175	TRP
1	A	178	ASP
1	A	215	ASP
1	A	321	LYS
1	B	35	GLN
1	B	79	ARG
1	B	96	GLU
1	B	129	GLU
1	B	175	TRP
1	B	178	ASP
1	B	221	TYR
1	B	227	GLN
1	B	321	LYS
1	C	56	PHE
1	C	65	ASN
1	C	79	ARG
1	C	130	ASP
1	C	145	HIS
1	C	146	GLU
1	C	175	TRP
1	C	215	ASP
1	C	229	GLN
1	C	278	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	65	ASN
1	C	145	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

6 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	$\#\|Z\| > 2$
3	NAP	A	402	-	45,52,52	4.54	16 (35%)	56,80,80	2.19	7 (12%)
2	GOL	B	401	-	5,5,5	0.72	0	5,5,5	0.86	0
2	GOL	C	401	-	5,5,5	0.96	0	5,5,5	1.16	1 (20%)
3	NAP	C	402	-	45,52,52	4.57	14 (31%)	56,80,80	2.18	7 (12%)
3	NAP	B	402	-	45,52,52	4.46	15 (33%)	56,80,80	2.25	7 (12%)
2	GOL	A	401	-	5,5,5	0.81	0	5,5,5	0.92	0

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
3	NAP	A	402	-	-	5/31/67/67	0/5/5/5
2	GOL	B	401	-	-	2/4/4/4	-
2	GOL	C	401	-	-	2/4/4/4	-
3	NAP	C	402	-	-	8/31/67/67	0/5/5/5
3	NAP	B	402	-	-	6/31/67/67	0/5/5/5
2	GOL	A	401	-	-	4/4/4/4	-

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	402	NAP	O4B-C1B	16.28	1.63	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	402	NAP	O4B-C1B	15.90	1.63	1.41
3	A	402	NAP	O4D-C1D	15.29	1.62	1.41
3	C	402	NAP	O4D-C1D	15.26	1.62	1.41
3	B	402	NAP	O4B-C1B	15.13	1.62	1.41
3	B	402	NAP	O4D-C1D	15.12	1.62	1.41
3	C	402	NAP	C2D-C1D	-14.93	1.31	1.53
3	B	402	NAP	C2D-C1D	-14.87	1.31	1.53
3	A	402	NAP	C2D-C1D	-14.73	1.31	1.53
3	A	402	NAP	C7N-N7N	6.74	1.45	1.33
3	B	402	NAP	C7N-N7N	6.70	1.45	1.33
3	C	402	NAP	C7N-N7N	6.61	1.45	1.33
3	C	402	NAP	O4B-C4B	-6.18	1.31	1.45
3	B	402	NAP	O4B-C4B	-6.15	1.31	1.45
3	C	402	NAP	O4D-C4D	-6.10	1.31	1.45
3	A	402	NAP	O4D-C4D	-6.08	1.31	1.45
3	B	402	NAP	O4D-C4D	-6.01	1.31	1.45
3	A	402	NAP	O4B-C4B	-5.99	1.31	1.45
3	C	402	NAP	P2B-O2B	3.39	1.65	1.59
3	A	402	NAP	P2B-O2B	3.26	1.65	1.59
3	A	402	NAP	C6A-N6A	3.24	1.45	1.34
3	B	402	NAP	C6A-N6A	3.18	1.45	1.34
3	A	402	NAP	O3D-C3D	-3.12	1.35	1.43
3	C	402	NAP	C6A-N6A	3.09	1.45	1.34
3	B	402	NAP	P2B-O2B	3.07	1.65	1.59
3	C	402	NAP	O2D-C2D	3.07	1.50	1.43
3	B	402	NAP	O2D-C2D	3.05	1.50	1.43
3	A	402	NAP	O2D-C2D	3.02	1.50	1.43
3	C	402	NAP	O3D-C3D	-3.01	1.35	1.43
3	B	402	NAP	O3D-C3D	-2.93	1.36	1.43
3	A	402	NAP	O3B-C3B	-2.91	1.36	1.43
3	B	402	NAP	O3B-C3B	-2.82	1.36	1.43
3	B	402	NAP	O7N-C7N	-2.79	1.18	1.24
3	C	402	NAP	O3B-C3B	-2.78	1.36	1.43
3	A	402	NAP	O7N-C7N	-2.75	1.18	1.24
3	C	402	NAP	O7N-C7N	-2.71	1.19	1.24
3	C	402	NAP	C5A-C4A	-2.59	1.34	1.40
3	B	402	NAP	C5A-C4A	-2.57	1.34	1.40
3	A	402	NAP	C5A-C4A	-2.51	1.34	1.40
3	B	402	NAP	C2A-N3A	2.26	1.35	1.32
3	A	402	NAP	C2A-N3A	2.26	1.35	1.32
3	A	402	NAP	C4N-C3N	-2.13	1.35	1.39
3	B	402	NAP	C4N-C3N	-2.11	1.35	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	402	NAP	C2A-N3A	2.10	1.35	1.32
3	A	402	NAP	C3N-C7N	2.09	1.53	1.50

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	402	NAP	C5A-C6A-N6A	11.08	137.19	120.35
3	A	402	NAP	C5A-C6A-N6A	10.98	137.04	120.35
3	C	402	NAP	C5A-C6A-N6A	10.83	136.81	120.35
3	C	402	NAP	N6A-C6A-N1A	-7.60	102.81	118.57
3	B	402	NAP	N6A-C6A-N1A	-7.54	102.92	118.57
3	A	402	NAP	N6A-C6A-N1A	-7.41	103.19	118.57
3	B	402	NAP	N3A-C2A-N1A	-5.56	119.98	128.68
3	C	402	NAP	N3A-C2A-N1A	-5.53	120.03	128.68
3	A	402	NAP	N3A-C2A-N1A	-5.42	120.21	128.68
3	B	402	NAP	C1B-N9A-C4A	-4.43	118.87	126.64
3	A	402	NAP	C1B-N9A-C4A	-3.97	119.67	126.64
3	B	402	NAP	C3D-C2D-C1D	3.93	106.89	100.98
3	A	402	NAP	C3D-C2D-C1D	3.63	106.44	100.98
3	C	402	NAP	C3D-C2D-C1D	3.53	106.29	100.98
3	C	402	NAP	C2B-C3B-C4B	2.80	108.08	101.99
3	B	402	NAP	PN-O3-PA	-2.74	123.43	132.83
3	C	402	NAP	C6N-N1N-C2N	-2.63	119.58	121.97
3	A	402	NAP	C6N-N1N-C2N	-2.47	119.73	121.97
3	B	402	NAP	C6N-N1N-C2N	-2.40	119.78	121.97
2	C	401	GOL	C3-C2-C1	-2.29	102.80	111.70
3	C	402	NAP	PN-O3-PA	-2.24	125.14	132.83
3	A	402	NAP	O7N-C7N-N7N	-2.21	119.44	122.58

