Full wwPDB X-ray Structure Validation Report ⓘ

Feb 25, 2024 – 01:34 PM EST

PDB ID	:	5ESS
Title	:	Crystal Structure of M. tuberculosis MenD bound to Mg2+ and covalent intermediate I (a ThDP and decarboxylated 2-oxoglutarate adduct)
Authors	:	Johnston, J.M.; Jirgis, E.N.M.; Bashiri, G.; Bulloch, E.M.M.; Baker, E.N.
Deposited on	:	2015-11-17
Resolution	:	2.20 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:

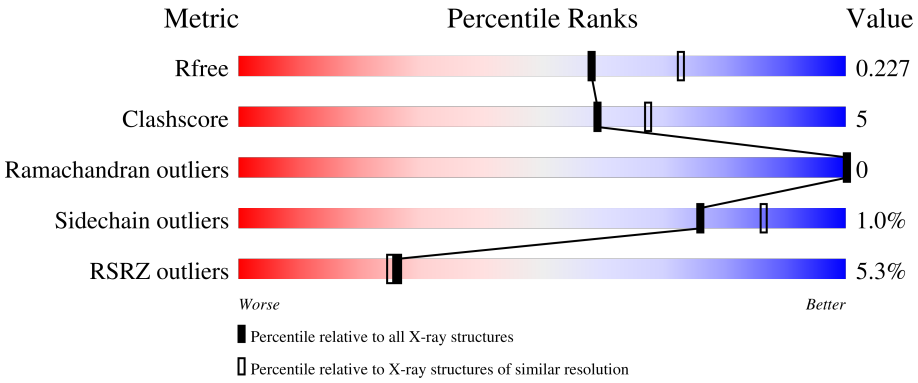
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.20 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	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	574	7% 85% 10% ·
1	B	574	5% 86% 8% 6%
1	C	574	5% 79% 15% · 5%
1	D	574	3% 84% 10% 6%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	FMT	A	605	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 16697 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 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	551	Total	C	N	O	S	0	2	0
			4052	2530	748	762	12			
1	B	537	Total	C	N	O	S	0	1	0
			3946	2459	733	742	12			
1	C	543	Total	C	N	O	S	0	1	0
			3994	2489	743	752	10			
1	D	542	Total	C	N	O	S	0	1	0
			3993	2488	743	752	10			

There are 80 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP P9WK11
A	-18	GLY	-	expression tag	UNP P9WK11
A	-17	SER	-	expression tag	UNP P9WK11
A	-16	SER	-	expression tag	UNP P9WK11
A	-15	HIS	-	expression tag	UNP P9WK11
A	-14	HIS	-	expression tag	UNP P9WK11
A	-13	HIS	-	expression tag	UNP P9WK11
A	-12	HIS	-	expression tag	UNP P9WK11
A	-11	HIS	-	expression tag	UNP P9WK11
A	-10	HIS	-	expression tag	UNP P9WK11
A	-9	SER	-	expression tag	UNP P9WK11
A	-8	SER	-	expression tag	UNP P9WK11
A	-7	GLY	-	expression tag	UNP P9WK11
A	-6	LEU	-	expression tag	UNP P9WK11
A	-5	VAL	-	expression tag	UNP P9WK11
A	-4	PRO	-	expression tag	UNP P9WK11
A	-3	ARG	-	expression tag	UNP P9WK11
A	-2	GLY	-	expression tag	UNP P9WK11
A	-1	SER	-	expression tag	UNP P9WK11
A	0	HIS	-	expression tag	UNP P9WK11

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-19	MET	-	initiating methionine	UNP P9WK11
B	-18	GLY	-	expression tag	UNP P9WK11
B	-17	SER	-	expression tag	UNP P9WK11
B	-16	SER	-	expression tag	UNP P9WK11
B	-15	HIS	-	expression tag	UNP P9WK11
B	-14	HIS	-	expression tag	UNP P9WK11
B	-13	HIS	-	expression tag	UNP P9WK11
B	-12	HIS	-	expression tag	UNP P9WK11
B	-11	HIS	-	expression tag	UNP P9WK11
B	-10	HIS	-	expression tag	UNP P9WK11
B	-9	SER	-	expression tag	UNP P9WK11
B	-8	SER	-	expression tag	UNP P9WK11
B	-7	GLY	-	expression tag	UNP P9WK11
B	-6	LEU	-	expression tag	UNP P9WK11
B	-5	VAL	-	expression tag	UNP P9WK11
B	-4	PRO	-	expression tag	UNP P9WK11
B	-3	ARG	-	expression tag	UNP P9WK11
B	-2	GLY	-	expression tag	UNP P9WK11
B	-1	SER	-	expression tag	UNP P9WK11
B	0	HIS	-	expression tag	UNP P9WK11
C	-19	MET	-	initiating methionine	UNP P9WK11
C	-18	GLY	-	expression tag	UNP P9WK11
C	-17	SER	-	expression tag	UNP P9WK11
C	-16	SER	-	expression tag	UNP P9WK11
C	-15	HIS	-	expression tag	UNP P9WK11
C	-14	HIS	-	expression tag	UNP P9WK11
C	-13	HIS	-	expression tag	UNP P9WK11
C	-12	HIS	-	expression tag	UNP P9WK11
C	-11	HIS	-	expression tag	UNP P9WK11
C	-10	HIS	-	expression tag	UNP P9WK11
C	-9	SER	-	expression tag	UNP P9WK11
C	-8	SER	-	expression tag	UNP P9WK11
C	-7	GLY	-	expression tag	UNP P9WK11
C	-6	LEU	-	expression tag	UNP P9WK11
C	-5	VAL	-	expression tag	UNP P9WK11
C	-4	PRO	-	expression tag	UNP P9WK11
C	-3	ARG	-	expression tag	UNP P9WK11
C	-2	GLY	-	expression tag	UNP P9WK11
C	-1	SER	-	expression tag	UNP P9WK11
C	0	HIS	-	expression tag	UNP P9WK11
D	-19	MET	-	initiating methionine	UNP P9WK11
D	-18	GLY	-	expression tag	UNP P9WK11

Continued on next page...

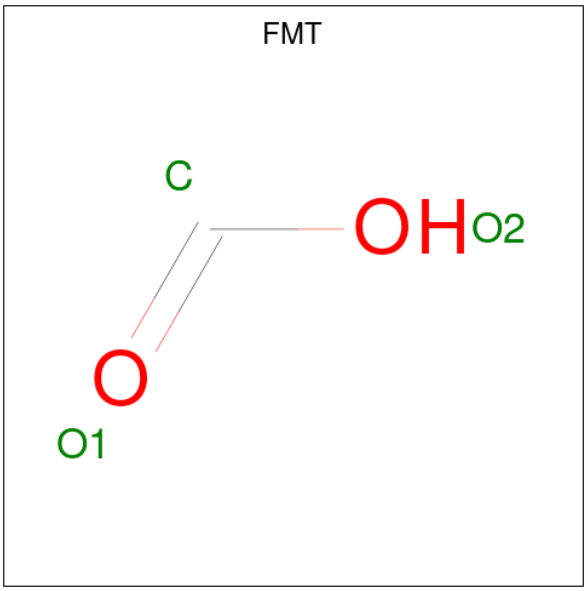
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	-17	SER	-	expression tag	UNP P9WK11
D	-16	SER	-	expression tag	UNP P9WK11
D	-15	HIS	-	expression tag	UNP P9WK11
D	-14	HIS	-	expression tag	UNP P9WK11
D	-13	HIS	-	expression tag	UNP P9WK11
D	-12	HIS	-	expression tag	UNP P9WK11
D	-11	HIS	-	expression tag	UNP P9WK11
D	-10	HIS	-	expression tag	UNP P9WK11
D	-9	SER	-	expression tag	UNP P9WK11
D	-8	SER	-	expression tag	UNP P9WK11
D	-7	GLY	-	expression tag	UNP P9WK11
D	-6	LEU	-	expression tag	UNP P9WK11
D	-5	VAL	-	expression tag	UNP P9WK11
D	-4	PRO	-	expression tag	UNP P9WK11
D	-3	ARG	-	expression tag	UNP P9WK11
D	-2	GLY	-	expression tag	UNP P9WK11
D	-1	SER	-	expression tag	UNP P9WK11
D	0	HIS	-	expression tag	UNP P9WK11

