Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2024 – 10:26 am BST

PDB ID	:	9ENJ
Title	:	L-amino acid oxidase 4 (HcLAAO4) from the fungus Hebeloma cylindrosporum in complex with L-glutamate
Authors	:	Gilzer, D.; Koopmeiners, S.; Fischer von Mollard, G.; Niemann, H.H.
Deposited on	:	2024-03-13
Resolution	:	2.10 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:

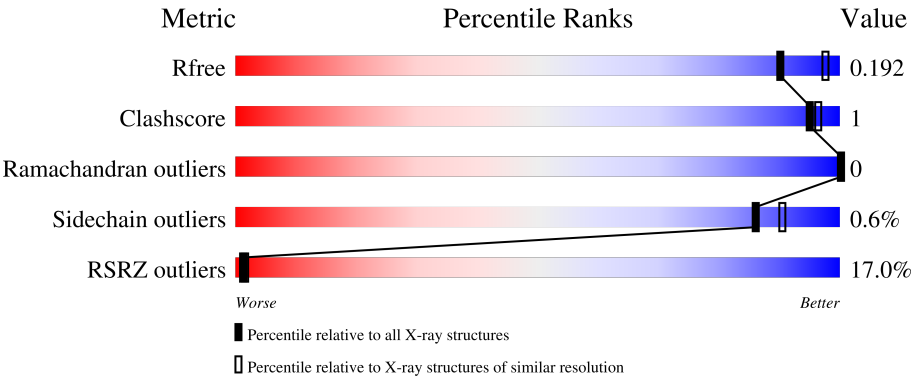
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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	562	16% 92% · 5%
1	B	562	16% 91% · 6%
1	C	562	16% 93% · 5%
1	D	562	17% 92% · 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:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	SO4	A	709	-	-	-	X
4	SO4	B	715	-	-	-	X
4	SO4	C	708	-	-	-	X
4	SO4	C	709	-	-	-	X
4	SO4	C	714	-	-	-	X
4	SO4	D	712	-	-	-	X

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 35332 atoms, of which 16799 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.

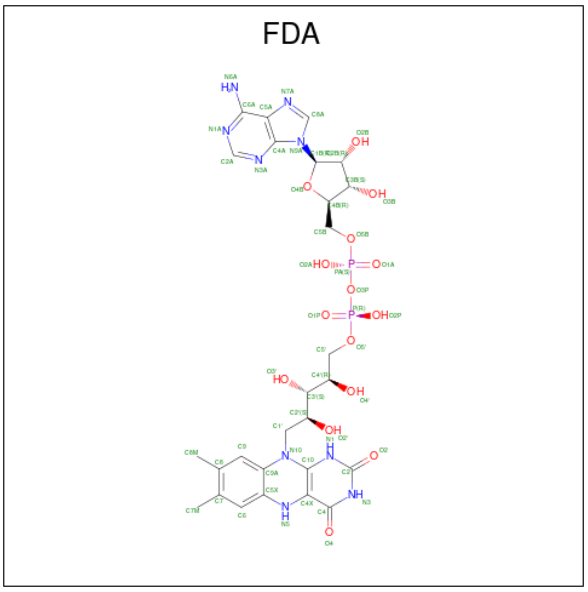
- Molecule 1 is a protein called L-amino acid oxidase 4.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	532	Total	C	H	N	O	S	0	6	0
			8343	2725	4113	711	783	11			
1	B	531	Total	C	H	N	O	S	0	5	0
			8311	2718	4092	707	783	11			
1	C	534	Total	C	H	N	O	S	0	9	0
			8404	2746	4140	712	795	11			
1	D	533	Total	C	H	N	O	S	0	5	0
			8319	2716	4098	711	783	11			

There are 8 discrepancies between the modelled and reference sequences:

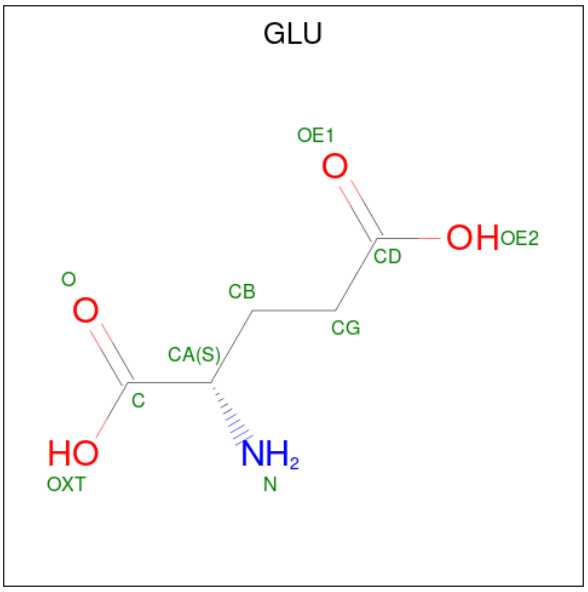
Chain	Residue	Modelled	Actual	Comment	Reference
A	474	ALA	LYS	engineered mutation	UNP S4S6Z0
A	475	ALA	LYS	engineered mutation	UNP S4S6Z0
B	474	ALA	LYS	engineered mutation	UNP S4S6Z0
B	475	ALA	LYS	engineered mutation	UNP S4S6Z0
C	474	ALA	LYS	engineered mutation	UNP S4S6Z0
C	475	ALA	LYS	engineered mutation	UNP S4S6Z0
D	474	ALA	LYS	engineered mutation	UNP S4S6Z0
D	475	ALA	LYS	engineered mutation	UNP S4S6Z0

- Molecule 2 is DIHYDROFLAVINE-ADENINE DINUCLEOTIDE (three-letter code: FDA) (formula: $C_{27}H_{35}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



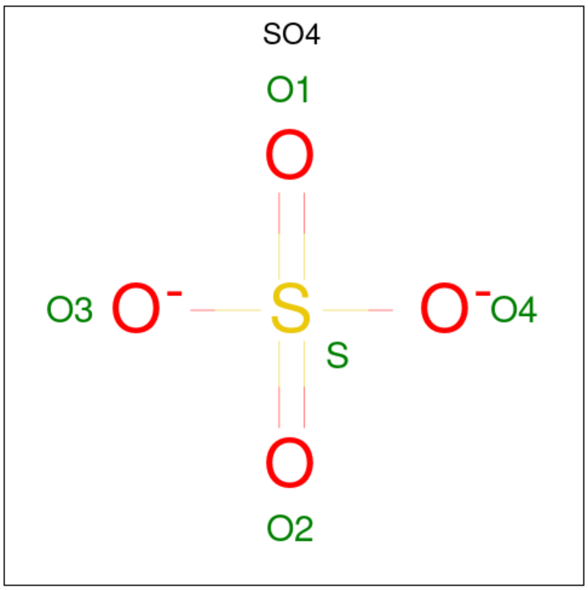
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	P	0	0
			85	27	32	9	15	2		
2	B	1	Total	C	H	N	O	P	0	0
			85	27	32	9	15	2		
2	C	1	Total	C	H	N	O	P	0	0
			85	27	32	9	15	2		
2	D	1	Total	C	H	N	O	P	0	0
			85	27	32	9	15	2		

- Molecule 3 is GLUTAMIC ACID (three-letter code: GLU) (formula: $C_5H_9NO_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
3	A	1	15	5	5	1	4	0	0
3	B	1	15	5	5	1	4	0	0
3	C	1	15	5	5	1	4	0	0
3	D	1	15	5	5	1	4	0	0

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0
4	A	1	5	4	1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	A	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	B	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	C	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0
4	D	1	Total O S 5 4 1	0	0

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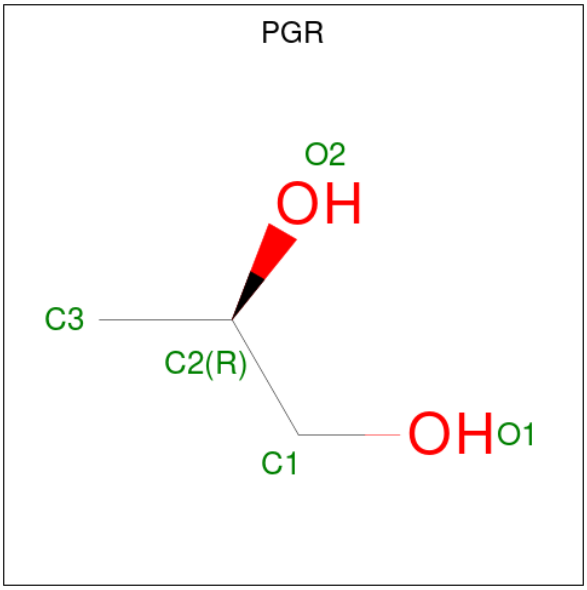
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	D	1	Total O S 5 4 1	0	0

- Molecule 5 is R-1,2-PROPANEDIOL (three-letter code: PGR) (formula: $C_3H_8O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C H O 13 3 8 2	0	0
5	A	1	Total C H O 13 3 8 2	0	0
5	A	1	Total C H O 13 3 8 2	0	0
5	B	1	Total C H O 13 3 8 2	0	0
5	B	1	Total C H O 13 3 8 2	0	0
5	C	1	Total C H O 13 3 8 2	0	0
5	C	1	Total C H O 13 3 8 2	0	0
5	C	1	Total C H O 13 3 8 2	0	0
5	D	1	Total C H O 13 3 8 2	0	0
5	D	1	Total C H O 13 3 8 2	0	0

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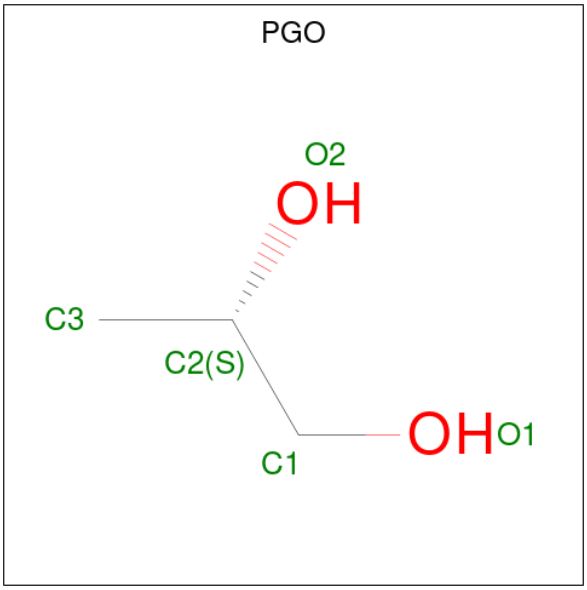
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	1	Total C H O 13 3 8 2	0	0
5	D	1	Total C H O 13 3 8 2	0	0

- Molecule 6 is S-1,2-PROPANEDIOL (three-letter code: PGO) (formula: $C_3H_8O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C H O 13 3 8 2	0	0
6	A	1	Total C H O 13 3 8 2	0	0
6	A	1	Total C H O 13 3 8 2	0	0
6	A	1	Total C H O 13 3 8 2	0	0
6	B	1	Total C H O 13 3 8 2	0	0
6	B	1	Total C H O 13 3 8 2	0	0
6	B	1	Total C H O 13 3 8 2	0	0
6	B	1	Total C H O 13 3 8 2	0	0
6	B	1	Total C H O 13 3 8 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total C H O 13 3 8 2	0	0
6	C	1	Total C H O 13 3 8 2	0	0
6	D	1	Total C H O 13 3 8 2	0	0
6	D	1	Total C H O 13 3 8 2	0	0
6	D	1	Total C H O 13 3 8 2	0	0

- Molecule 7 is water.