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	GOL	O1-C1-C2-O2
2	B	401	GOL	C1-C2-C3-O3
2	B	401	GOL	O2-C2-C3-O3
2	C	401	GOL	C1-C2-C3-O3
3	B	402	NAP	C5B-O5B-PA-O1A
3	B	402	NAP	C5B-O5B-PA-O2A
3	C	402	NAP	C5B-O5B-PA-O1A
3	C	402	NAP	C5B-O5B-PA-O2A
3	B	402	NAP	O4D-C4D-C5D-O5D

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Mol	Chain	Res	Type	Atoms
3	C	402	NAP	C3B-C2B-O2B-P2B
2	A	401	GOL	O1-C1-C2-C3
2	A	401	GOL	C1-C2-C3-O3
3	C	402	NAP	C1B-C2B-O2B-P2B
3	C	402	NAP	C3B-C4B-C5B-O5B
3	B	402	NAP	C3D-C4D-C5D-O5D
3	C	402	NAP	O4B-C4B-C5B-O5B
3	A	402	NAP	PA-O3-PN-O5D
3	A	402	NAP	C5B-O5B-PA-O3
3	A	402	NAP	C2B-O2B-P2B-O2X
3	A	402	NAP	C5D-O5D-PN-O3
3	B	402	NAP	C5B-O5B-PA-O3
2	A	401	GOL	O2-C2-C3-O3
2	C	401	GOL	O2-C2-C3-O3
3	A	402	NAP	O4D-C4D-C5D-O5D
3	B	402	NAP	C2B-O2B-P2B-O3X
3	C	402	NAP	C5B-O5B-PA-O3
3	C	402	NAP	C2B-O2B-P2B-O2X

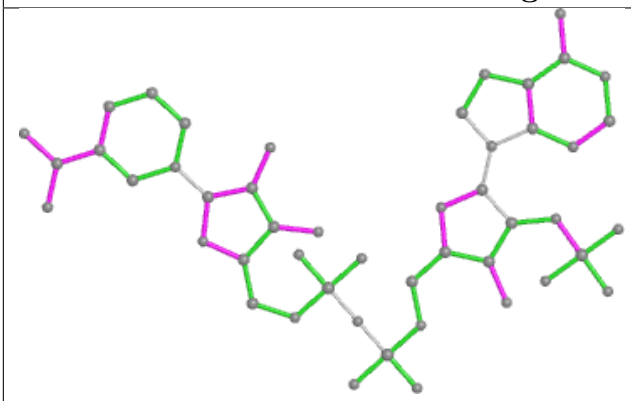
There are no ring outliers.

5 monomers are involved in 24 short contacts:

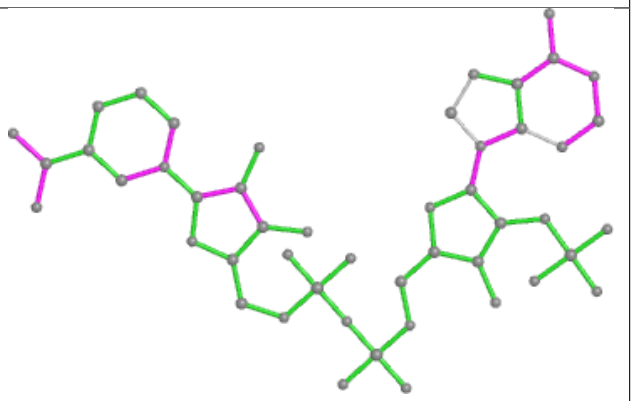
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402	NAP	5	0
2	B	401	GOL	1	0
3	C	402	NAP	11	0
3	B	402	NAP	8	0
2	A	401	GOL	1	0

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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