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

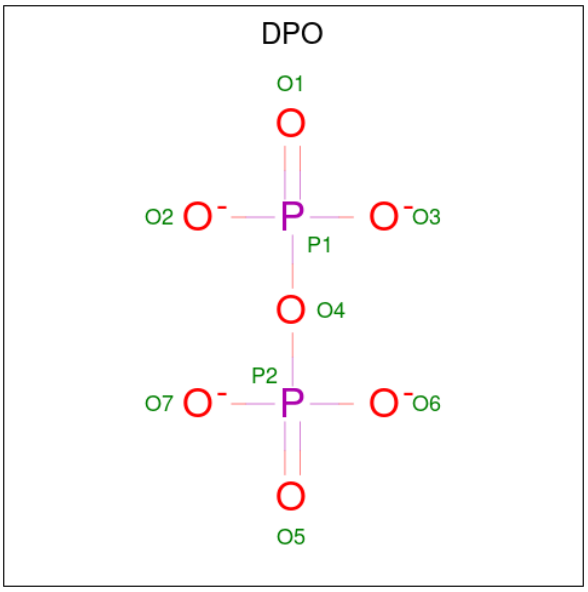
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Mg 1 1	0	0
2	C	1	Total Mg 1 1	0	0
2	D	1	Total Mg 1 1	0	0

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).



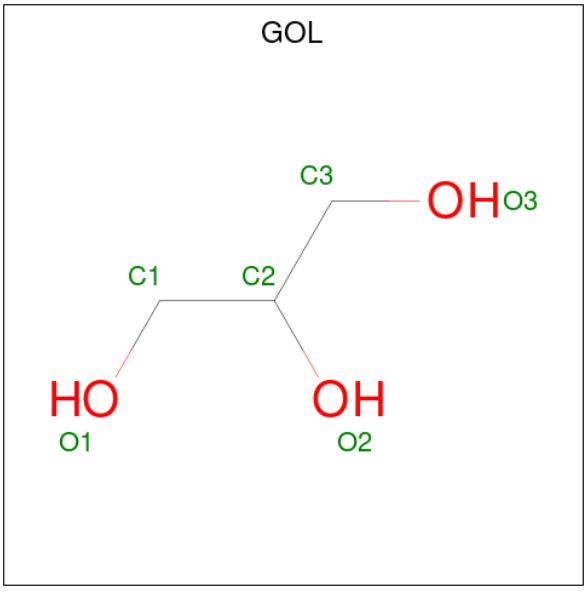
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			3	1	2		
3	A	1	Total	C	O	0	0
			3	1	2		
3	A	1	Total	C	O	0	0
			3	1	2		
3	A	1	Total	C	O	0	0
			3	1	2		
3	B	1	Total	C	O	0	0
			3	1	2		
3	B	1	Total	C	O	0	0
			3	1	2		
3	B	1	Total	C	O	0	0
			3	1	2		
3	C	1	Total	C	O	0	0
			3	1	2		
3	C	1	Total	C	O	0	0
			3	1	2		
3	D	1	Total	C	O	0	0
			3	1	2		

- Molecule 4 is DIPHOSPHATE (three-letter code: DPO) (formula: O_7P_2).



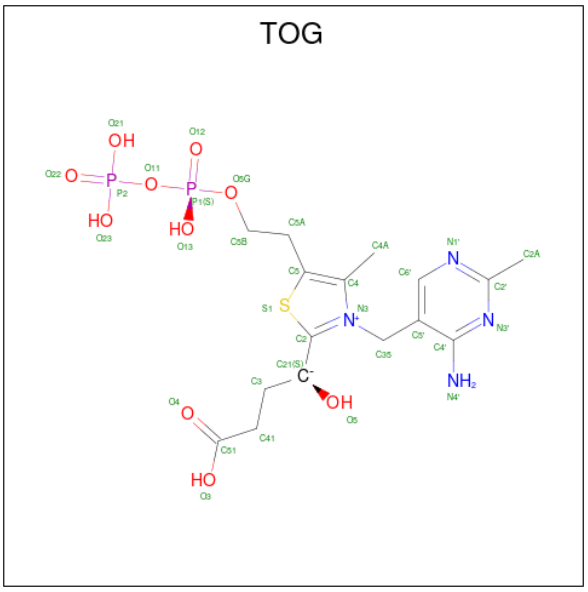
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 9 7 2	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



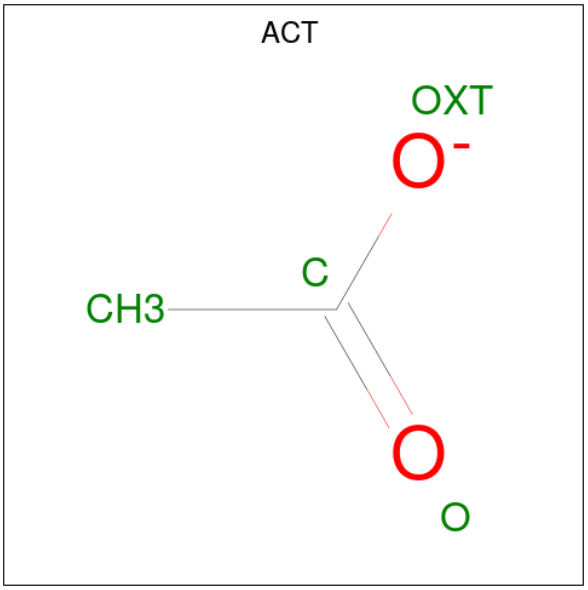
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C O 6 3 3	0	0

- Molecule 6 is 4-[3-[(4-azanyl-2-methyl-pyrimidin-5-yl)methyl]-4-methyl-5-[2-[oxidanyl(phosphonooxy)phosphoryl]oxyethyl]-1,3-thiazol-3 -ium-2-yl]-4-oxidanyl-butanoic acid (three-letter code: TOG) (formula: $C_{16}H_{24}N_4O_{10}P_2S$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
6	C	1	Total	C	N	O	P	S	0	0
			33	16	4	10	2	1		
6	D	1	Total	C	N	O	P	S	0	0
			33	16	4	10	2	1		

- Molecule 7 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	D	1	Total	C	O	0	0
			4	2	2		
7	D	1	Total	C	O	0	0
			4	2	2		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	D	1	Total C O 4 2 2	0	0

- Molecule 8 is water.