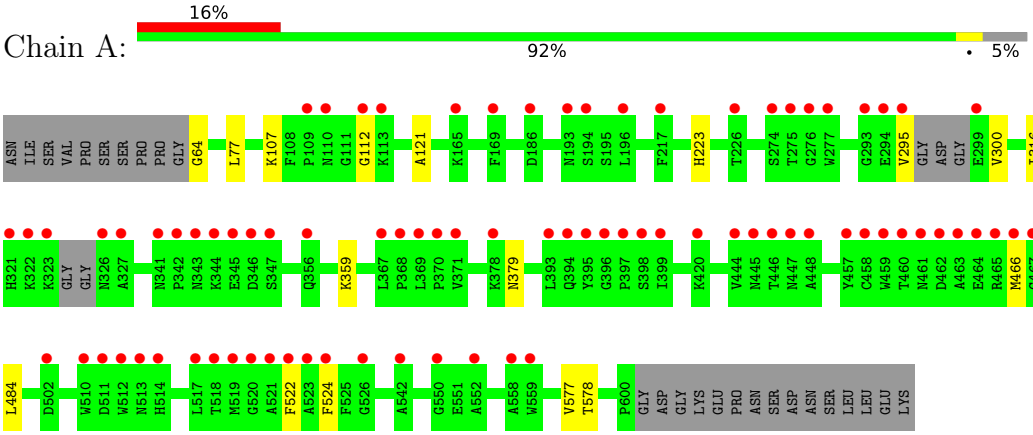
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	269	Total O 273 273	0	4
7	B	261	Total O 264 264	0	4
7	C	217	Total O 218 218	0	2
7	D	204	Total O 207 207	0	3

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.

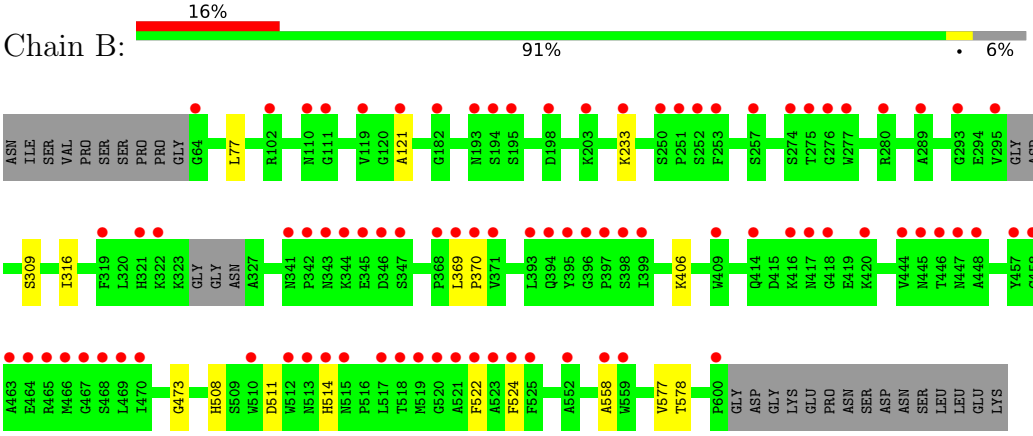
• Molecule 1: L-amino acid oxidase 4

Chain A:



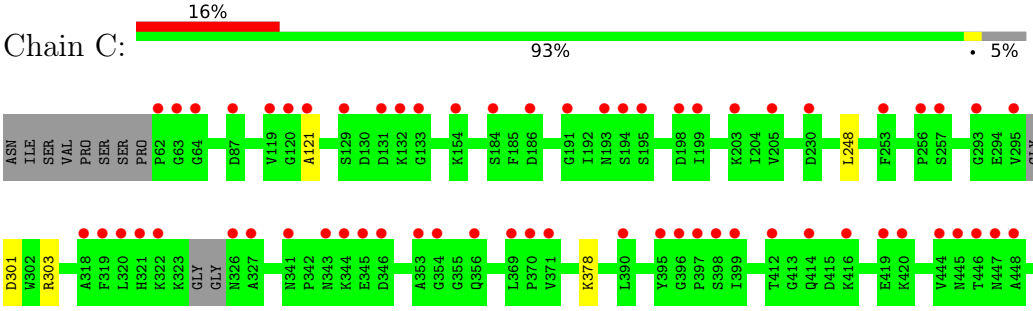
• Molecule 1: L-amino acid oxidase 4

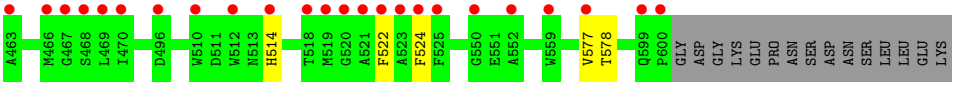
Chain B:



• Molecule 1: L-amino acid oxidase 4

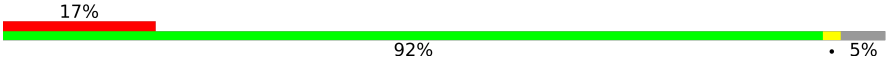
Chain C:

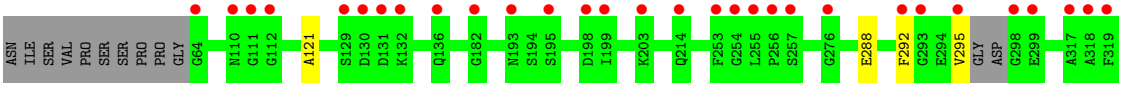


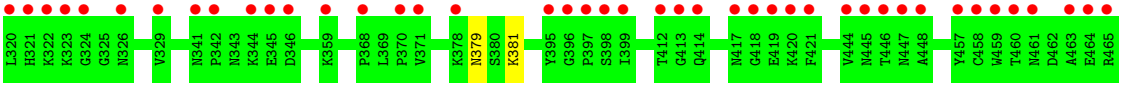


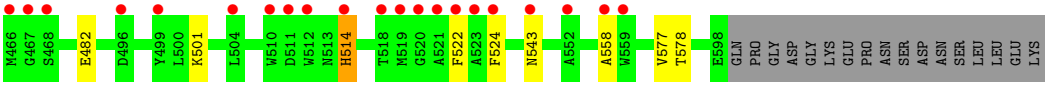
• Molecule 1: L-amino acid oxidase 4

Chain D:









4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	84.76Å 130.79Å 107.30Å 90.00° 95.66° 90.00°	Depositor
Resolution (Å)	40.62 – 2.10 44.45 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.2 (40.62-2.10) 99.2 (44.45-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.44 (at 2.10Å)	Xtriage
Refinement program	PHENIX 1.21_5207	Depositor
R, R_{free}	0.174 , 0.195 0.172 , 0.192	Depositor DCC
R_{free} test set	6716 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	39.3	Xtriage
Anisotropy	0.091	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.41 , 46.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	35332	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.56% 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: FDA, PGO, SO4, PGR

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	0.25	0/4368	0.47	0/5938
1	B	0.26	0/4354	0.48	1/5919 (0.0%)
1	C	0.25	0/4415	0.47	0/6001
1	D	0.25	0/4356	0.48	0/5921
All	All	0.25	0/17493	0.48	1/23779 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	233	LYS	CD-CE-NZ	5.64	124.68	111.70

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	4230	4113	4113	11	0
1	B	4219	4092	4093	10	0
1	C	4264	4140	4138	6	0
1	D	4221	4098	4096	9	0
2	A	53	32	33	1	0
2	B	53	32	33	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	53	32	33	1	0
2	D	53	32	33	1	0
3	A	10	5	5	1	0
3	B	10	5	5	2	0
3	C	10	5	5	1	0
3	D	10	5	5	2	0
4	A	65	0	0	2	0
4	B	75	0	0	2	0
4	C	60	0	0	0	0
4	D	55	0	0	1	0
5	A	15	24	24	2	0
5	B	10	16	16	0	0
5	C	15	24	24	0	0
5	D	20	32	32	0	0
6	A	20	32	32	1	0
6	B	25	40	40	1	0
6	C	10	16	16	0	0
6	D	15	24	24	0	0
7	A	273	0	0	1	0
7	B	264	0	0	3	0
7	C	218	0	0	1	0
7	D	207	0	0	0	0
All	All	18533	16799	16800	40	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 1.

All (40) 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)
3:D:702:GLU:N	3:D:702:GLU:OE2	2.21	0.74
3:C:702:GLU:N	3:C:702:GLU:OE2	2.20	0.74
3:A:702:GLU:N	3:A:702:GLU:OE2	2.21	0.73
3:B:702:GLU:N	3:B:702:GLU:OE2	2.22	0.73
4:B:709:SO4:O3	7:B:801:HOH:O	2.08	0.71
1:C:378:LYS:O	7:C:801:HOH:O	2.09	0.70
1:B:473:GLY:HA3	1:C:248:LEU:HD12	1.75	0.68
6:B:722:PGO:H32	7:B:992:HOH:O	1.93	0.68
1:A:223:HIS:CE1	6:A:718:PGO:H33	2.36	0.61
1:A:379:ASN:N	4:A:706:SO4:O1	2.35	0.59
1:C:301:ASP:OD1	1:C:303:ARG:NH1	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:381:LYS:NZ	1:D:543:ASN:OD1	2.30	0.56
1:A:466:MET:SD	5:A:722:PGR:H31	2.47	0.54
1:D:577:VAL:HG23	1:D:578:THR:HG23	1.92	0.52
1:A:359:LYS:NZ	4:A:704:SO4:O1	2.43	0.51
1:A:577:VAL:HG23	1:A:578:THR:HG23	1.93	0.50
1:C:514[B]:HIS:HB2	1:D:514[B]:HIS:CE1	2.47	0.49
1:A:64:GLY:N	7:A:806:HOH:O	2.44	0.49
1:A:121:ALA:HA	2:A:701:FDA:C4X	2.43	0.49
1:C:577:VAL:HG23	1:C:578:THR:HG23	1.95	0.49
1:D:121:ALA:HA	2:D:701:FDA:C4X	2.42	0.49
1:D:482:GLU:OE2	1:D:501:LYS:NZ	2.36	0.48
1:C:121:ALA:HA	2:C:701:FDA:C4X	2.44	0.47
1:B:121:ALA:HA	2:B:701:FDA:C4X	2.46	0.46
1:B:577:VAL:HG23	1:B:578:THR:HG23	1.98	0.46
1:D:379:ASN:N	4:D:706:SO4:O3	2.40	0.45
1:A:77:LEU:HB3	1:A:316:ILE:HG21	1.98	0.45
1:D:288:GLU:OE2	1:D:292:PHE:HE1	2.00	0.44
1:B:558:ALA:HB1	3:B:702:GLU:HB3	1.99	0.44
1:D:295:VAL:O	1:D:295:VAL:HG22	2.18	0.44
1:A:295:VAL:HG22	1:A:295:VAL:O	2.17	0.43
1:B:508:HIS:NE2	4:B:706:SO4:O2	2.50	0.43
1:A:484:LEU:HD21	5:A:722:PGR:H32	2.01	0.42
1:B:511:ASP:OD2	1:B:514[B]:HIS:ND1	2.44	0.42
1:D:558:ALA:HB1	3:D:702:GLU:HB3	2.01	0.42
1:B:406:LYS:NZ	7:B:828:HOH:O	2.52	0.41
1:B:77:LEU:HB3	1:B:316:ILE:HG21	2.03	0.41
1:B:305:ILE:HD12	1:B:309:SER:HA	2.02	0.41
1:A:107:LYS:HE2	1:A:112:GLY:O	2.21	0.41
1:B:369:LEU:N	1:B:370:PRO:HD2	2.36	0.41