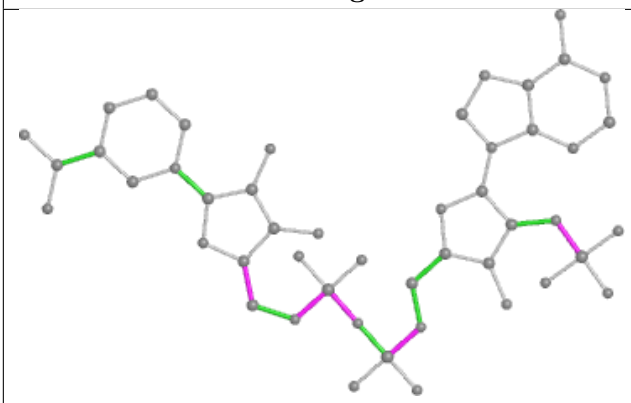
Ligand NAP A 402



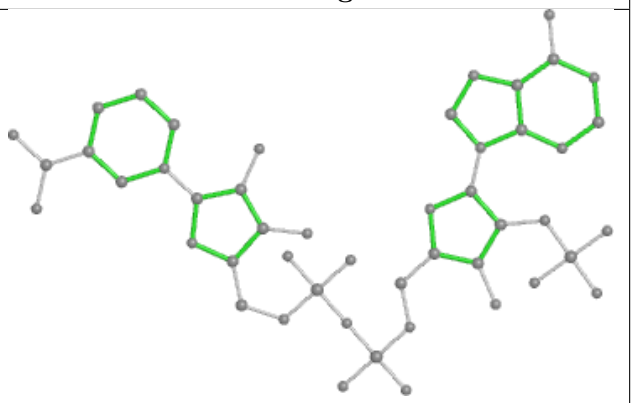
Bond lengths



Bond angles

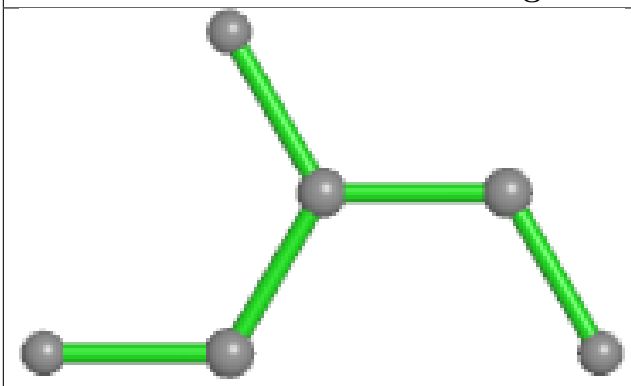


Torsions



Rings

Ligand GOL B 401



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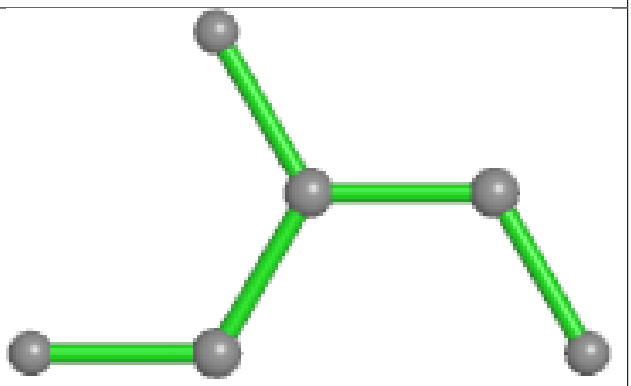

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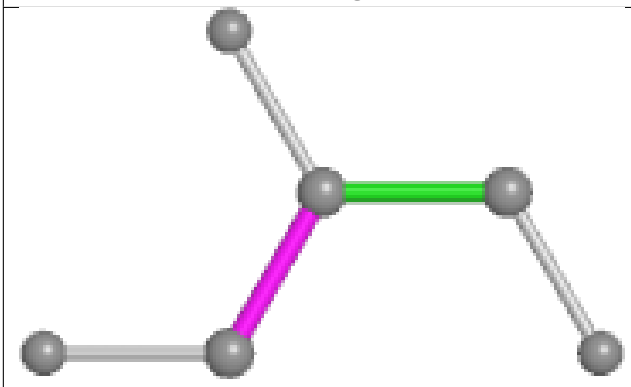

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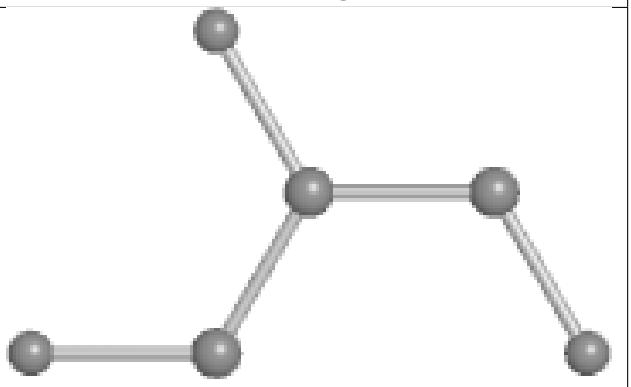
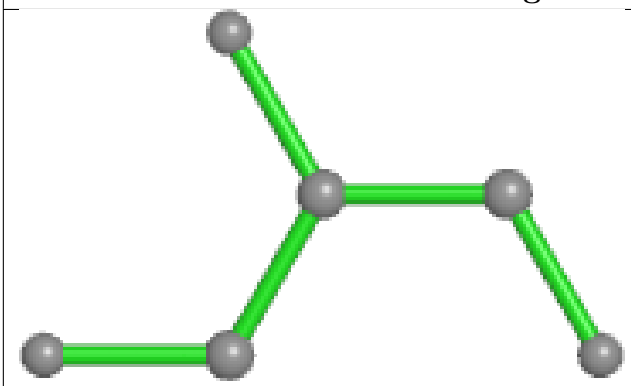


Rings

Ligand GOL C 401



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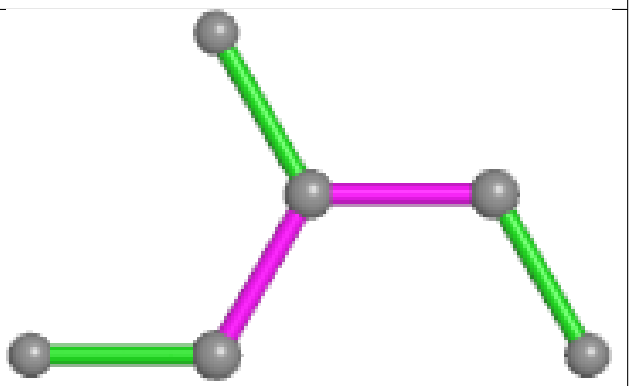
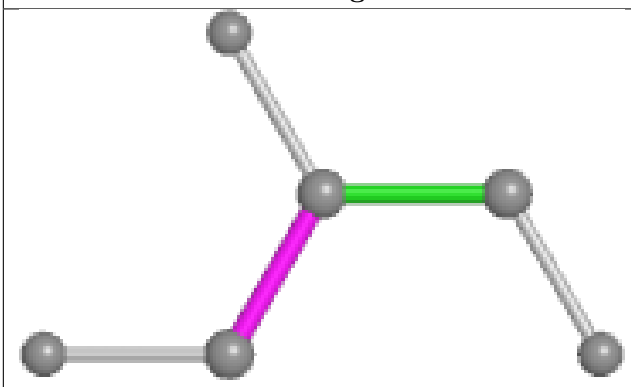
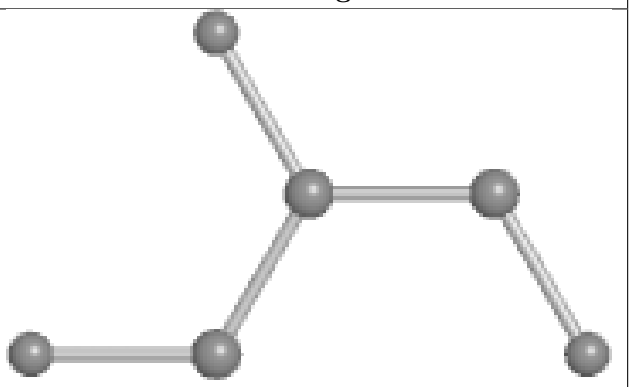