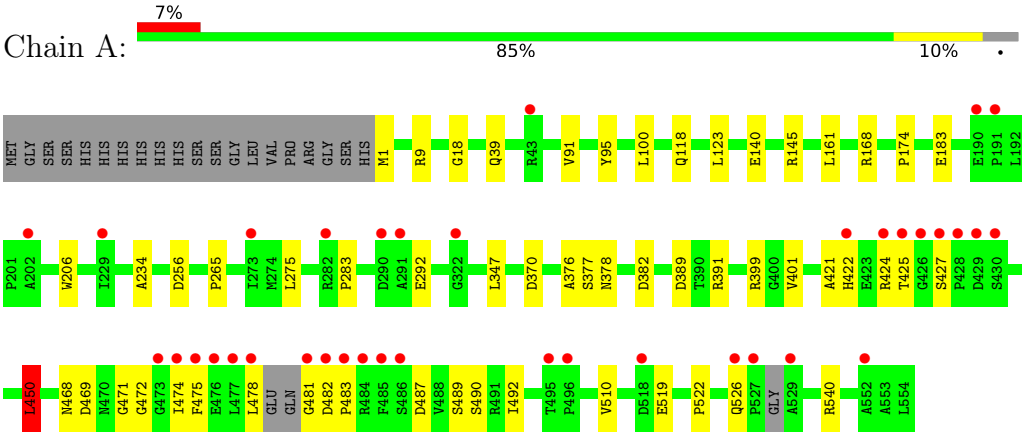
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	155	Total O 155 155	0	0
8	B	152	Total O 152 152	0	0
8	C	121	Total O 121 121	0	0
8	D	158	Total O 158 158	0	0

3 Residue-property plots

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

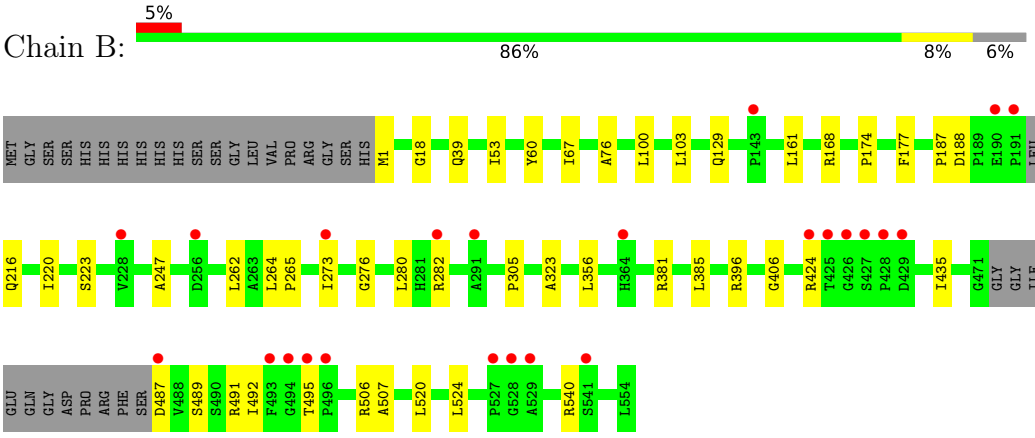
• Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

Chain A:



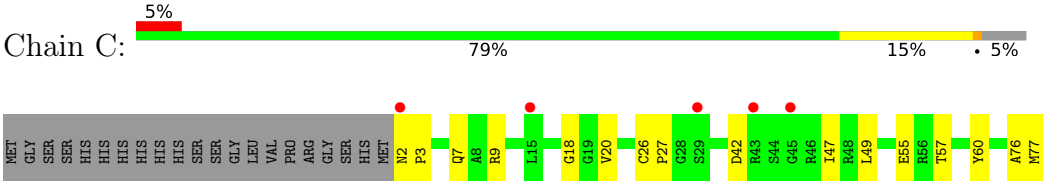
• Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

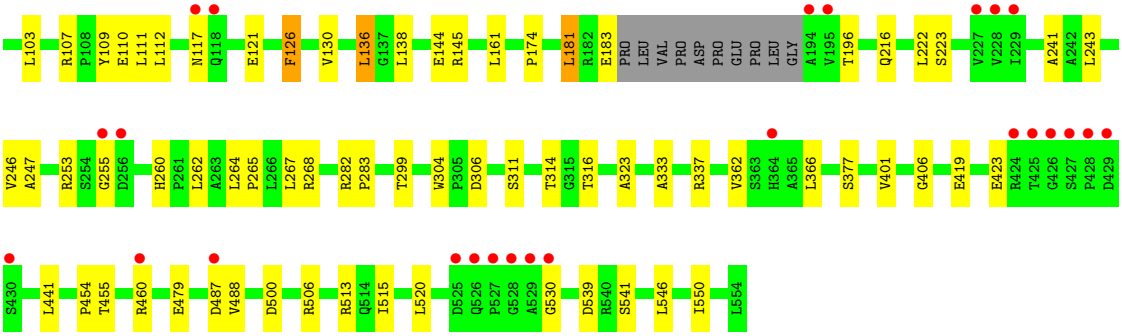
Chain B:



• Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

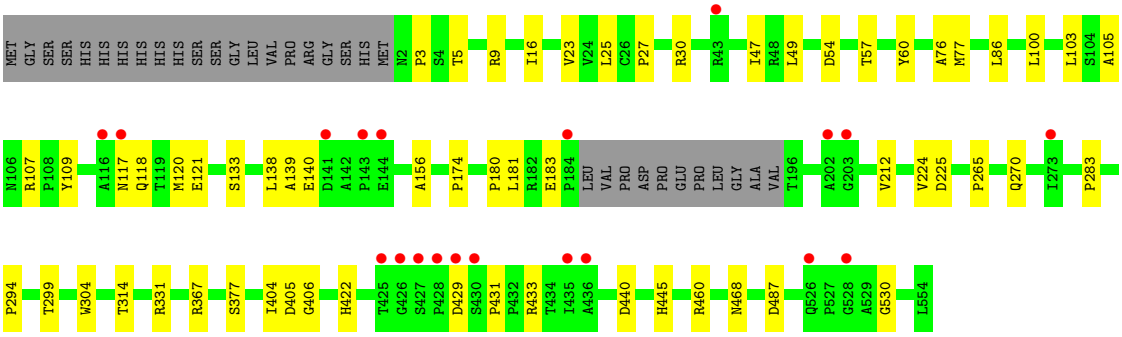
Chain C:





• Molecule 1: 2-succinyl-5-enolpyruvyl-6-hydroxy-3-cyclohexene-1-carboxylate synthase

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	101.14Å 143.55Å 174.29Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.73 – 2.20 19.73 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.4 (19.73-2.20) 99.4 (19.73-2.20)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.08 (at 2.19Å)	Xtriage
Refinement program	PHENIX, REFMAC	Depositor
R, R_{free}	0.186 , 0.229 0.183 , 0.227	Depositor DCC
R_{free} test set	6481 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	45.6	Xtriage
Anisotropy	0.290	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 43.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	16697	wwPDB-VP
Average B, all atoms (Å^2)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.65% 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: FMT, GOL, DPO, ACT, MG, TOG

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	0.40	0/4143	0.58	2/5676 (0.0%)
1	B	0.37	0/4031	0.55	0/5523
1	C	0.37	0/4079	0.57	1/5584 (0.0%)
1	D	0.37	0/4079	0.57	0/5584
All	All	0.38	0/16332	0.57	3/22367 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	526	GLN	C-N-CA	-5.75	97.85	122.00
1	A	450	LEU	CA-CB-CG	5.48	127.91	115.30
1	C	136	LEU	C-N-CA	-5.09	111.60	122.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4052	0	4086	37	0
1	B	3946	0	3985	32	0
1	C	3994	0	4022	60	0
1	D	3993	0	4021	41	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	12	0	4	2	0
3	B	9	0	3	0	0
3	C	6	0	2	0	0
3	D	3	0	1	0	0
4	A	9	0	0	1	0
5	B	6	0	8	1	0
6	C	33	0	0	0	0
6	D	33	0	0	1	0
7	D	12	0	9	0	0
8	A	155	0	0	1	0
8	B	152	0	0	2	0
8	C	121	0	0	2	0
8	D	158	0	0	0	0
All	All	16697	0	16141	151	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 5.