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	532/562 (95%)	515 (97%)	17 (3%)	0	100	100
1	B	530/562 (94%)	513 (97%)	17 (3%)	0	100	100
1	C	538/562 (96%)	521 (97%)	17 (3%)	0	100	100
1	D	534/562 (95%)	517 (97%)	17 (3%)	0	100	100
All	All	2134/2248 (95%)	2066 (97%)	68 (3%)	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	450/467 (96%)	447 (99%)	3 (1%)	84	88
1	B	448/467 (96%)	446 (100%)	2 (0%)	91	94
1	C	455/467 (97%)	453 (100%)	2 (0%)	91	94
1	D	447/467 (96%)	443 (99%)	4 (1%)	78	84
All	All	1800/1868 (96%)	1789 (99%)	11 (1%)	86	90

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	300	VAL
1	A	522	PHE
1	A	524	PHE
1	B	522	PHE
1	B	524	PHE
1	C	522	PHE
1	C	524	PHE
1	D	514[A]	HIS
1	D	514[B]	HIS
1	D	522	PHE
1	D	524	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are

no such sidechains identified.

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 monosaccharides in this entry.

5.6 Ligand geometry (i)

85 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	GLU	C	702	-	8,9,9	1.04	1 (12%)	10,11,11	1.24	2 (20%)
4	SO4	C	709	-	4,4,4	0.61	0	6,6,6	0.05	0
4	SO4	B	707	-	4,4,4	0.60	0	6,6,6	0.04	0
4	SO4	B	705	-	4,4,4	0.59	0	6,6,6	0.05	0
4	SO4	D	706	-	4,4,4	0.60	0	6,6,6	0.04	0
4	SO4	C	703	-	4,4,4	0.59	0	6,6,6	0.05	0
4	SO4	B	708	-	4,4,4	0.59	0	6,6,6	0.08	0
5	PGR	A	720	-	3,4,4	0.28	0	1,4,4	0.54	0
4	SO4	B	706	-	4,4,4	0.59	0	6,6,6	0.08	0
4	SO4	A	708	-	4,4,4	0.61	0	6,6,6	0.07	0
5	PGR	A	722	-	3,4,4	0.32	0	1,4,4	0.61	0
5	PGR	D	719	-	3,4,4	0.30	0	1,4,4	0.62	0
5	PGR	A	716	-	3,4,4	0.28	0	1,4,4	0.59	0
4	SO4	D	710	-	4,4,4	0.59	0	6,6,6	0.07	0
4	SO4	A	705	-	4,4,4	0.60	0	6,6,6	0.06	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	SO4	C	708	-	4,4,4	0.60	0	6,6,6	0.05	0
5	PGR	B	719	-	3,4,4	0.27	0	1,4,4	0.65	0
6	PGO	A	719	-	3,4,4	0.26	0	1,4,4	0.55	0
4	SO4	D	709	-	4,4,4	0.60	0	6,6,6	0.06	0
6	PGO	B	724	-	3,4,4	0.27	0	1,4,4	0.70	0
4	SO4	C	707	-	4,4,4	0.59	0	6,6,6	0.06	0
6	PGO	C	718	-	3,4,4	0.28	0	1,4,4	0.50	0
4	SO4	D	708	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	A	703	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	A	706	-	4,4,4	0.59	0	6,6,6	0.05	0
4	SO4	A	704	-	4,4,4	0.59	0	6,6,6	0.10	0
5	PGR	C	717	-	3,4,4	0.27	0	1,4,4	0.47	0
4	SO4	C	705	-	4,4,4	0.60	0	6,6,6	0.06	0
6	PGO	B	721	-	3,4,4	0.26	0	1,4,4	0.52	0
4	SO4	A	714	-	4,4,4	0.59	0	6,6,6	0.08	0
2	FDA	A	701	-	52,58,58	0.62	0	60,89,89	0.73	2 (3%)
4	SO4	B	715	-	4,4,4	0.58	0	6,6,6	0.05	0
4	SO4	C	714	-	4,4,4	0.61	0	6,6,6	0.11	0
2	FDA	D	701	-	52,58,58	0.62	0	60,89,89	0.73	2 (3%)
4	SO4	D	704	-	4,4,4	0.60	0	6,6,6	0.08	0
4	SO4	D	705	-	4,4,4	0.59	0	6,6,6	0.06	0
4	SO4	A	710	-	4,4,4	0.61	0	6,6,6	0.06	0
6	PGO	D	716	-	3,4,4	0.27	0	1,4,4	0.50	0
4	SO4	B	704	-	4,4,4	0.61	0	6,6,6	0.07	0
2	FDA	B	701	-	52,58,58	0.61	0	60,89,89	0.75	2 (3%)
4	SO4	C	704	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	D	712	-	4,4,4	0.60	0	6,6,6	0.04	0
6	PGO	B	722	-	3,4,4	0.27	0	1,4,4	0.43	0
4	SO4	D	714	-	4,4,4	0.62	0	6,6,6	0.07	0
5	PGR	D	720	-	3,4,4	0.32	0	1,4,4	0.54	0
6	PGO	A	721	-	3,4,4	0.28	0	1,4,4	0.61	0
5	PGR	B	723	-	3,4,4	0.27	0	1,4,4	0.51	0
6	PGO	D	718	-	3,4,4	0.27	0	1,4,4	0.50	0
4	SO4	B	710	-	4,4,4	0.60	0	6,6,6	0.07	0
4	SO4	D	711	-	4,4,4	0.60	0	6,6,6	0.06	0
5	PGR	C	719	-	3,4,4	0.28	0	1,4,4	0.69	0
4	SO4	A	712	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	B	711	-	4,4,4	0.60	0	6,6,6	0.06	0
3	GLU	D	702	-	8,9,9	1.07	1 (12%)	10,11,11	1.31	2 (20%)
6	PGO	A	718	-	3,4,4	0.28	0	1,4,4	0.46	0
2	FDA	C	701	-	52,58,58	0.62	0	60,89,89	0.72	2 (3%)
4	SO4	C	711	-	4,4,4	0.60	0	6,6,6	0.05	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	PGO	B	703	-	3,4,4	0.28	0	1,4,4	0.66	0
4	SO4	A	707	-	4,4,4	0.60	0	6,6,6	0.06	0
5	PGR	D	715	-	3,4,4	0.26	0	1,4,4	0.60	0
4	SO4	B	713	-	4,4,4	0.59	0	6,6,6	0.05	0
4	SO4	C	706	-	4,4,4	0.59	0	6,6,6	0.06	0
4	SO4	D	713	-	4,4,4	0.58	0	6,6,6	0.09	0
4	SO4	B	712	-	4,4,4	0.60	0	6,6,6	0.05	0
5	PGR	C	715	-	3,4,4	0.27	0	1,4,4	0.60	0
4	SO4	C	712	-	4,4,4	0.60	0	6,6,6	0.06	0
4	SO4	C	710	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	A	711	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	A	713	-	4,4,4	0.60	0	6,6,6	0.04	0
6	PGO	B	720	-	3,4,4	0.25	0	1,4,4	0.50	0
6	PGO	A	717	-	3,4,4	0.27	0	1,4,4	0.55	0
4	SO4	B	709	-	4,4,4	0.60	0	6,6,6	0.05	0
4	SO4	B	716	-	4,4,4	0.58	0	6,6,6	0.06	0
3	GLU	B	702	-	8,9,9	1.04	1 (12%)	10,11,11	1.34	2 (20%)
4	SO4	A	709	-	4,4,4	0.61	0	6,6,6	0.08	0
4	SO4	B	714	-	4,4,4	0.60	0	6,6,6	0.06	0
4	SO4	A	715	-	4,4,4	0.61	0	6,6,6	0.05	0
4	SO4	B	717	-	4,4,4	0.60	0	6,6,6	0.06	0
6	PGO	D	717	-	3,4,4	0.28	0	1,4,4	0.59	0
4	SO4	C	713	-	4,4,4	0.59	0	6,6,6	0.07	0
6	PGO	C	716	-	3,4,4	0.26	0	1,4,4	0.61	0
3	GLU	A	702	-	8,9,9	1.07	1 (12%)	10,11,11	1.27	2 (20%)
4	SO4	D	707	-	4,4,4	0.60	0	6,6,6	0.05	0
5	PGR	D	703	-	3,4,4	0.27	0	1,4,4	0.65	0
4	SO4	B	718	-	4,4,4	0.59	0	6,6,6	0.08	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
5	PGR	D	720	-	-	2/2/2/2	-
3	GLU	C	702	-	-	4/9/9/9	-
6	PGO	A	721	-	-	0/2/2/2	-
5	PGR	C	715	-	-	0/2/2/2	-
5	PGR	B	723	-	-	1/2/2/2	-
6	PGO	D	718	-	-	2/2/2/2	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PGR	C	717	-	-	0/2/2/2	-
5	PGR	C	719	-	-	0/2/2/2	-
6	PGO	B	720	-	-	2/2/2/2	-
6	PGO	A	717	-	-	1/2/2/2	-
3	GLU	D	702	-	-	3/9/9/9	-
6	PGO	A	718	-	-	1/2/2/2	-
5	PGR	A	720	-	-	0/2/2/2	-
2	FDA	C	701	-	-	2/30/50/50	0/6/6/6
3	GLU	B	702	-	-	4/9/9/9	-
6	PGO	B	721	-	-	2/2/2/2	-
2	FDA	A	701	-	-	2/30/50/50	0/6/6/6
5	PGR	A	722	-	-	0/2/2/2	-
5	PGR	D	719	-	-	0/2/2/2	-
5	PGR	A	716	-	-	0/2/2/2	-
2	FDA	D	701	-	-	2/30/50/50	0/6/6/6
6	PGO	D	717	-	-	0/2/2/2	-
5	PGR	B	719	-	-	0/2/2/2	-
6	PGO	D	716	-	-	0/2/2/2	-
2	FDA	B	701	-	-	2/30/50/50	0/6/6/6
6	PGO	B	703	-	-	1/2/2/2	-
6	PGO	C	718	-	-	2/2/2/2	-
6	PGO	A	719	-	-	1/2/2/2	-
6	PGO	B	722	-	-	0/2/2/2	-
6	PGO	C	716	-	-	1/2/2/2	-
5	PGR	D	715	-	-	0/2/2/2	-
6	PGO	B	724	-	-	2/2/2/2	-
3	GLU	A	702	-	-	3/9/9/9	-
5	PGR	D	703	-	-	0/2/2/2	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	702	GLU	OXT-C	-2.14	1.23	1.30
3	A	702	GLU	OXT-C	-2.14	1.23	1.30
3	B	702	GLU	OXT-C	-2.08	1.23	1.30
3	C	702	GLU	OXT-C	-2.08	1.23	1.30