Bond angles

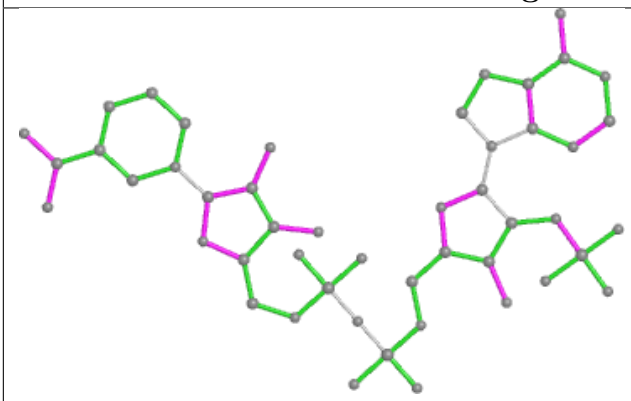


Torsions

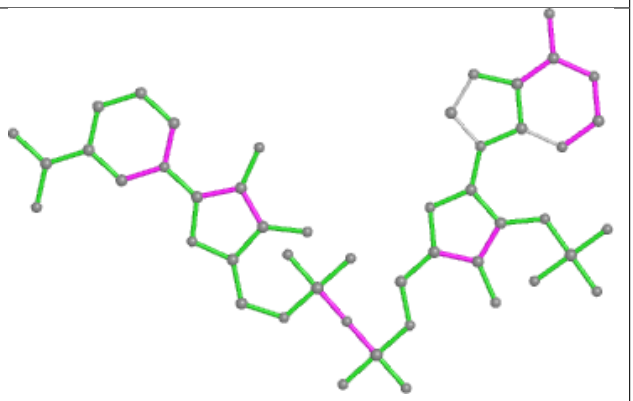


Rings

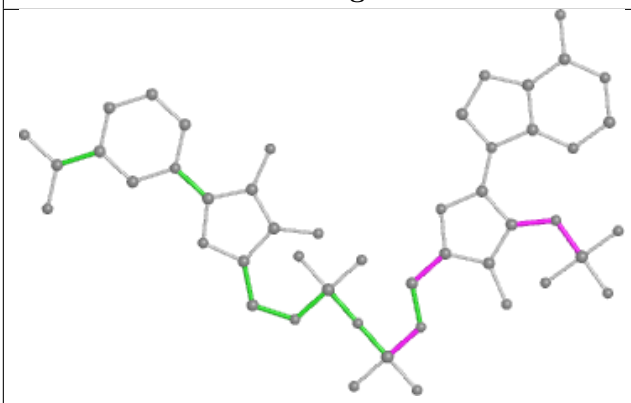
Ligand NAP C 402



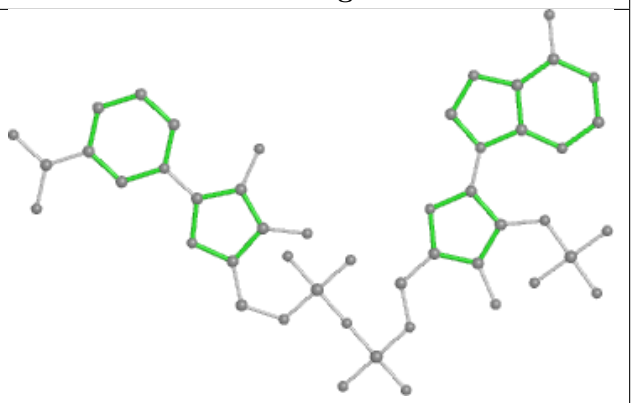
Bond lengths



Bond angles

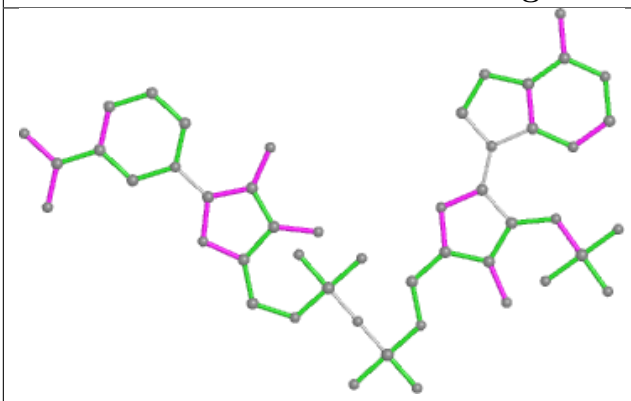


Torsions

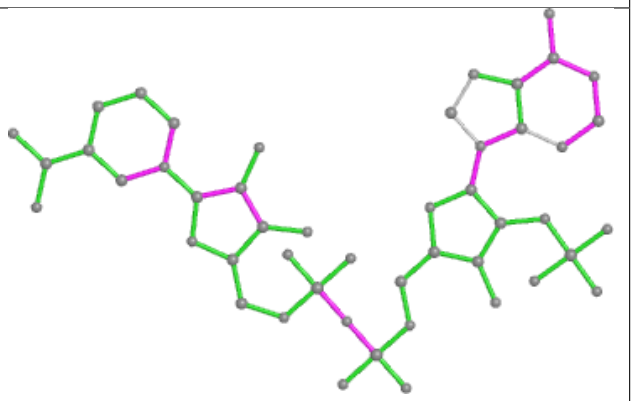


Rings

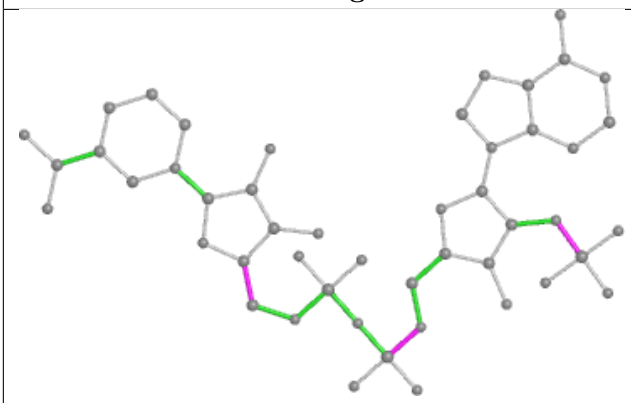
Ligand NAP B 402