All (151) 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:378[A]:ASN:ND2	4:A:606:DPO:O6	1.96	0.98
1:B:506:ARG:HH21	1:C:506:ARG:HH22	1.03	0.90
1:A:256:ASP:OD1	1:A:391:ARG:NH1	2.08	0.86
1:B:506:ARG:HH21	1:C:506:ARG:NH2	1.79	0.81
1:B:495:THR:HG21	1:C:454:PRO:HG3	1.66	0.77
1:C:267:LEU:O	1:C:268:ARG:NH2	2.17	0.77
1:A:422:HIS:O	1:A:425:THR:HG22	1.85	0.75
1:B:1:MET:CE	1:B:188:ASP:H	2.00	0.75
1:A:425:THR:HG23	1:A:427:SER:H	1.51	0.74
1:A:475:PHE:HZ	1:A:490:SER:HB3	1.53	0.74
1:B:39:GLN:NE2	8:B:701:HOH:O	2.20	0.73
1:B:1:MET:HE1	1:B:188:ASP:H	1.53	0.73
1:D:225:ASP:HB2	1:D:270:GLN:HG3	1.75	0.69
1:D:30:ARG:NH2	1:D:107:ARG:HD3	2.07	0.69
1:C:487:ASP:OD1	1:C:488:VAL:N	2.27	0.67
1:D:77:MET:HE3	1:D:86:LEU:HD21	1.76	0.67
1:A:472:GLY:HA3	1:A:474:ILE:HG13	1.80	0.63

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:478:LEU:HD22	1:A:481:GLY:HA3	1.81	0.62
1:A:389:ASP:OD2	1:A:391:ARG:NH2	2.28	0.62
1:C:107:ARG:NH1	1:C:183:GLU:OE2	2.33	0.62
1:C:144:GLU:OE1	1:C:144:GLU:N	2.22	0.60
1:A:183:GLU:HG3	8:A:811:HOH:O	2.01	0.60
1:A:487:ASP:OD2	1:A:489:SER:OG	2.20	0.59
1:B:1:MET:HE1	1:B:187:PRO:HA	1.85	0.59
1:C:333:ALA:O	1:C:337:ARG:HG3	2.02	0.59
1:A:378[B]:ASN:ND2	1:A:382:ASP:OD2	2.38	0.56
1:A:140:GLU:CD	1:A:145:ARG:HH22	2.09	0.56
1:D:460:ARG:O	1:D:530:GLY:HA2	2.06	0.56
1:C:91:VAL:HG12	1:C:401:VAL:HG21	1.88	0.56
1:A:376:ALA:O	1:A:399:ARG:NH1	2.40	0.55
1:A:475:PHE:CZ	1:A:490:SER:HB3	2.37	0.54
1:A:265:PRO:HD3	1:A:283:PRO:HB3	1.91	0.53
1:A:447:SER:O	1:A:450:LEU:HB2	2.09	0.53
1:B:506:ARG:NH2	1:C:506:ARG:HH22	1.88	0.53
1:C:76:ALA:HB2	1:C:103:LEU:HD12	1.91	0.53
1:C:265:PRO:HG3	1:C:283:PRO:HB3	1.91	0.53
1:C:26:CYS:HB2	1:C:77:MET:HG2	1.90	0.53
1:A:118:GLN:HE22	3:A:605:FMT:H	1.73	0.52
1:C:419:GLU:O	1:C:423:GLU:HG3	2.09	0.52
1:A:482:ASP:N	1:A:483:PRO:HD2	2.25	0.52
1:D:105:ALA:O	1:D:107:ARG:NH1	2.42	0.52
1:B:53:ILE:HG12	1:C:441:LEU:HD22	1.92	0.52
1:A:370:ASP:OD2	1:A:433:ARG:NH2	2.40	0.51
1:D:117:ASN:OD1	1:D:120:MET:N	2.30	0.51
1:B:168:ARG:NH2	1:D:299:THR:O	2.43	0.51
1:A:91:VAL:HG12	1:A:401:VAL:HG11	1.92	0.51
1:C:138:LEU:HB3	1:D:109:TYR:CE1	2.46	0.51
1:B:492:ILE:HD11	1:C:27:PRO:HG3	1.93	0.50
1:C:107:ARG:NH1	1:C:110:GLU:OE2	2.44	0.50
1:D:54:ASP:HB3	1:D:57:THR:HG22	1.94	0.50
1:B:60:TYR:CG	1:B:406:GLY:HA3	2.46	0.50
1:D:265:PRO:HG3	1:D:283:PRO:HB3	1.93	0.50
1:C:126:PHE:O	1:C:130:VAL:HG22	2.12	0.50
1:B:280:LEU:HD11	1:B:381:ARG:HG3	1.93	0.50
1:B:491:ARG:HG3	1:C:455:THR:HG21	1.95	0.49
1:C:42:ASP:HB2	1:C:49:LEU:HD13	1.93	0.49
1:A:95:TYR:OH	1:D:121:GLU:OE2	2.23	0.49
1:C:55:GLU:HB3	1:C:77:MET:HE1	1.95	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:5:THR:O	1:D:9:ARG:HG3	2.13	0.49
1:B:220:ILE:HG21	1:B:273:ILE:HD11	1.95	0.49
1:D:25:LEU:CD2	1:D:76:ALA:HB3	2.43	0.49
1:D:422:HIS:CD2	1:D:431:PRO:HA	2.48	0.48
1:A:450:LEU:HG	1:A:510:VAL:HG21	1.95	0.48
1:C:100:LEU:O	1:C:174:PRO:HA	2.14	0.48
1:A:168:ARG:NH2	1:C:299:THR:O	2.45	0.48
1:B:424:ARG:NH1	8:B:702:HOH:O	2.26	0.48
1:C:7:GLN:NE2	8:C:703:HOH:O	2.42	0.48
1:C:111:LEU:HD21	1:D:156:ALA:HB2	1.95	0.48
1:C:460:ARG:O	1:C:530:GLY:HA2	2.13	0.47
1:B:100:LEU:O	1:B:174:PRO:HA	2.14	0.47
1:D:138:LEU:HD13	1:D:180:PRO:HB2	1.95	0.47
1:D:224:VAL:HG12	1:D:270:GLN:HB2	1.97	0.47
1:C:515:ILE:HD11	1:C:520:LEU:HD13	1.96	0.47
1:D:25:LEU:HD23	1:D:76:ALA:HB3	1.96	0.47
1:D:270:GLN:O	1:D:294:PRO:HD2	2.15	0.47
1:D:440:ASP:HB3	1:D:468:ASN:HA	1.96	0.47
1:C:306:ASP:OD2	1:C:311:SER:HB2	2.15	0.47
1:A:1:MET:SD	1:A:9:ARG:NH1	2.88	0.46
1:B:67:ILE:HD12	1:B:396:ARG:HB3	1.97	0.46
1:A:492:ILE:HD11	1:D:27:PRO:HG2	1.98	0.46
1:A:234:ALA:HB1	1:A:275:LEU:HB3	1.98	0.46
1:A:440:ASP:HB3	1:A:468:ASN:HA	1.97	0.46
1:B:356:LEU:HD21	1:B:385:LEU:HD23	1.97	0.46
1:C:20:VAL:HG12	1:C:47:ILE:HD11	1.98	0.46
1:C:109:TYR:CD1	1:D:140:GLU:HG2	2.51	0.46
1:C:223:SER:HA	1:C:323:ALA:O	2.15	0.46
1:C:246:VAL:HG21	1:C:264:LEU:HG	1.98	0.46
1:D:30:ARG:HH21	1:D:107:ARG:HD3	1.80	0.46
1:D:76:ALA:HB2	1:D:103:LEU:HD12	1.98	0.45
1:D:100:LEU:O	1:D:174:PRO:HA	2.17	0.45
1:C:117:ASN:HB2	8:C:786:HOH:O	2.16	0.45
1:B:247:ALA:H	5:B:604:GOL:H32	1.81	0.45
1:C:241:ALA:O	1:C:255:GLY:HA3	2.16	0.45
1:A:519:GLU:C	1:A:522:PRO:HD2	2.37	0.45
1:B:487:ASP:OD1	1:B:489:SER:OG	2.21	0.45
1:B:507:ALA:HA	1:C:500:ASP:HB3	1.98	0.45
1:C:111:LEU:O	1:C:112:LEU:HD23	2.17	0.45
1:C:546:LEU:O	1:C:550:ILE:HG13	2.16	0.45
1:D:304:TRP:CG	1:D:314:THR:HG21	2.52	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:138:LEU:HB3	1:D:109:TYR:CD1	2.51	0.45
1:C:260:HIS:ND1	1:C:262:LEU:HB2	2.32	0.45
1:C:9:ARG:HD3	1:C:196:THR:HG21	1.98	0.44
1:C:304:TRP:CG	1:C:314:THR:HG21	2.52	0.44
1:B:262:LEU:O	1:B:265:PRO:HD2	2.18	0.44
1:C:136:LEU:HD23	1:C:136:LEU:HA	1.73	0.44
1:D:3:PRO:HB2	1:D:139:ALA:HB1	1.98	0.44
1:D:331:ARG:NE	1:D:331:ARG:HA	2.31	0.44
1:D:16:ILE:HG12	1:D:47:ILE:HG23	1.99	0.44
1:A:200:ARG:HG2	1:A:206:TRP:HA	1.99	0.44
1:C:539:ASP:OD1	1:C:541:SER:OG	2.27	0.44
1:D:487:ASP:N	1:D:487:ASP:OD1	2.51	0.44
1:D:107:ARG:NE	1:D:183:GLU:OE1	2.49	0.44
1:B:18:GLY:HA3	1:B:161:LEU:HD13	2.00	0.44
1:C:264:LEU:HD23	1:C:264:LEU:HA	1.86	0.44
1:C:181:LEU:HD23	1:C:181:LEU:HA	1.83	0.43
1:D:118:GLN:OE1	1:D:118:GLN:N	2.48	0.43
1:B:216:GLN:HB2	1:D:212:VAL:HG12	2.01	0.43
1:C:60:TYR:CD2	1:C:406:GLY:HA3	2.53	0.43
1:C:282:ARG:HE	1:C:282:ARG:HB2	1.47	0.43
1:C:362:VAL:O	1:C:366:LEU:HG	2.19	0.43
1:C:479:GLU:H	1:C:479:GLU:CD	2.23	0.42
1:C:262:LEU:O	1:C:265:PRO:HD2	2.19	0.42
1:A:18:GLY:HA3	1:A:161:LEU:HD13	2.00	0.42
1:D:405:ASP:HB3	1:D:445:HIS:CE1	2.55	0.42
1:B:223:SER:HA	1:B:323:ALA:O	2.19	0.42
1:C:2:ASN:HA	1:C:3:PRO:HD3	1.95	0.42
1:A:123:LEU:HD12	1:A:123:LEU:HA	1.90	0.42
1:B:39:GLN:OE1	1:C:488:VAL:HG12	2.20	0.42
1:A:100:LEU:O	1:A:174:PRO:HA	2.19	0.42
1:B:264:LEU:HD12	1:B:264:LEU:HA	1.91	0.42
1:C:222:LEU:HD22	1:C:243:LEU:HD21	2.02	0.42
1:C:18:GLY:HA3	1:C:161:LEU:HD13	2.02	0.42
1:C:216:GLN:HB2	1:C:316:THR:HG23	2.00	0.41
1:C:222:LEU:HD23	1:C:222:LEU:HA	1.85	0.41
1:A:471:GLY:HA3	1:A:540:ARG:NH1	2.35	0.41
1:D:30:ARG:HH22	1:D:107:ARG:HD3	1.83	0.41
1:D:23:VAL:HB	1:D:49:LEU:HD23	2.03	0.41
1:A:118:GLN:NE2	3:A:605:FMT:H	2.35	0.41
1:A:421:ALA:HA	1:A:424:ARG:NH2	2.35	0.41
1:B:276:GLY:O	1:B:305:PRO:HG3	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:247:ALA:HB3	1:C:253:ARG:HE	1.86	0.41
1:D:60:TYR:CD2	1:D:406:GLY:HA3	2.56	0.41
1:D:181:LEU:CD1	1:D:183:GLU:HG3	2.50	0.41
1:B:129:GLN:NE2	1:C:121:GLU:HG3	2.36	0.41
1:B:435:ILE:HD13	1:B:524:LEU:HD13	2.03	0.41
1:D:404:ILE:HG12	6:D:601:TOG:C2'	2.51	0.41
1:D:367:ARG:HG2	1:D:433:ARG:NH2	2.36	0.40
1:A:469:ASP:HB2	1:A:540:ARG:HB3	2.03	0.40
1:B:76:ALA:HA	1:B:103:LEU:O	2.22	0.40
1:C:144:GLU:HG2	1:C:145:ARG:HG3	2.03	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	547/574 (95%)	535 (98%)	12 (2%)	0	100	100
1	B	532/574 (93%)	522 (98%)	10 (2%)	0	100	100
1	C	540/574 (94%)	522 (97%)	18 (3%)	0	100	100
1	D	539/574 (94%)	525 (97%)	14 (3%)	0	100	100
All	All	2158/2296 (94%)	2104 (98%)	54 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	427/445 (96%)	423 (99%)	4 (1%)	78	88
1	B	416/445 (94%)	412 (99%)	4 (1%)	76	86
1	C	418/445 (94%)	412 (99%)	6 (1%)	67	80
1	D	419/445 (94%)	416 (99%)	3 (1%)	84	91
All	All	1680/1780 (94%)	1663 (99%)	17 (1%)	76	86