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	702	GLU	OXT-C-O	-2.74	117.87	124.09
3	B	702	GLU	OXT-C-O	-2.71	117.93	124.09
3	A	702	GLU	OXT-C-O	-2.62	118.13	124.09
3	C	702	GLU	OXT-C-O	-2.49	118.42	124.09
3	B	702	GLU	OXT-C-CA	2.42	121.64	113.38
2	B	701	FDA	O4B-C1B-C2B	-2.37	103.46	106.93
3	D	702	GLU	OXT-C-CA	2.31	121.26	113.38
2	C	701	FDA	C5A-C6A-N6A	2.30	123.84	120.35
2	B	701	FDA	C5A-C6A-N6A	2.28	123.82	120.35
2	A	701	FDA	C5A-C6A-N6A	2.28	123.82	120.35
2	D	701	FDA	C5A-C6A-N6A	2.25	123.78	120.35
3	C	702	GLU	OXT-C-CA	2.24	121.01	113.38
2	A	701	FDA	O4B-C1B-C2B	-2.22	103.69	106.93
2	D	701	FDA	O4B-C1B-C2B	-2.19	103.72	106.93
3	A	702	GLU	OXT-C-CA	2.18	120.79	113.38
2	C	701	FDA	O4B-C1B-C2B	-2.13	103.82	106.93

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	D	720	PGR	O1-C1-C2-C3
5	D	720	PGR	O1-C1-C2-O2
6	B	720	PGO	O1-C1-C2-O2
6	B	721	PGO	O1-C1-C2-C3
6	B	721	PGO	O1-C1-C2-O2
6	B	724	PGO	O1-C1-C2-O2
6	C	718	PGO	O1-C1-C2-C3
6	C	718	PGO	O1-C1-C2-O2
6	D	718	PGO	O1-C1-C2-C3
6	D	718	PGO	O1-C1-C2-O2
6	A	717	PGO	O1-C1-C2-O2
6	C	716	PGO	O1-C1-C2-O2
2	A	701	FDA	PA-O3P-P-O5'
2	B	701	FDA	PA-O3P-P-O5'
2	C	701	FDA	PA-O3P-P-O5'
2	D	701	FDA	PA-O3P-P-O5'
5	B	723	PGR	O1-C1-C2-C3
6	B	720	PGO	O1-C1-C2-C3
6	B	724	PGO	O1-C1-C2-C3
3	B	702	GLU	OXT-C-CA-CB
3	A	702	GLU	OE1-CD-CG-CB
3	B	702	GLU	OE1-CD-CG-CB

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Mol	Chain	Res	Type	Atoms
6	A	718	PGO	O1-C1-C2-O2
3	B	702	GLU	O-C-CA-CB
3	C	702	GLU	OE1-CD-CG-CB
3	D	702	GLU	OE1-CD-CG-CB
3	B	702	GLU	OE2-CD-CG-CB
3	A	702	GLU	OE2-CD-CG-CB
3	C	702	GLU	OXT-C-CA-CB
3	C	702	GLU	OE2-CD-CG-CB
2	D	701	FDA	O4B-C4B-C5B-O5B
3	D	702	GLU	OE2-CD-CG-CB
3	D	702	GLU	OXT-C-CA-CB
2	A	701	FDA	O4B-C4B-C5B-O5B
3	A	702	GLU	OXT-C-CA-CB
3	C	702	GLU	O-C-CA-CB
2	B	701	FDA	O4B-C4B-C5B-O5B
2	C	701	FDA	O4B-C4B-C5B-O5B
6	A	719	PGO	O1-C1-C2-O2
6	B	703	PGO	O1-C1-C2-O2

There are no ring outliers.

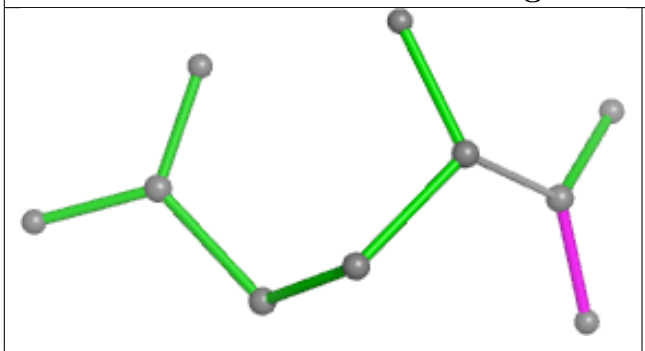
16 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	702	GLU	1	0
4	D	706	SO4	1	0
4	B	706	SO4	1	0
5	A	722	PGR	2	0
4	A	706	SO4	1	0
4	A	704	SO4	1	0
2	A	701	FDA	1	0
2	D	701	FDA	1	0
2	B	701	FDA	1	0
6	B	722	PGO	1	0
3	D	702	GLU	2	0
6	A	718	PGO	1	0
2	C	701	FDA	1	0
4	B	709	SO4	1	0
3	B	702	GLU	2	0
3	A	702	GLU	1	0

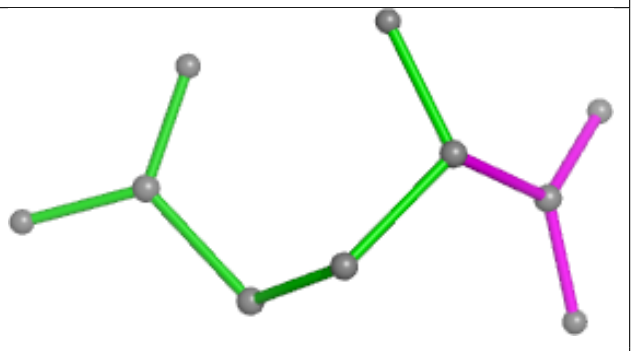
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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.