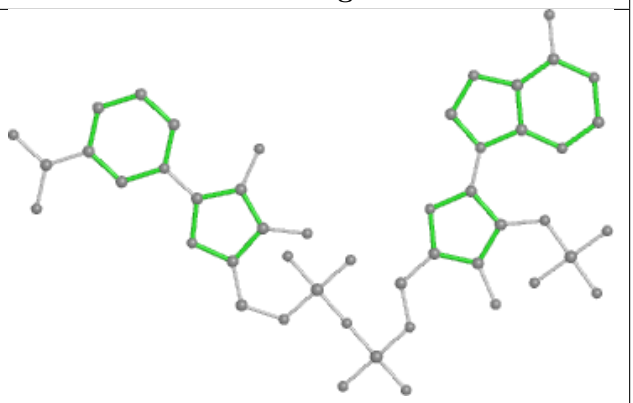
Bond lengths



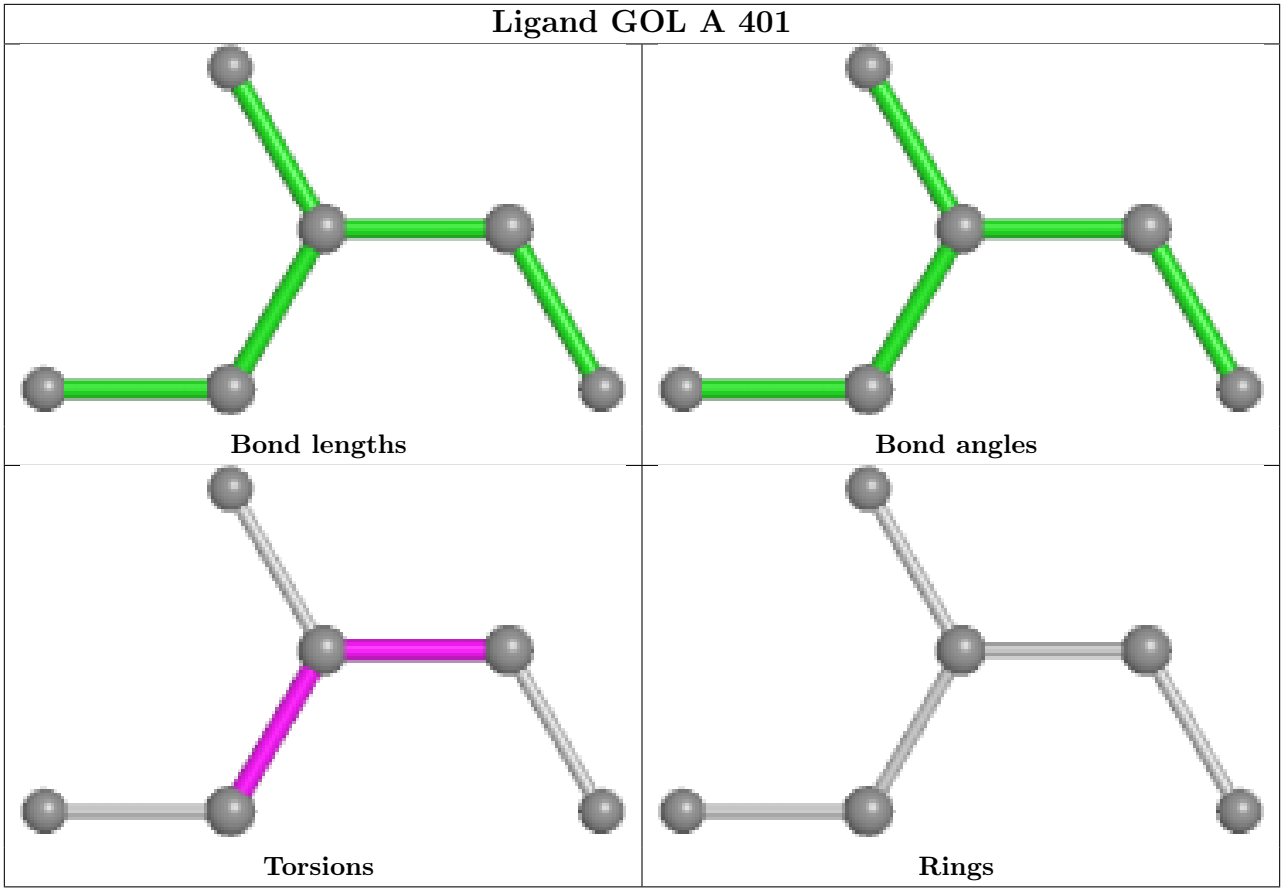
Bond angles



Torsions



Rings



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	326/332 (98%)	-0.09	10 (3%) 51 46	17, 36, 67, 93	1 (0%)
1	B	314/332 (94%)	-0.18	8 (2%) 58 52	26, 37, 58, 89	0
1	C	320/332 (96%)	0.08	14 (4%) 39 34	26, 46, 78, 103	0
All	All	960/996 (96%)	-0.06	32 (3%) 49 43	17, 38, 71, 103	1 (0%)