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	GLN
1	A	292	GLU
1	A	347	LEU
1	A	450	LEU
1	B	177	PHE
1	B	282	ARG
1	B	520	LEU
1	B	540	ARG
1	C	57	THR
1	C	126	PHE
1	C	181	LEU
1	C	377	SER
1	C	513[A]	ARG
1	C	513[B]	ARG
1	D	133	SER
1	D	377	SER
1	D	429	ASP

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

Mol	Chain	Res	Type
1	A	118	GLN
1	B	118	GLN
1	C	31	ASN

5.3.3 RNA

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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 20 ligands modelled in this entry, 3 are monoatomic - leaving 17 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	$\#\|Z\| > 2$
3	FMT	B	602	-	2,2,2	0.59	0	1,1,1	0.10	0
3	FMT	B	603	-	2,2,2	0.79	0	1,1,1	0.72	0
3	FMT	C	603	-	2,2,2	0.58	0	1,1,1	0.04	0
7	ACT	D	604	-	3,3,3	0.81	0	3,3,3	0.83	0
3	FMT	C	604	-	2,2,2	0.65	0	1,1,1	0.20	0
7	ACT	D	606	-	3,3,3	0.76	0	3,3,3	1.48	0
3	FMT	D	603	-	2,2,2	0.63	0	1,1,1	0.05	0
3	FMT	A	603	-	2,2,2	0.64	0	1,1,1	0.15	0
4	DPO	A	606	2	6,8,8	0.70	0	13,13,13	1.03	0
3	FMT	A	605	-	2,2,2	0.70	0	1,1,1	0.27	0
5	GOL	B	604	-	5,5,5	0.30	0	5,5,5	0.63	0
3	FMT	B	601	-	2,2,2	0.63	0	1,1,1	0.11	0
3	FMT	A	604	-	2,2,2	0.66	0	1,1,1	0.19	0
3	FMT	A	602	-	2,2,2	0.62	0	1,1,1	0.27	0
7	ACT	D	605	-	3,3,3	0.75	0	3,3,3	1.25	0
6	TOG	D	601	2	29,34,34	1.22	3 (10%)	35,50,50	1.67	9 (25%)
6	TOG	C	601	2	29,34,34	1.32	3 (10%)	35,50,50	1.69	9 (25%)