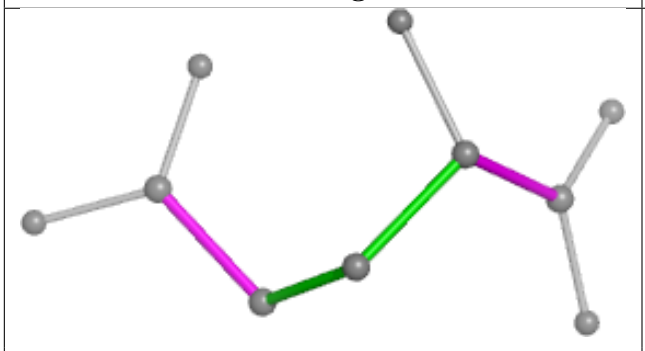
Ligand GLU C 702



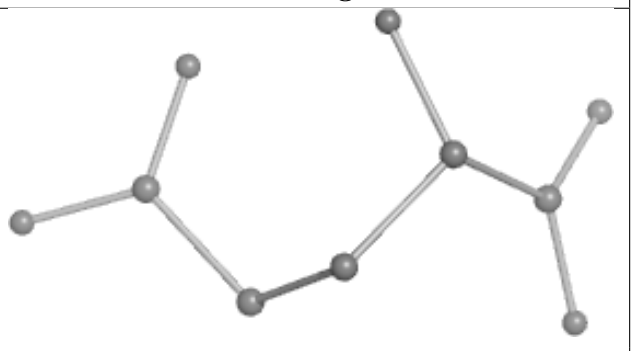
Bond lengths



Bond angles

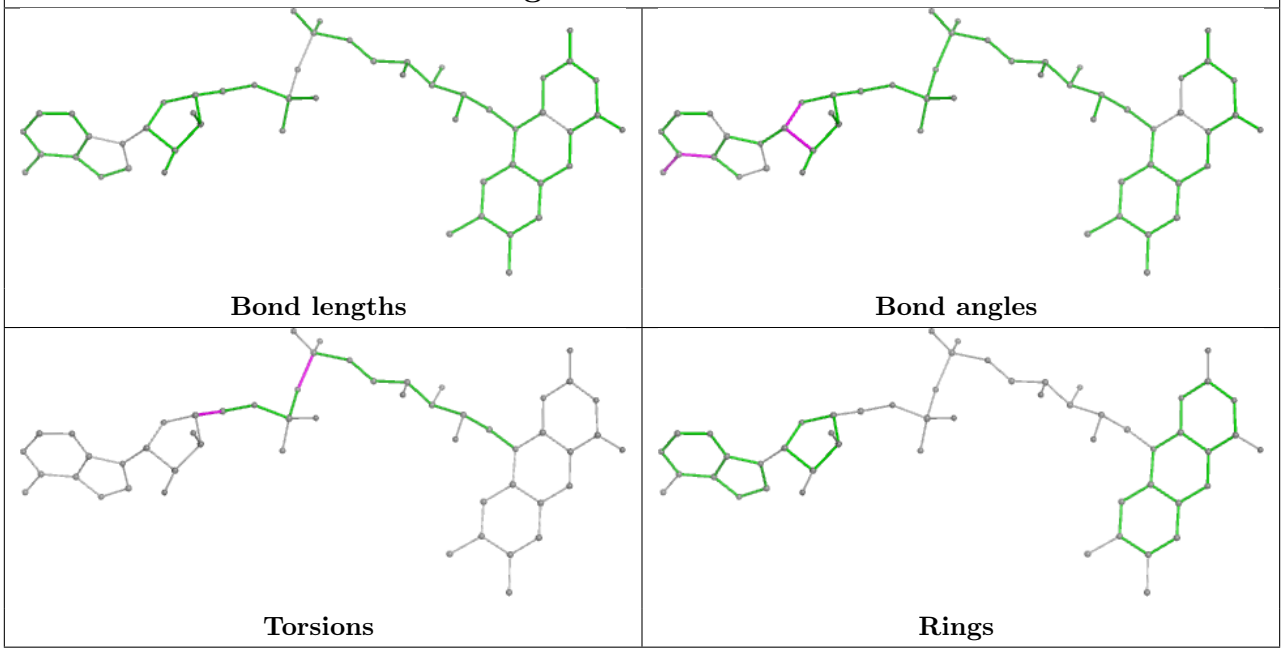


Torsions

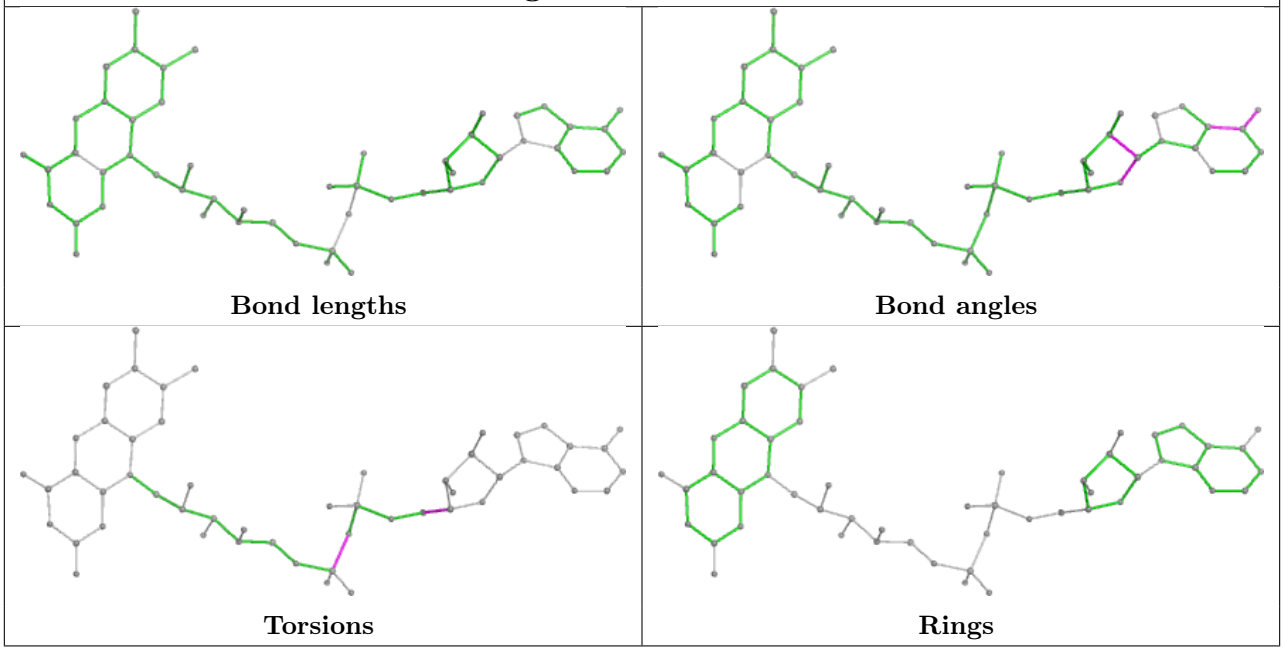


Rings

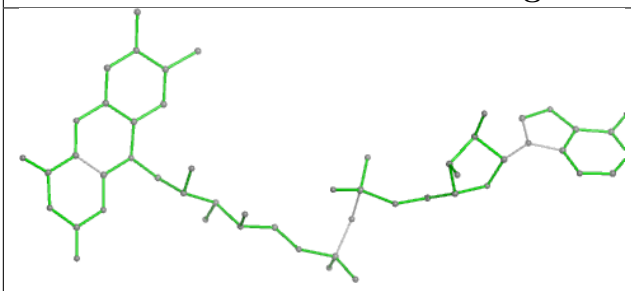
Ligand FDA A 701



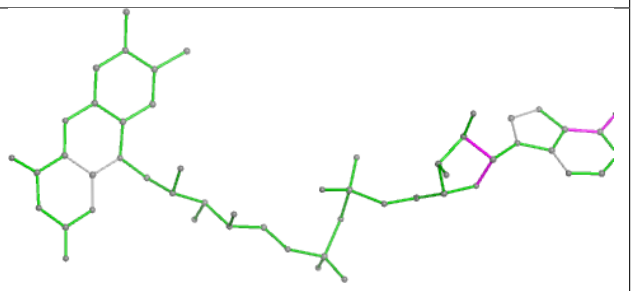
Ligand FDA D 701



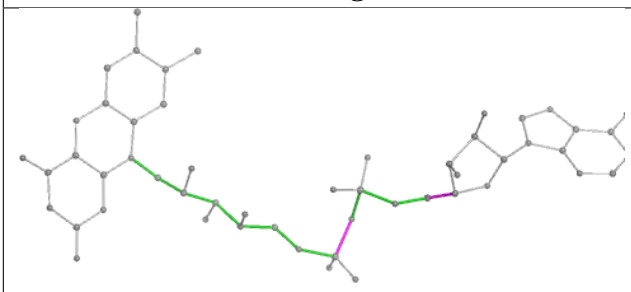
Ligand FDA B 701



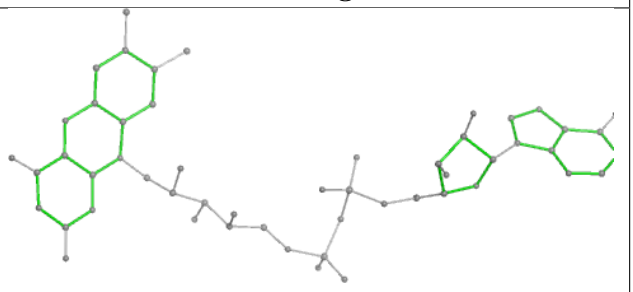
Bond lengths



Bond angles

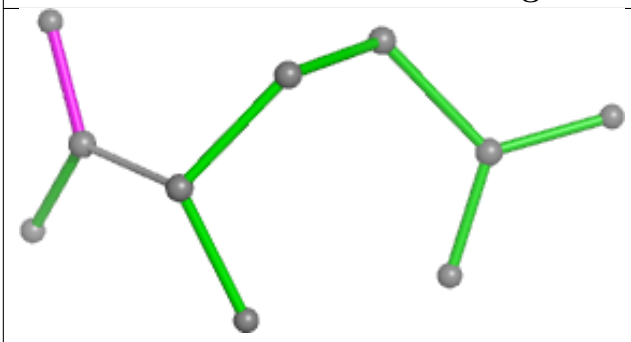


Torsions

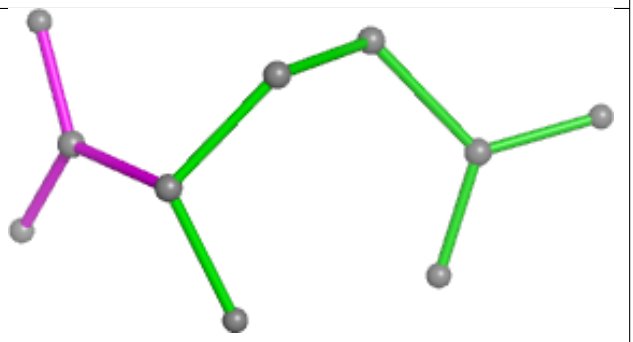


Rings

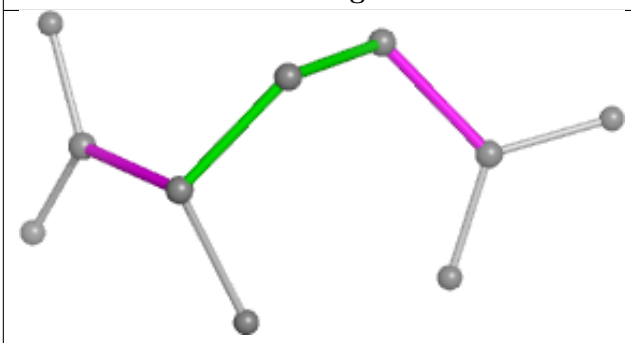
Ligand GLU D 702



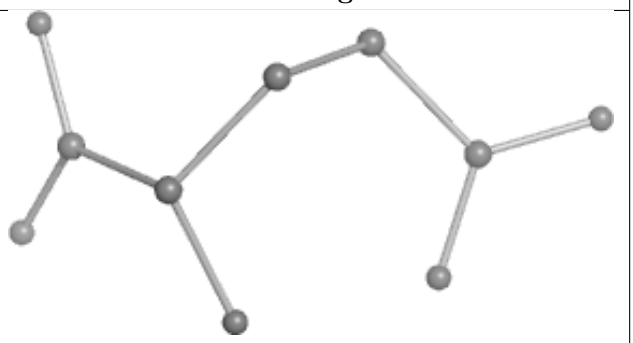
Bond lengths



Bond angles

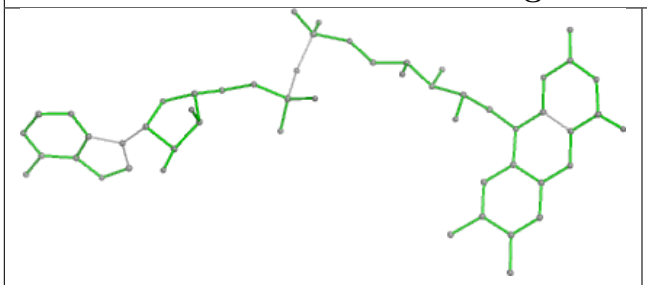


Torsions

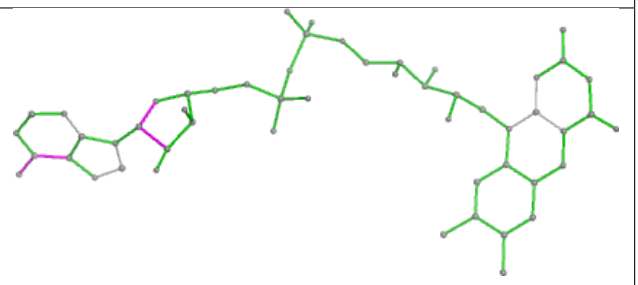


Rings

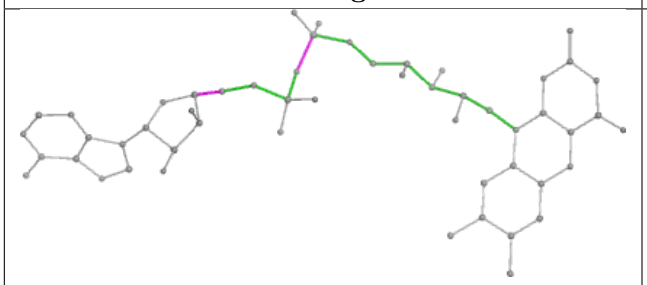
Ligand FDA C 701



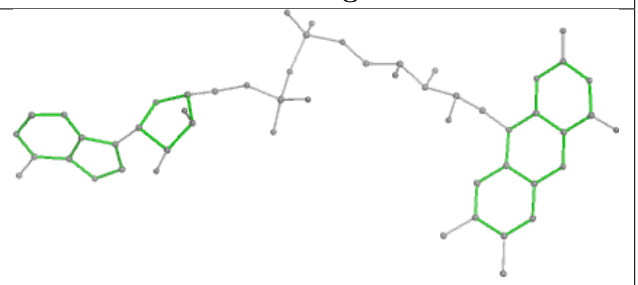
Bond lengths



Bond angles

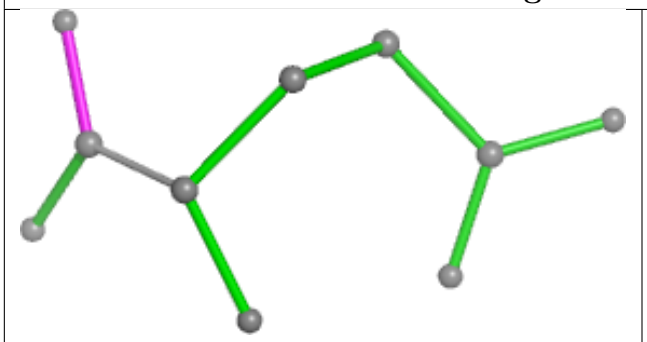


Torsions

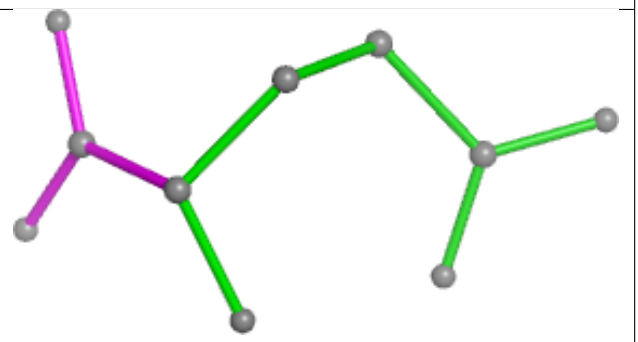


Rings

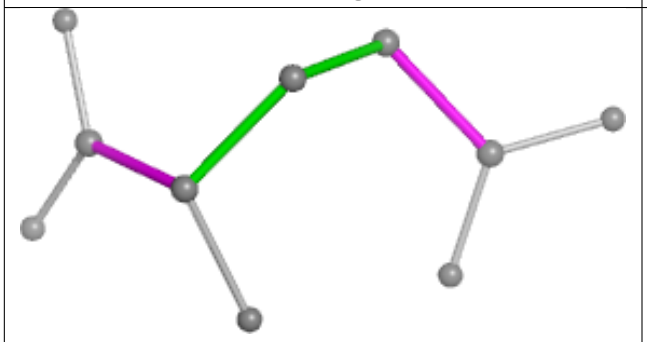
Ligand GLU B 702



Bond lengths



Bond angles



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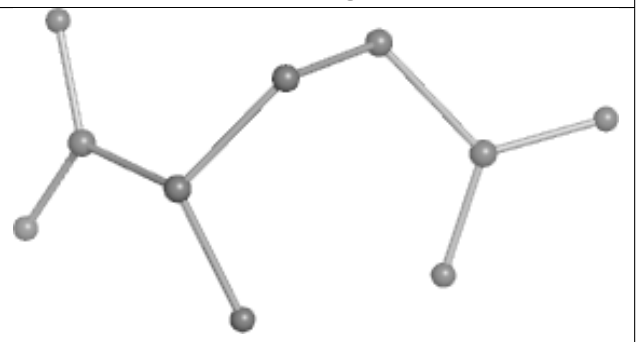
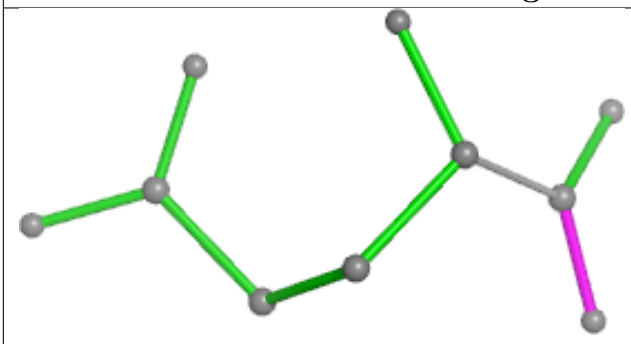
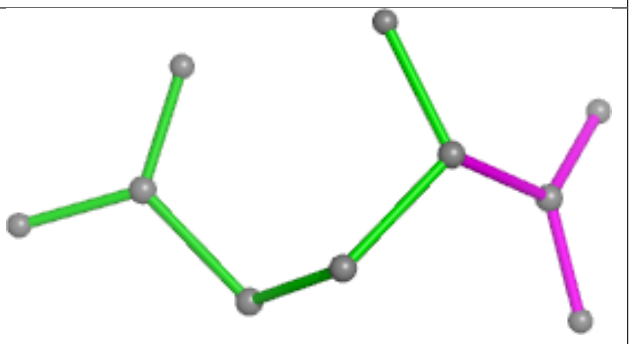


Rings

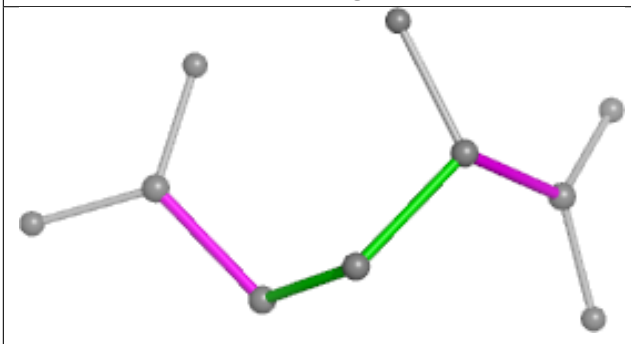
Ligand GLU A 702



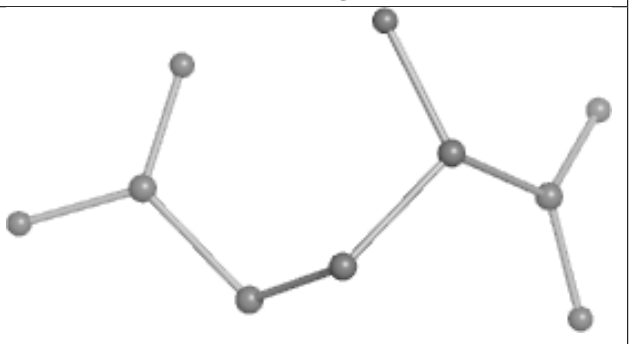
Bond lengths



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	532/562 (94%)	0.96	88 (16%)	1 2	30, 40, 57, 106	0
1	B	531/562 (94%)	0.98	91 (17%)	1 1	31, 38, 53, 85	0
1	C	534/562 (95%)	1.07	90 (16%)	1 2	32, 44, 66, 105	0
1	D	533/562 (94%)	1.05	94 (17%)	1 1	33, 45, 71, 112	0
All	All	2130/2248 (94%)	1.02	363 (17%)	1 1	30, 41, 63, 112	0

All (363) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	321	HIS	10.0
1	D	323	LYS	8.3
1	C	299	GLU	7.9
1	D	321	HIS	6.9
1	C	62	PRO	6.9
1	A	448	ALA	6.7
1	D	322	LYS	6.7
1	B	343	ASN	5.9
1	A	321	HIS	5.6
1	C	63	GLY	5.6
1	D	319	PHE	5.6
1	D	445	ASN	5.4
1	B	395	TYR	5.3
1	D	448	ALA	5.1
1	B	321	HIS	5.1
1	C	322	LYS	5.0
1	D	195	SER	5.0
1	A	322	LYS	5.0
1	A	327	ALA	4.8
1	C	318	ALA	4.8
1	B	445	ASN	4.8

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Mol	Chain	Res	Type	RSRZ