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	29	ALA	4.8
1	B	129	GLU	4.3
1	A	235	GLU	3.6
1	A	149	GLU	3.3
1	C	230	VAL	3.1
1	A	231	PRO	3.1
1	C	145	HIS	3.0
1	B	229	GLN	3.0
1	B	5	THR	3.0
1	C	226	SER	3.0
1	A	233	THR	2.9
1	C	228	ASP	2.9
1	C	129	GLU	2.9
1	C	28	ALA	2.8
1	C	323	SER	2.8
1	A	225	GLY	2.7
1	A	232	THR	2.7
1	B	31	GLY	2.7
1	A	32	GLN	2.6
1	C	233	THR	2.5
1	C	227	GLN	2.5
1	B	30	GLU	2.5
1	B	96	GLU	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	31	GLY	2.4
1	C	136	GLY	2.4
1	C	225	GLY	2.3
1	B	28	ALA	2.2
1	C	163	GLU	2.2
1	A	230	VAL	2.1
1	A	226	SER	2.1
1	B	29	ALA	2.1
1	C	30	GLU	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 monosaccharides in this entry.

6.4 Ligands (i)

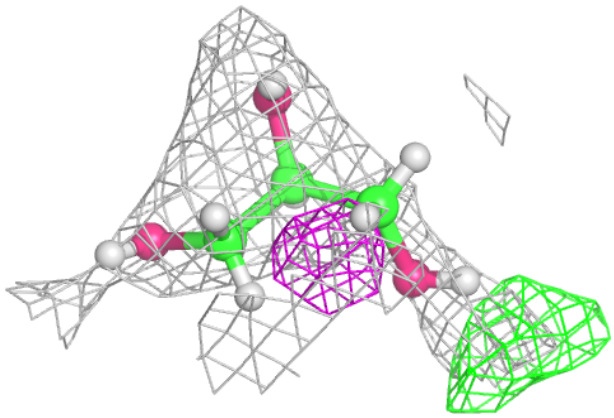
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

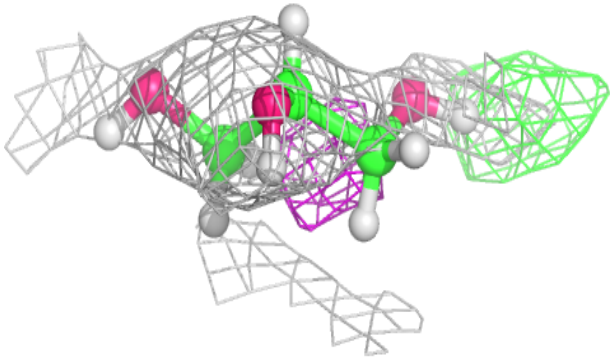
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GOL	C	401	6/6	0.76	0.21	50,62,77,77	0
2	GOL	B	401	6/6	0.87	0.15	39,48,58,61	0
2	GOL	A	401	6/6	0.89	0.17	34,51,66,66	0
3	NAP	C	402	48/48	0.93	0.10	42,51,62,74	0
3	NAP	A	402	48/48	0.95	0.09	34,43,54,65	0
3	NAP	B	402	48/48	0.96	0.08	33,43,56,63	0

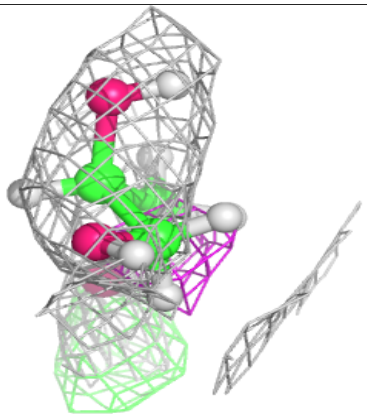
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around GOL C 401:

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

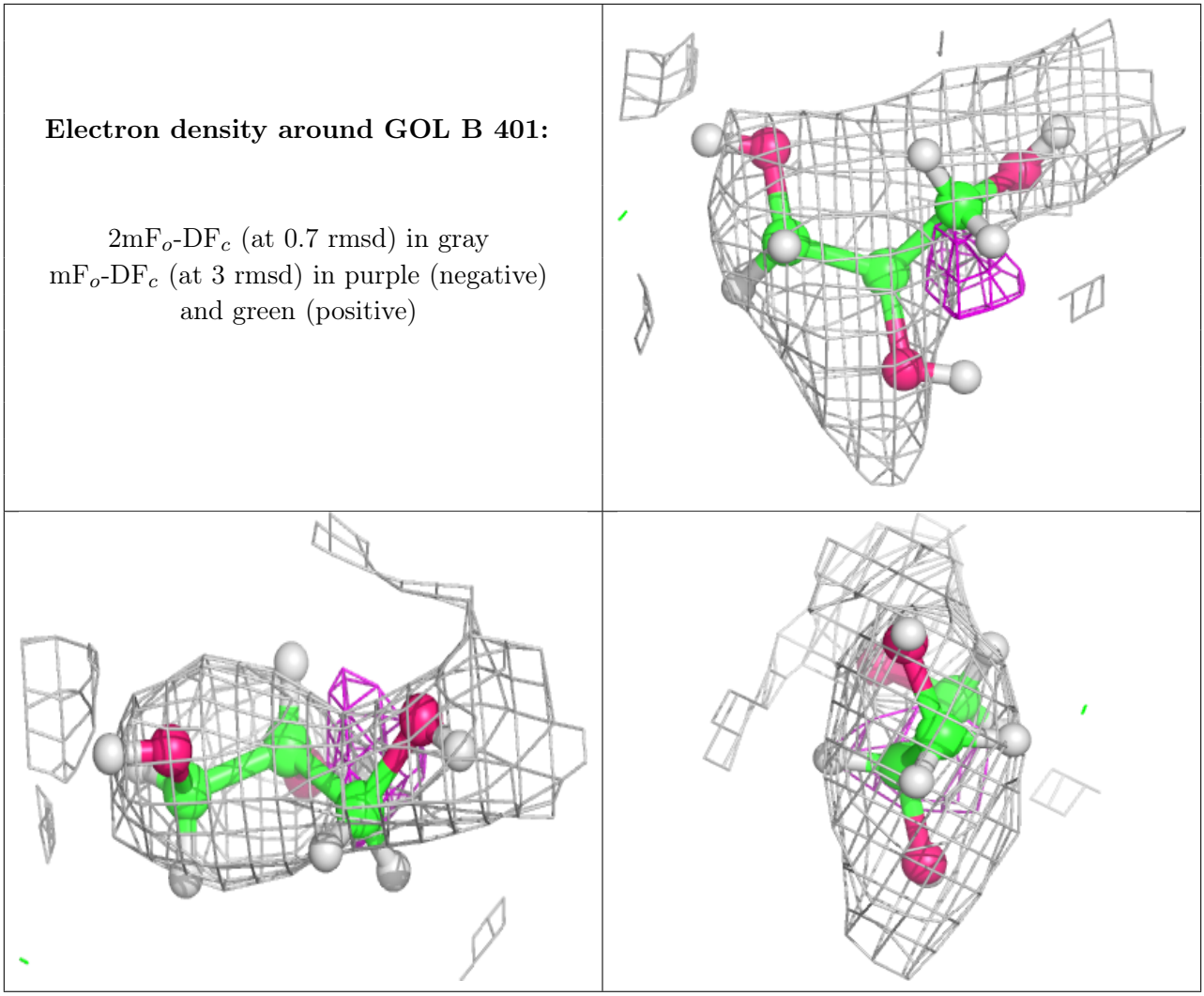






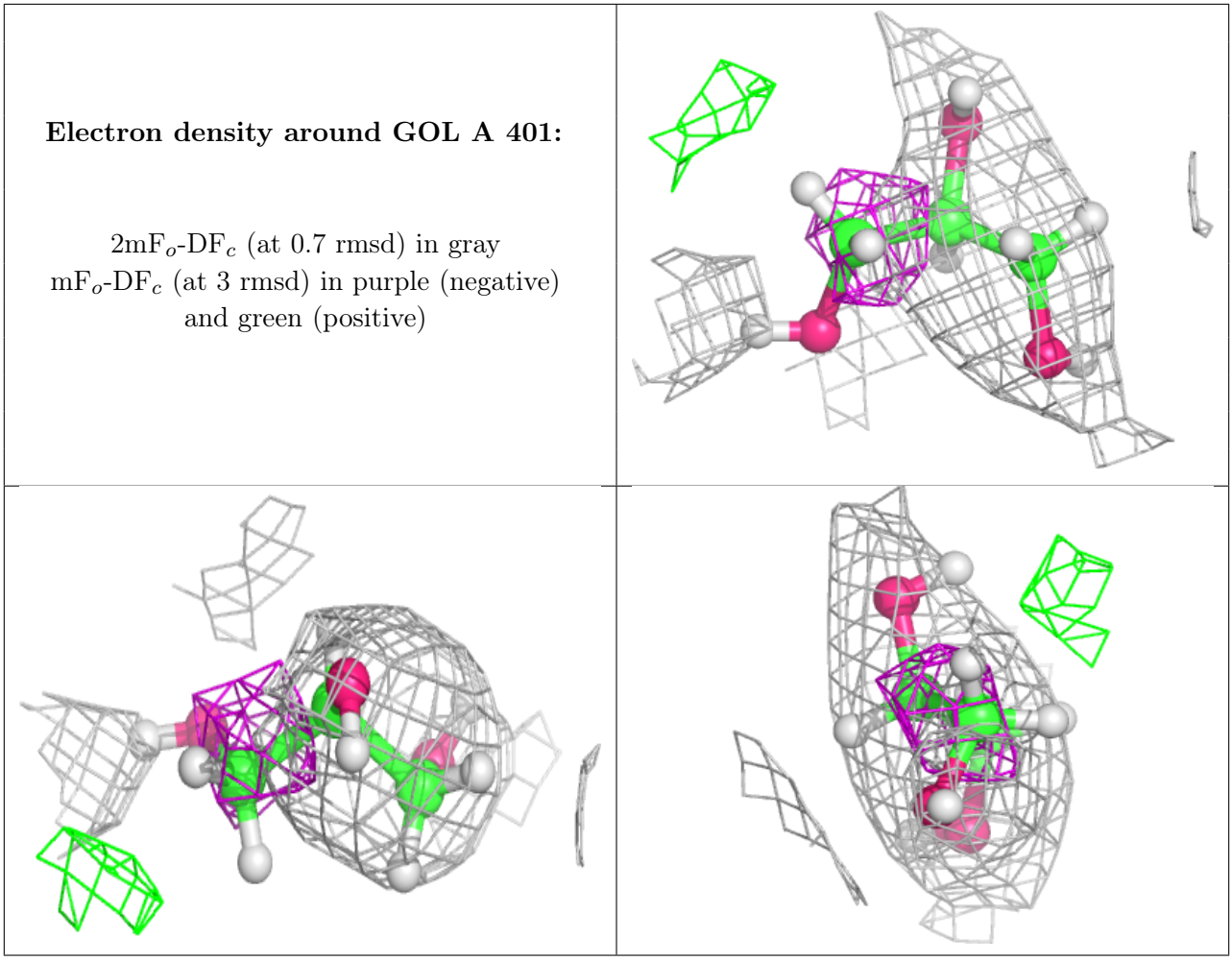
Electron density around GOL B 401:

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



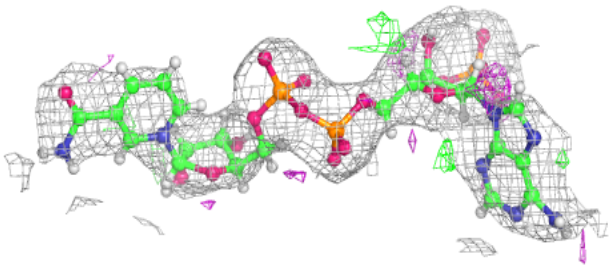
Electron density around GOL A 401:

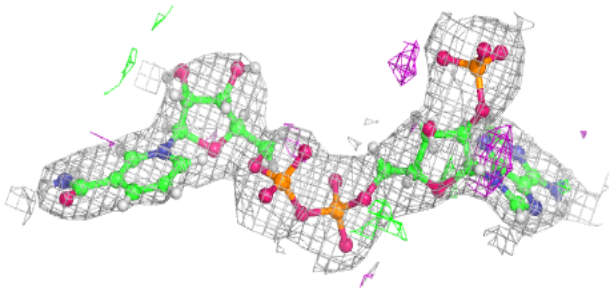
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

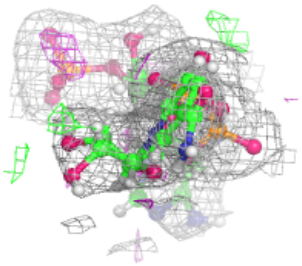


Electron density around NAP C 402:

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

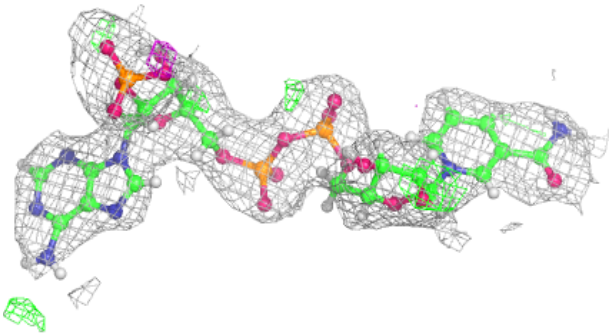


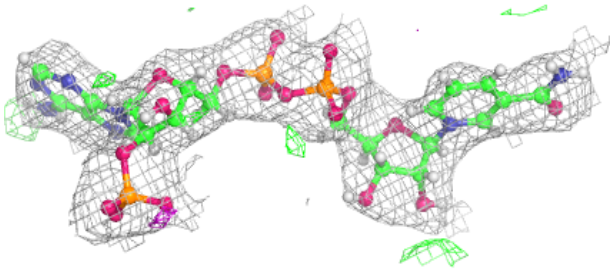


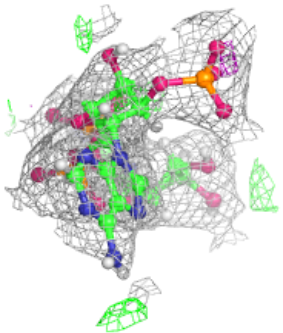


Electron density around NAP A 402:

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

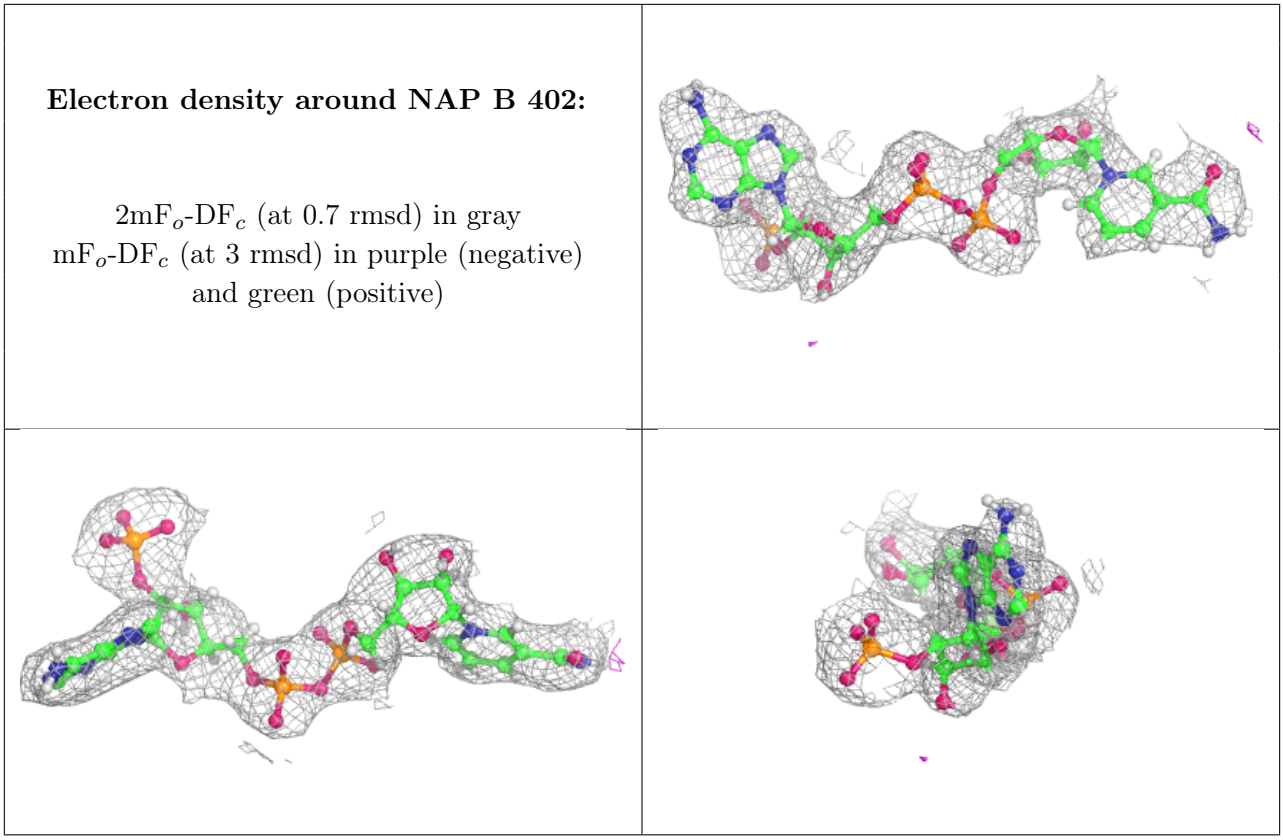






Electron density around NAP B 402:

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



6.5 Other polymers (i)

There are no such residues in this entry.