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
4	DPO	A	606	2	-	1/6/6/6	-
6	TOG	D	601	2	-	2/21/26/26	0/2/2/2
5	GOL	B	604	-	-	2/4/4/4	-
6	TOG	C	601	2	-	6/21/26/26	0/2/2/2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	D	601	TOG	O5-C21	-4.17	1.33	1.42
6	C	601	TOG	O5-C21	-3.84	1.34	1.42
6	C	601	TOG	C5A-C5	3.65	1.52	1.50
6	C	601	TOG	C5'-C4'	3.24	1.48	1.42
6	D	601	TOG	C5'-C4'	3.03	1.48	1.42
6	D	601	TOG	C5A-C5	2.91	1.52	1.50

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	D	601	TOG	C6'-N1'-C2'	3.97	122.72	115.96
6	C	601	TOG	C6'-N1'-C2'	3.94	122.67	115.96
6	C	601	TOG	C5A-C5-C4	3.50	130.24	127.43
6	C	601	TOG	N4'-C4'-N3'	3.15	121.48	117.03
6	D	601	TOG	C4A-C4-N3	3.09	126.58	122.69
6	C	601	TOG	C5'-C6'-N1'	-2.58	119.53	123.82
6	D	601	TOG	N1'-C2'-N3'	-2.56	121.13	125.54
6	C	601	TOG	C41-C3-C21	-2.55	110.65	114.45
6	D	601	TOG	C4A-C4-C5	-2.53	122.07	127.60
6	D	601	TOG	C5A-C5-C4	2.53	129.46	127.43
6	C	601	TOG	N1'-C2'-N3'	-2.36	121.48	125.54
6	D	601	TOG	C5'-C6'-N1'	-2.35	119.90	123.82
6	C	601	TOG	C4A-C4-N3	2.34	125.64	122.69
6	D	601	TOG	C41-C3-C21	-2.34	110.96	114.45
6	C	601	TOG	C5'-C4'-N4'	-2.18	119.10	122.19
6	D	601	TOG	O3-C51-C41	2.11	120.79	114.03
6	C	601	TOG	P1-O11-P2	-2.10	125.62	132.83
6	D	601	TOG	O11-P2-O22	-2.02	100.00	111.19

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	604	GOL	O1-C1-C2-C3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	C	601	TOG	P1-O11-P2-O21
6	C	601	TOG	C2-C21-C3-C41
6	C	601	TOG	O5-C21-C3-C41
6	D	601	TOG	P1-O11-P2-O21
5	B	604	GOL	O1-C1-C2-O2
6	D	601	TOG	P1-O11-P2-O22
4	A	606	DPO	P1-O4-P2-O7
6	C	601	TOG	C3-C41-C51-O4
6	C	601	TOG	P1-O11-P2-O22
6	C	601	TOG	C3-C41-C51-O3

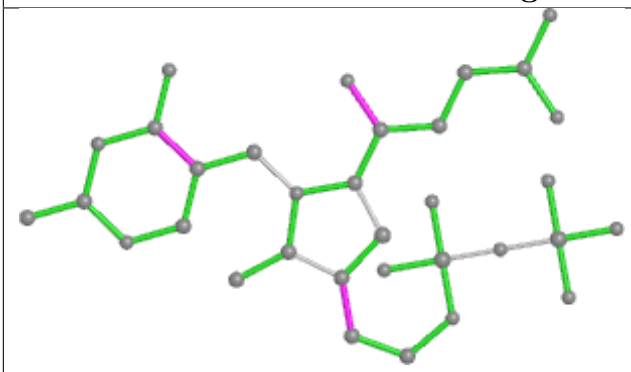
There are no ring outliers.

4 monomers are involved in 5 short contacts:

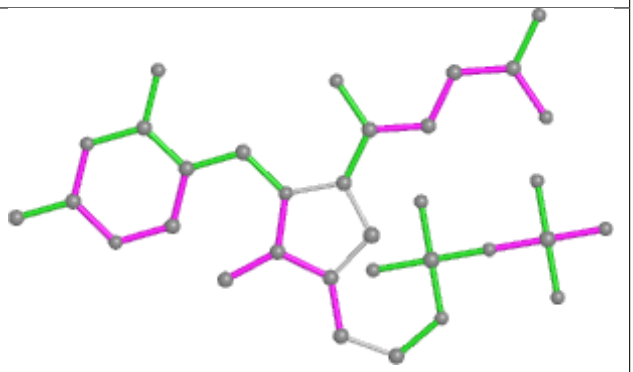
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	606	DPO	1	0
3	A	605	FMT	2	0
5	B	604	GOL	1	0
6	D	601	TOG	1	0

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.