1	B	396	GLY	4.8
1	D	298	GLY	4.8
1	A	514[A]	HIS	4.7
1	A	399	ILE	4.6
1	B	514[A]	HIS	4.6
1	D	299	GLU	4.6
1	A	293	GLY	4.6
1	C	514[A]	HIS	4.6
1	A	326	ASN	4.5
1	C	319	PHE	4.5
1	D	395	TYR	4.5
1	B	322	LYS	4.5
1	C	293	GLY	4.5
1	C	420	LYS	4.5
1	B	398	SER	4.4
1	C	326	ASN	4.4
1	C	600	PRO	4.4
1	C	198	ASP	4.4
1	B	399	ILE	4.3
1	A	343	ASN	4.3
1	A	522	PHE	4.3
1	A	458	CYS	4.3
1	A	397	PRO	4.3
1	B	522	PHE	4.3
1	B	467	GLY	4.3
1	C	295	VAL	4.3
1	D	255	LEU	4.2
1	B	447	ASN	4.2
1	C	445	ASN	4.2
1	B	195	SER	4.2
1	C	341	ASN	4.2
1	A	445	ASN	4.1
1	C	395	TYR	4.1
1	C	399	ILE	4.1
1	B	458	CYS	4.1
1	C	195	SER	4.1
1	A	110	ASN	4.1
1	B	518	THR	4.0
1	A	468	SER	4.0
1	B	512	TRP	4.0
1	C	446	THR	4.0
1	B	295	VAL	4.0

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Mol	Chain	Res	Type	RSRZ
1	B	251	PRO	4.0
1	D	253	PHE	4.0
1	D	112	GLY	4.0
1	D	514[A]	HIS	3.9
1	A	398	SER	3.9
1	C	343	ASN	3.9
1	B	250	SER	3.9
1	D	257	SER	3.9
1	B	64	GLY	3.9
1	A	447	ASN	3.8
1	B	513	ASN	3.8
1	A	460	THR	3.8
1	B	397	PRO	3.8
1	A	470	ILE	3.8
1	B	524	PHE	3.8
1	D	417	ASN	3.7
1	B	463	ALA	3.7
1	D	318	ALA	3.7
1	C	345	GLU	3.7
1	A	395	TYR	3.7
1	A	521	ALA	3.7
1	D	198	ASP	3.7
1	B	459	TRP	3.7
1	C	397	PRO	3.7
1	D	324	GLY	3.7
1	A	512	TRP	3.6
1	D	345	GLU	3.6
1	B	182	GLY	3.6
1	A	345	GLU	3.6
1	C	458	CYS	3.6
1	D	320	LEU	3.6
1	C	512	TRP	3.5
1	D	463	ALA	3.5
1	B	460	THR	3.5
1	D	398	SER	3.5
1	A	396	GLY	3.5
1	D	396	GLY	3.5
1	C	132	LYS	3.5
1	D	399	ILE	3.5
1	A	469	LEU	3.5
1	D	397	PRO	3.4
1	D	419	GLU	3.4

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Mol	Chain	Res	Type	RSRZ
1	D	499	TYR	3.4
1	A	109	PRO	3.4
1	B	414	GLN	3.4
1	C	523	ALA	3.4
1	B	417	ASN	3.4
1	B	444	VAL	3.4
1	A	323	LYS	3.4
1	C	356	GLN	3.4
1	A	347	SER	3.3
1	D	524	PHE	3.3
1	D	132	LYS	3.3
1	D	203	LYS	3.3
1	C	459	TRP	3.3
1	A	299	GLU	3.3
1	C	469	LEU	3.3
1	D	256	PRO	3.3
1	A	523	ALA	3.3
1	D	459	TRP	3.3
1	A	420	LYS	3.3
1	D	447	ASN	3.2
1	C	396	GLY	3.2
1	D	64	GLY	3.2
1	B	461	ASN	3.2
1	C	447	ASN	3.2
1	C	346	ASP	3.2
1	C	522	PHE	3.2
1	A	461	ASN	3.2
1	A	464	GLU	3.2
1	B	523	ALA	3.2
1	C	199	ILE	3.2
1	B	558	ALA	3.2
1	B	344	LYS	3.2
1	D	458	CYS	3.1
1	D	559	TRP	3.1
1	A	193	ASN	3.1
1	A	341	ASN	3.1
1	D	558	ALA	3.1
1	A	319	PHE	3.1
1	A	295	VAL	3.1
1	B	341	ASN	3.1
1	C	467	GLY	3.1
1	C	193	ASN	3.1