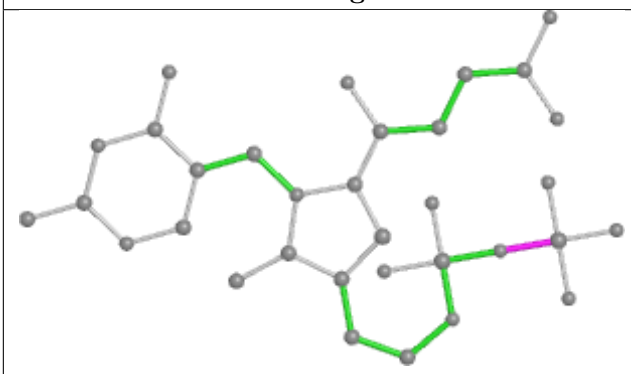
Ligand TOG D 601



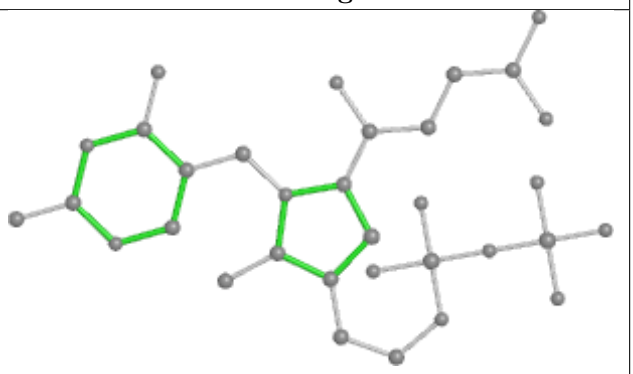
Bond lengths



Bond angles

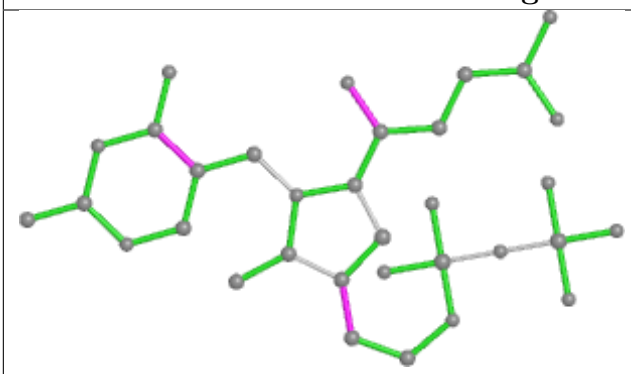


Torsions

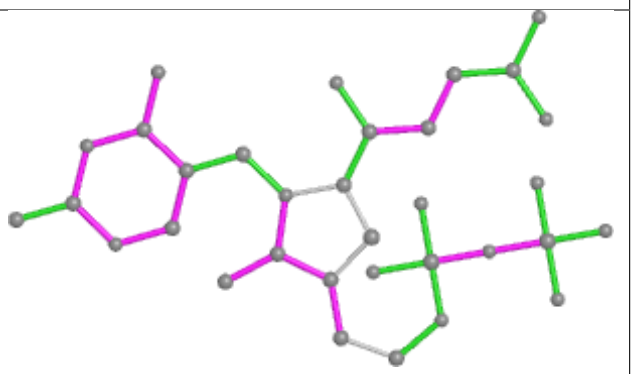


Rings

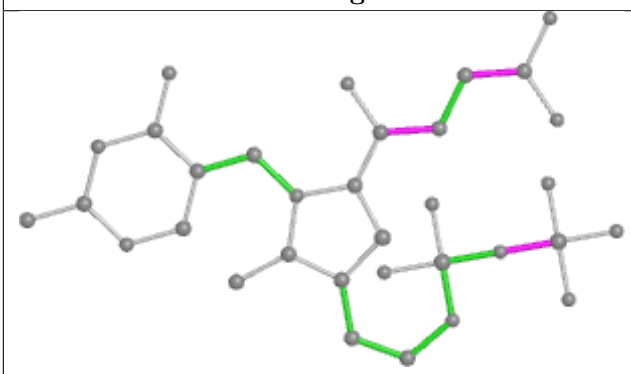
Ligand TOG C 601



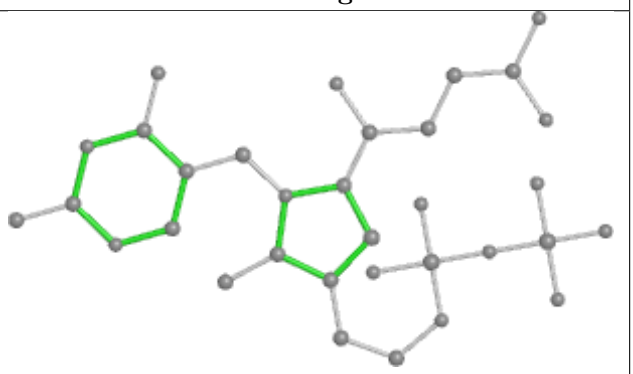
Bond lengths



Bond angles



Torsions



Rings

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^{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	551/574 (95%)	0.03	40 (7%)	15	14	32, 47, 83, 115	0
1	B	537/574 (93%)	-0.07	26 (4%)	30	29	32, 48, 77, 101	0
1	C	543/574 (94%)	0.01	30 (5%)	25	24	33, 52, 78, 108	0
1	D	542/574 (94%)	-0.15	20 (3%)	41	39	31, 48, 73, 105	0
All	All	2173/2296 (94%)	-0.04	116 (5%)	26	25	31, 49, 78, 115	0

All (116) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	428	PRO	7.5
1	B	494	GLY	7.2
1	B	425	THR	7.1
1	A	428	PRO	6.8
1	C	426	GLY	6.4
1	B	527	PRO	6.2
1	C	195	VAL	5.9
1	B	528	GLY	5.7
1	B	191	PRO	5.7
1	A	481	GLY	5.6
1	A	427	SER	5.5
1	A	426	GLY	5.5
1	C	427	SER	5.5
1	B	495	THR	5.4
1	B	426	GLY	5.3
1	A	190	GLU	5.2
1	A	527	PRO	5.2
1	A	485	PHE	5.0
1	D	426	GLY	4.8
1	A	191	PRO	4.8
1	D	429	ASP	4.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	D	428	PRO	4.7
1	B	195	VAL	4.6
1	A	291	ALA	4.5
1	A	194	ALA	4.4
1	D	427	SER	4.4
1	A	482	ASP	4.3
1	A	193	GLY	4.2
1	A	475	PHE	4.2
1	B	493	PHE	4.0
1	A	473	GLY	4.0
1	A	425	THR	4.0
1	A	526	GLN	3.9
1	D	184	PRO	3.9
1	A	477	LEU	3.9
1	C	425	THR	3.9
1	D	425	THR	3.9
1	C	194	ALA	3.8
1	B	428	PRO	3.7
1	C	527	PRO	3.7
1	B	256	ASP	3.7
1	B	496	PRO	3.6
1	C	429	ASP	3.6
1	A	496	PRO	3.5
1	A	195	VAL	3.5
1	C	430	SER	3.4
1	D	430	SER	3.4
1	B	228	VAL	3.3
1	A	322	GLY	3.3
1	A	282	ARG	3.3
1	D	526	GLN	3.2
1	A	474	ILE	3.2
1	B	487	ASP	3.2
1	A	484	ARG	3.1
1	D	43	ARG	3.1
1	D	117	ASN	3.1
1	B	429	ASP	3.0
1	A	429	ASP	3.0
1	C	525	ASP	3.0
1	B	273	ILE	3.0
1	B	190	GLU	3.0
1	A	529	ALA	3.0
1	C	526	GLN	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	D	141	ASP	2.9
1	A	483	PRO	2.9
1	C	118	GLN	2.9
1	A	495	THR	2.9
1	C	529	ALA	2.9
1	D	144	GLU	2.8
1	B	424	ARG	2.7
1	B	529	ALA	2.7
1	D	528	GLY	2.7
1	A	486	SER	2.7
1	C	256	ASP	2.6
1	C	255	GLY	2.6
1	C	528	GLY	2.6
1	D	143	PRO	2.6
1	A	476	GLU	2.6
1	D	116	ALA	2.5
1	A	229	ILE	2.5
1	C	29	SER	2.5
1	B	282	ARG	2.5
1	C	487	ASP	2.5
1	B	291	ALA	2.5
1	A	43	ARG	2.5
1	C	424	ARG	2.5
1	B	194	ALA	2.5
1	A	424	ARG	2.4
1	C	2	ASN	2.4
1	C	530	GLY	2.4
1	D	202	ALA	2.4
1	D	273	ILE	2.4
1	A	478	LEU	2.3
1	A	290	ASP	2.3
1	B	427	SER	2.3
1	C	45	GLY	2.3
1	D	203	GLY	2.3
1	C	364	HIS	2.3
1	A	430	SER	2.3
1	A	273	ILE	2.3
1	C	227	VAL	2.2
1	B	364	HIS	2.2
1	C	43	ARG	2.2
1	C	229	ILE	2.2
1	D	435	ILE	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	15	LEU	2.2
1	C	117	ASN	2.1
1	C	228	VAL	2.1
1	D	436	ALA	2.1
1	A	202	ALA	2.1
1	B	143	PRO	2.1
1	B	541	SER	2.1
1	A	552	ALA	2.1
1	A	518	ASP	2.0
1	A	422	HIS	2.0
1	C	460	ARG	2.0

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

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

6.3 Carbohydrates (i)

There are no 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
4	DPO	A	606	9/9	0.85	0.17	55,74,86,89	9
3	FMT	A	604	3/3	0.86	0.21	68,68,70,73	0
3	FMT	A	602	3/3	0.86	0.11	52,52,60,65	0
3	FMT	C	604	3/3	0.89	0.12	63,63,69,69	0
7	ACT	D	606	4/4	0.90	0.19	61,67,75,76	0
7	ACT	D	605	4/4	0.91	0.17	61,67,70,70	0
3	FMT	D	603	3/3	0.91	0.09	58,58,66,68	0
3	FMT	C	603	3/3	0.92	0.11	65,65,67,73	0
5	GOL	B	604	6/6	0.93	0.13	54,57,59,60	0
7	ACT	D	604	4/4	0.93	0.10	49,55,63,65	0
3	FMT	B	602	3/3	0.94	0.09	52,52,61,62	0
3	FMT	A	603	3/3	0.94	0.10	54,54,55,62	0

Continued on next page...