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Mol	Chain	Res	Type	RSRZ
1	D	421	PHE	3.1
1	D	129	SER	3.1
1	B	370	PRO	3.0
1	B	519	MET	3.0
1	D	522	PHE	3.0
1	B	510	TRP	3.0
1	C	510	TRP	3.0
1	B	253	PHE	3.0
1	A	510	TRP	3.0
1	B	276	GLY	3.0
1	B	345	GLU	3.0
1	C	419[A]	GLU	3.0
1	D	510	TRP	3.0
1	C	521	ALA	3.0
1	D	512	TRP	2.9
1	A	520	GLY	2.9
1	B	521	ALA	2.9
1	A	356	GLN	2.9
1	A	459	TRP	2.9
1	B	520	GLY	2.9
1	A	524	PHE	2.9
1	C	466	MET	2.9
1	D	292	PHE	2.9
1	C	457	TYR	2.9
1	A	513	ASN	2.9
1	A	346	ASP	2.9
1	C	577	VAL	2.8
1	D	199	ILE	2.8
1	A	467	GLY	2.8
1	B	552	ALA	2.8
1	A	462	ASP	2.8
1	C	320	LEU	2.8
1	D	295	VAL	2.8
1	D	444	VAL	2.8
1	A	378	LYS	2.8
1	A	463	ALA	2.8
1	A	217	PHE	2.8
1	C	599	GLN	2.8
1	B	462	ASP	2.8
1	A	465	ARG	2.8
1	B	198	ASP	2.8
1	C	120	GLY	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	457	TYR	2.8
1	C	253	PHE	2.8
1	B	347	SER	2.7
1	A	342	PRO	2.7
1	C	119	VAL	2.7
1	D	518	THR	2.7
1	C	344	LYS	2.7
1	D	520	GLY	2.7
1	C	524	PHE	2.7
1	D	254	GLY	2.7
1	B	464	GLU	2.7
1	D	552	ALA	2.7
1	B	203	LYS	2.7
1	D	110	ASN	2.7
1	D	341	ASN	2.7
1	B	420	LYS	2.6
1	B	293	GLY	2.6
1	C	463	ALA	2.6
1	A	344	LYS	2.6
1	C	129	SER	2.6
1	C	398	SER	2.6
1	D	457	TYR	2.6
1	A	558	ALA	2.6
1	B	346	ASP	2.6
1	A	519	MET	2.6
1	D	344	LYS	2.6
1	D	420	LYS	2.6
1	B	252	SER	2.6
1	A	466	MET	2.6
1	A	276	GLY	2.6
1	D	418	GLY	2.6
1	C	496	ASP	2.6
1	B	525	PHE	2.6
1	D	193	ASN	2.6
1	B	448	ALA	2.5
1	D	468	SER	2.5
1	D	182	GLY	2.5
1	D	293	GLY	2.5
1	B	394	GLN	2.5
1	D	131	ASP	2.5
1	D	346	ASP	2.5
1	A	112	GLY	2.5

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Mol	Chain	Res	Type	RSRZ
1	D	326	ASN	2.5
1	D	460	THR	2.5
1	C	256	PRO	2.5
1	C	559	TRP	2.5
1	A	194	SER	2.5
1	B	416	LYS	2.5
1	A	457	TYR	2.5
1	B	600	PRO	2.5
1	B	274	SER	2.5
1	A	368	PRO	2.5
1	C	470	ILE	2.5
1	B	110	ASN	2.5
1	B	280	ARG	2.5
1	A	196	LEU	2.5
1	C	203	LYS	2.5
1	A	444	VAL	2.5
1	A	552	ALA	2.5
1	A	371	VAL	2.4
1	D	371	VAL	2.4
1	A	275	THR	2.4
1	D	446	THR	2.4
1	C	448	ALA	2.4
1	C	518	THR	2.4
1	D	519	MET	2.4
1	B	369	LEU	2.4
1	D	467	GLY	2.4
1	B	393	LEU	2.4
1	D	111	GLY	2.4
1	C	444	VAL	2.4
1	D	130	ASP	2.4
1	B	368	PRO	2.4
1	B	466	MET	2.4
1	B	194	SER	2.4
1	C	230[A]	ASP	2.4
1	B	342	PRO	2.4
1	C	412	THR	2.4
1	B	409	TRP	2.4
1	B	559	TRP	2.4
1	D	496	ASP	2.4
1	C	131	ASP	2.3
1	B	193	ASN	2.3
1	A	369	LEU	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	393	LEU	2.3
1	D	461	ASN	2.3
1	A	165	LYS	2.3
1	B	469	LEU	2.3
1	A	559	TRP	2.3
1	C	468	SER	2.3
1	D	214	GLN	2.3
1	C	191	GLY	2.3
1	B	319	PHE	2.3
1	C	353	ALA	2.3
1	C	371	VAL	2.3
1	D	466	MET	2.3
1	C	414	GLN	2.3
1	B	119	VAL	2.3
1	D	368	PRO	2.3
1	C	154	LYS	2.2
1	A	446	THR	2.2
1	D	511	ASP	2.2
1	C	133	GLY	2.2
1	C	416	LYS	2.2
1	C	87	ASP	2.2
1	B	121	ALA	2.2
1	C	552	ALA	2.2
1	C	194	SER	2.2
1	A	511	ASP	2.2
1	A	394	GLN	2.2
1	B	233	LYS	2.2
1	A	169	PHE	2.2
1	A	370	PRO	2.2
1	A	526	GLY	2.2
1	D	276	GLY	2.2
1	B	277	TRP	2.2
1	D	378	LYS	2.2
1	C	390	LEU	2.2
1	A	274	SER	2.2
1	B	468	SER	2.2
1	D	464	GLU	2.2
1	A	113	LYS	2.2
1	B	465	ARG	2.2
1	B	275	THR	2.2
1	D	412	THR	2.2
1	A	277	TRP	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	520	GLY	2.2
1	D	413	GLY	2.2
1	A	517	LEU	2.2
1	C	369	LEU	2.2
1	A	550	GLY	2.2
1	B	111	GLY	2.2
1	D	317	ALA	2.2
1	C	184	SER	2.2
1	C	257	SER	2.2
1	B	470	ILE	2.1
1	A	367	LEU	2.1
1	B	371	VAL	2.1
1	C	370	PRO	2.1
1	D	359	LYS	2.1
1	B	102	ARG	2.1
1	C	519	MET	2.1
1	A	318	ALA	2.1
1	C	121	ALA	2.1
1	D	523	ALA	2.1
1	B	515	ASN	2.1
1	D	504	LEU	2.1
1	C	205	VAL	2.1
1	C	525	PHE	2.1
1	B	289	ALA	2.1
1	D	370	PRO	2.1
1	D	543	ASN	2.1
1	A	186	ASP	2.1
1	A	226	THR	2.1
1	B	446	THR	2.1
1	C	327	ALA	2.1
1	A	502	ASP	2.1
1	D	136	GLN	2.1
1	C	354	GLY	2.1
1	C	550	GLY	2.1
1	C	186	ASP	2.1
1	A	542	ALA	2.1
1	B	299	GLU	2.0
1	C	64	GLY	2.0
1	D	342	PRO	2.0
1	B	517	LEU	2.0
1	A	518	THR	2.0
1	A	294	GLU	2.0

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Mol	Chain	Res	Type	RSRZ
1	D	465	ARG	2.0
1	B	257	SER	2.0
1	D	521	ALA	2.0
1	B	418	GLY	2.0
1	D	329	VAL	2.0
1	D	414	GLN	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	SO4	C	714	5/5	0.36	0.58	40,44,52,52	5
4	SO4	D	712	5/5	0.61	0.48	54,57,60,62	5
4	SO4	A	709	5/5	0.62	0.50	41,41,48,49	5
4	SO4	A	708	5/5	0.63	0.35	53,54,59,65	5
4	SO4	D	714	5/5	0.64	0.34	44,44,55,56	5
4	SO4	A	713	5/5	0.67	0.30	53,55,56,61	5
4	SO4	B	715	5/5	0.68	0.40	40,44,46,48	5
4	SO4	D	708	5/5	0.68	0.28	51,53,59,62	5
4	SO4	A	712	5/5	0.70	0.39	67,69,73,77	5
4	SO4	C	709	5/5	0.71	0.51	60,60,69,69	5
4	SO4	D	711	5/5	0.71	0.30	61,62,67,67	5
4	SO4	C	710	5/5	0.73	0.40	55,55,58,62	5
4	SO4	C	708	5/5	0.74	0.43	58,59,62,67	5
4	SO4	D	705	5/5	0.74	0.33	47,52,53,54	5
4	SO4	C	711	5/5	0.74	0.21	67,67,76,78	5
6	PGO	D	718	5/5	0.74	0.31	46,55,65,65	13
6	PGO	B	703	5/5	0.76	0.28	44,53,58,58	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	SO4	A	715	5/5	0.76	0.28	48,48,57,58	5
6	PGO	B	721	5/5	0.77	0.17	47,57,67,67	0
4	SO4	A	705	5/5	0.78	0.30	42,47,48,52	5
5	PGR	D	703	5/5	0.79	0.19	47,57,66,75	0
4	SO4	B	711	5/5	0.79	0.20	53,56,59,61	5
4	SO4	C	703	5/5	0.80	0.27	53,54,60,61	5
4	SO4	D	707	5/5	0.80	0.30	47,49,55,56	5
4	SO4	D	710	5/5	0.81	0.23	61,65,70,70	5
4	SO4	B	713	5/5	0.81	0.31	56,58,60,60	5
4	SO4	C	712	5/5	0.81	0.38	44,45,50,51	5
4	SO4	B	717	5/5	0.81	0.27	59,61,63,65	5
6	PGO	A	718	5/5	0.82	0.30	47,57,61,66	0
4	SO4	D	709	5/5	0.82	0.34	61,63,68,70	5
4	SO4	B	716	5/5	0.82	0.43	45,50,53,54	5
4	SO4	B	709	5/5	0.82	0.23	45,51,54,55	5
6	PGO	A	721	5/5	0.83	0.19	42,50,52,57	13
4	SO4	B	706	5/5	0.83	0.36	40,46,49,50	5
4	SO4	A	703	5/5	0.84	0.24	42,46,52,52	5
6	PGO	B	722	5/5	0.84	0.48	33,39,46,47	13
4	SO4	C	705	5/5	0.84	0.25	50,51,57,61	5
4	SO4	A	706	5/5	0.85	0.23	47,49,55,57	5
5	PGR	B	719	5/5	0.85	0.42	31,37,43,43	13
5	PGR	B	723	5/5	0.85	0.33	35,43,48,51	13
4	SO4	A	710	5/5	0.85	0.23	56,57,64,65	5
6	PGO	C	718	5/5	0.85	0.24	42,50,57,57	13
4	SO4	B	707	5/5	0.85	0.26	48,52,55,58	5
4	SO4	B	705	5/5	0.86	0.17	45,47,50,51	5
5	PGR	A	716	5/5	0.86	0.51	35,42,45,47	13
4	SO4	C	706	5/5	0.87	0.16	53,56,57,59	5
4	SO4	A	711	5/5	0.87	0.36	62,63,65,69	5
4	SO4	D	706	5/5	0.87	0.23	53,55,63,64	5
4	SO4	B	712	5/5	0.88	0.28	51,54,59,61	5
3	GLU	D	702	10/10	0.88	0.35	38,43,49,49	0
3	GLU	C	702	10/10	0.88	0.26	37,42,51,51	0
4	SO4	C	704	5/5	0.88	0.18	69,70,74,77	5
5	PGR	D	720	5/5	0.89	0.52	36,43,46,46	13
3	GLU	A	702	10/10	0.89	0.22	35,39,47,47	0
5	PGR	C	715	5/5	0.89	0.42	36,43,46,48	13
4	SO4	A	707	5/5	0.89	0.23	39,41,42,44	5
6	PGO	C	716	5/5	0.90	0.21	34,45,47,54	0
5	PGR	C	719	5/5	0.90	0.50	34,42,44,50	13
4	SO4	D	704	5/5	0.90	0.16	53,55,57,58	5