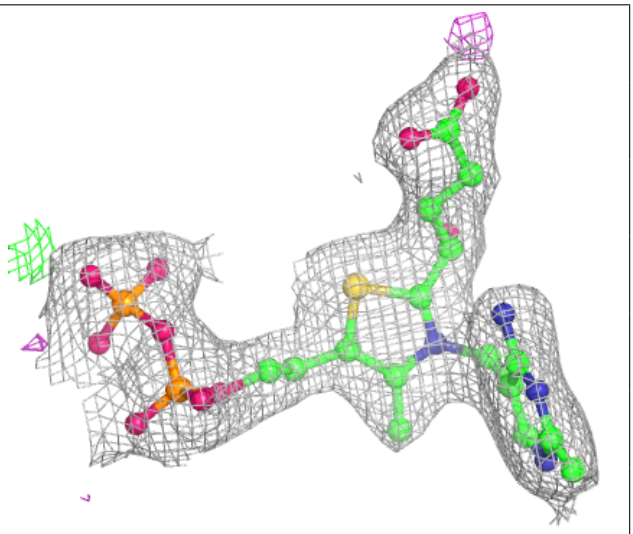
Continued from previous page...

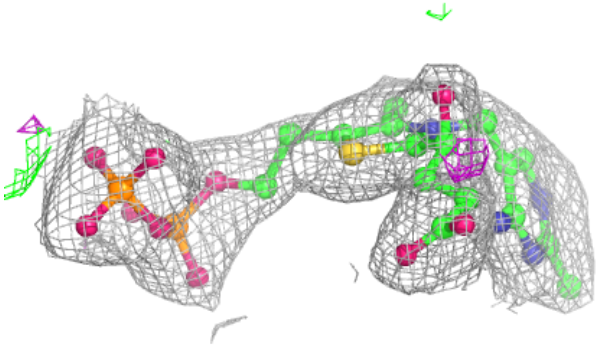
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FMT	B	601	3/3	0.94	0.11	58,58,63,69	0
2	MG	A	601	1/1	0.95	0.08	70,70,70,70	0
2	MG	C	602	1/1	0.96	0.07	43,43,43,43	0
6	TOG	C	601	33/33	0.98	0.08	34,43,51,54	0
3	FMT	B	603	3/3	0.98	0.09	48,48,53,57	0
2	MG	D	602	1/1	0.98	0.05	37,37,37,37	0
3	FMT	A	605	3/3	0.98	0.08	50,50,51,63	0
6	TOG	D	601	33/33	0.99	0.07	32,40,43,48	0

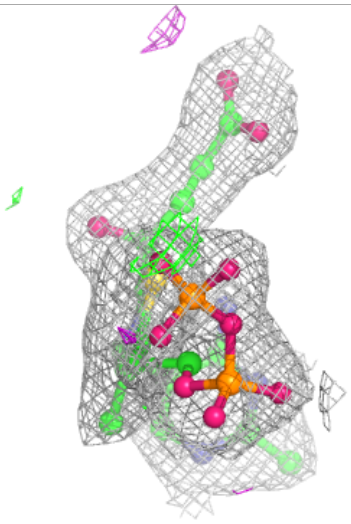
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around TOG C 601:

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

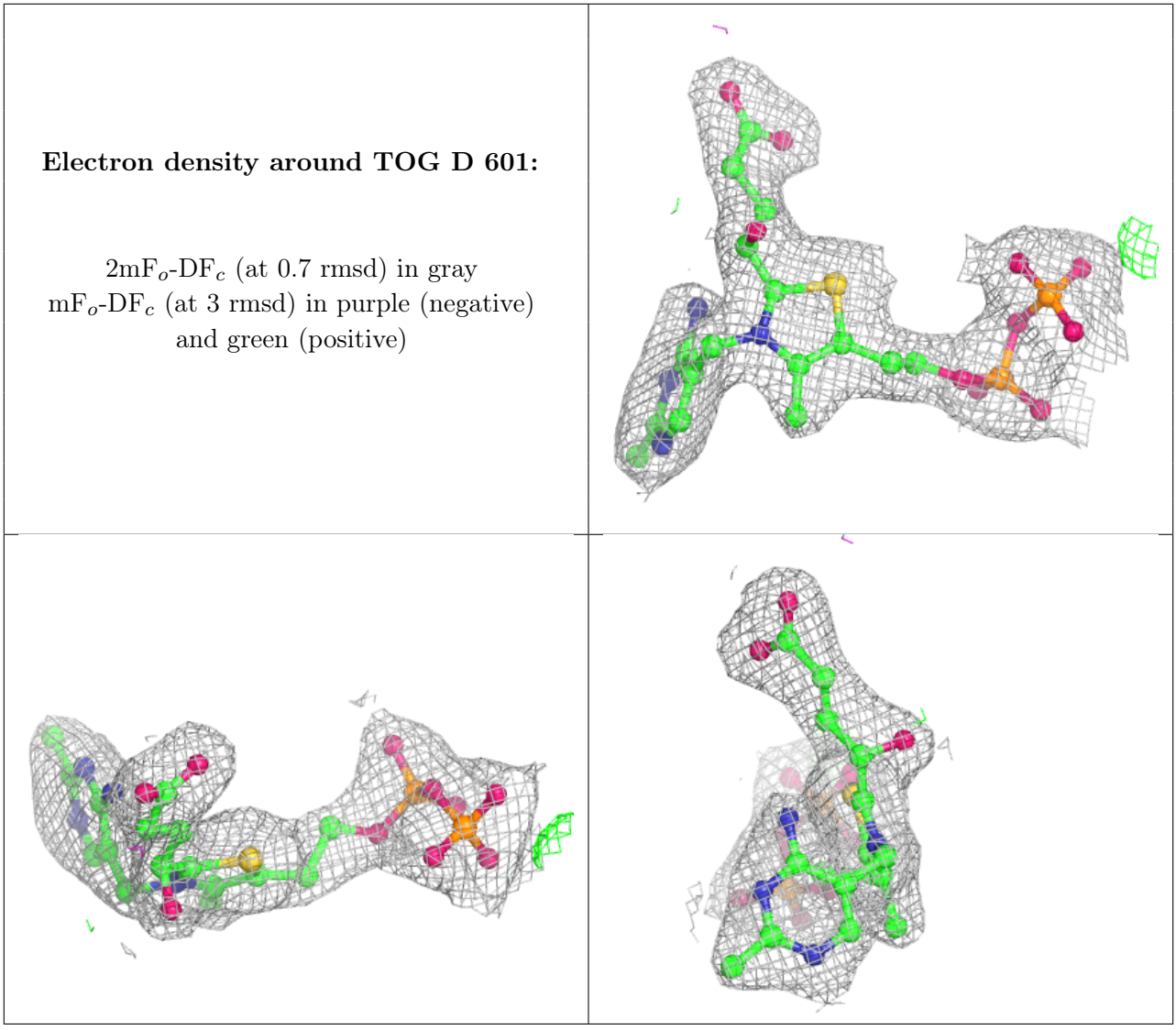






Electron density around TOG D 601:

$2mF_o$-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.