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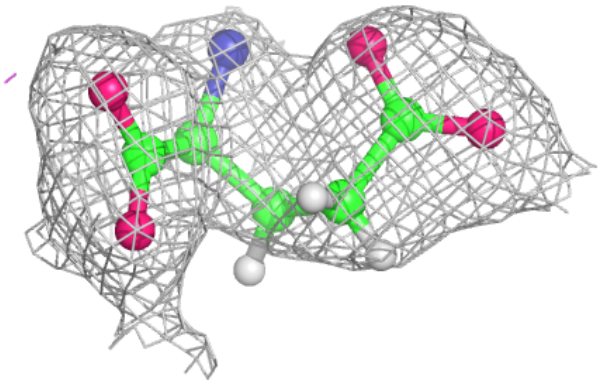
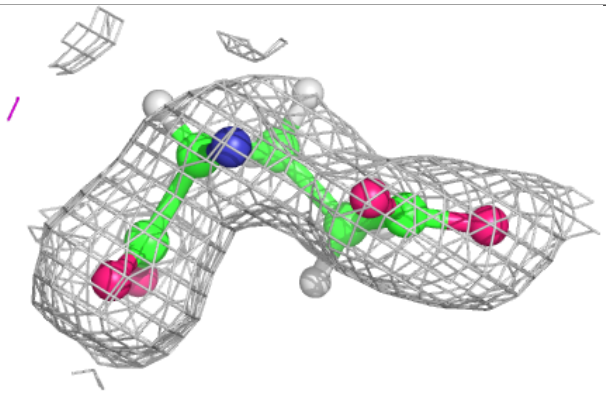
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	GLU	B	702	10/10	0.91	0.43	31,36,43,43	15
6	PGO	A	717	5/5	0.91	0.19	35,43,47,47	13
6	PGO	B	724	5/5	0.91	0.24	41,50,52,60	13
2	FDA	C	701	53/53	0.91	0.20	31,36,44,45	0
5	PGR	A	720	5/5	0.91	0.20	35,43,46,53	0
4	SO4	C	707	5/5	0.91	0.22	44,46,49,49	5
5	PGR	A	722	5/5	0.92	0.60	32,39,48,48	13
6	PGO	B	720	5/5	0.92	0.22	36,43,50,50	13
4	SO4	B	708	5/5	0.92	0.18	38,39,46,47	5
5	PGR	C	717	5/5	0.92	0.24	36,44,48,53	0
4	SO4	B	704	5/5	0.93	0.14	43,43,47,50	5
4	SO4	B	710	5/5	0.93	0.27	54,61,65,65	5
2	FDA	A	701	53/53	0.93	0.19	31,35,43,45	0
4	SO4	A	704	5/5	0.93	0.29	53,55,58,58	5
5	PGR	D	715	5/5	0.93	0.38	37,44,46,47	13
5	PGR	D	719	5/5	0.93	0.22	34,45,47,54	13
2	FDA	D	701	53/53	0.93	0.19	31,37,44,46	0
4	SO4	B	714	5/5	0.93	0.22	47,49,51,51	5
2	FDA	B	701	53/53	0.93	0.20	25,33,40,42	0
4	SO4	A	714	5/5	0.94	0.17	42,48,51,56	5
6	PGO	D	716	5/5	0.94	0.49	35,42,46,49	13
6	PGO	D	717	5/5	0.94	0.10	49,58,63,64	0
4	SO4	D	713	5/5	0.94	0.24	49,50,55,59	5
6	PGO	A	719	5/5	0.95	0.37	34,42,46,50	13
4	SO4	C	713	5/5	0.96	0.14	45,48,49,50	5
4	SO4	B	718	5/5	0.97	0.15	43,47,50,53	5

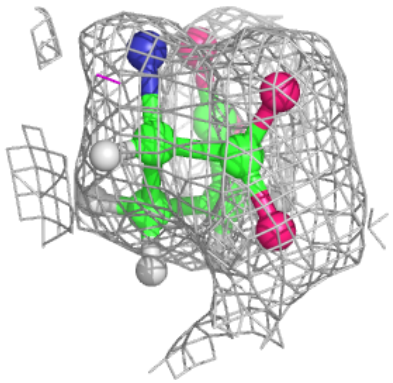
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around GLU D 702:

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

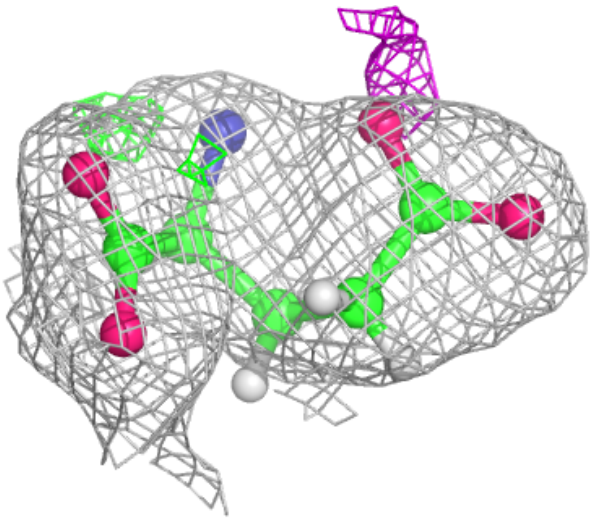


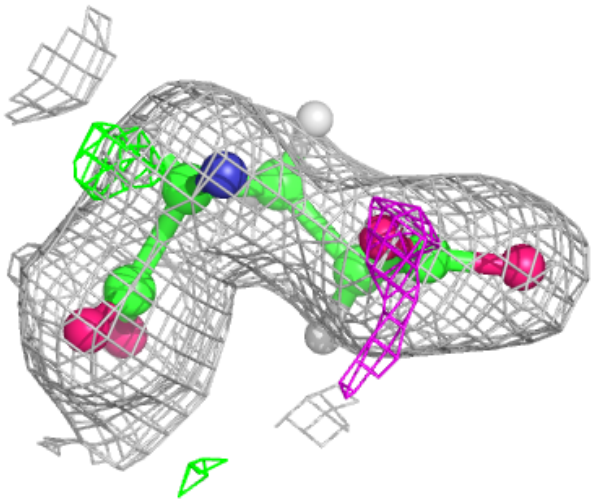


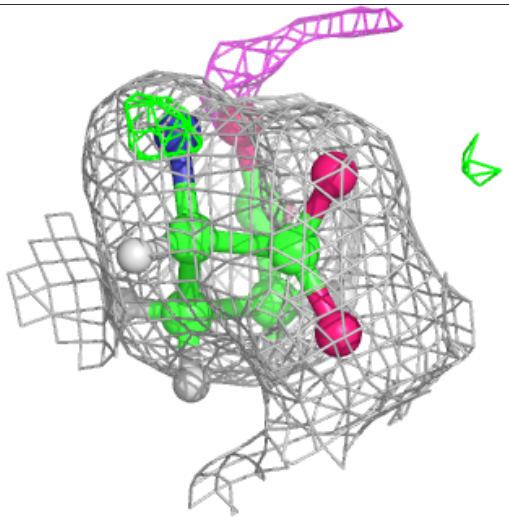


Electron density around GLU C 702:

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

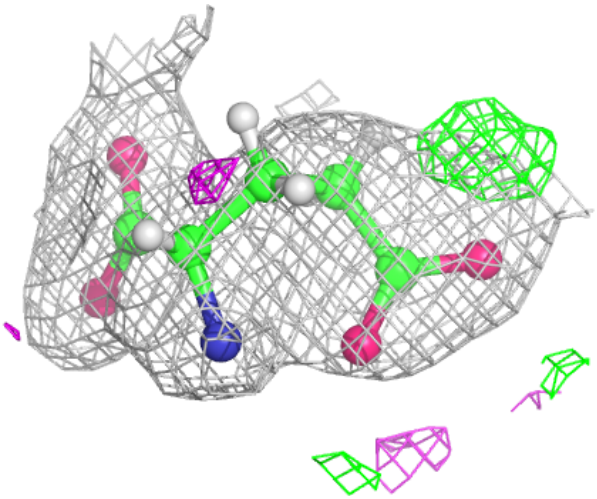


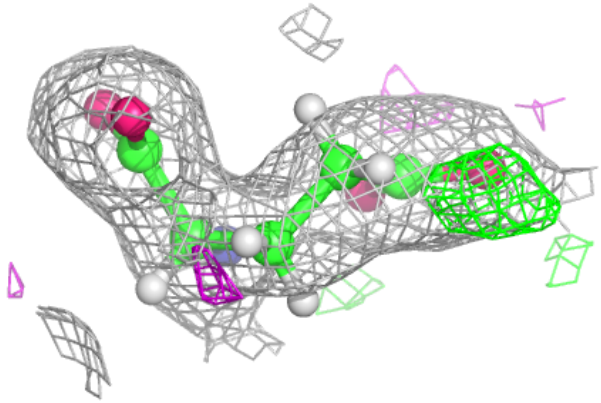


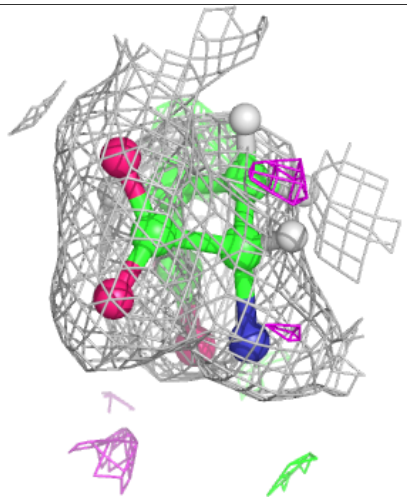


Electron density around GLU A 702:

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

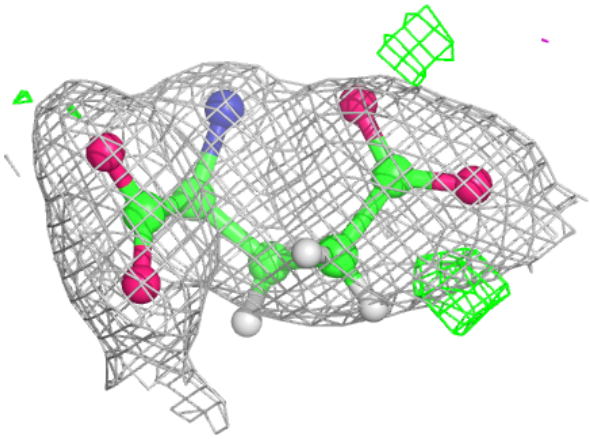


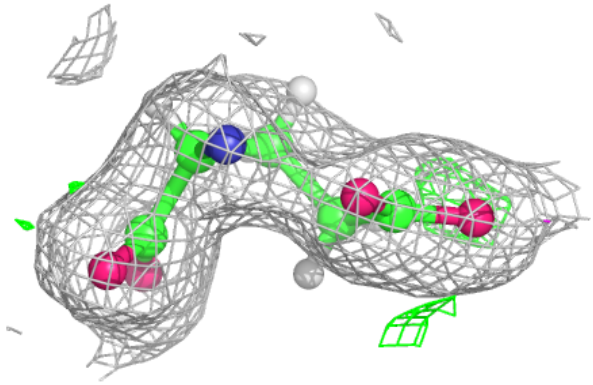


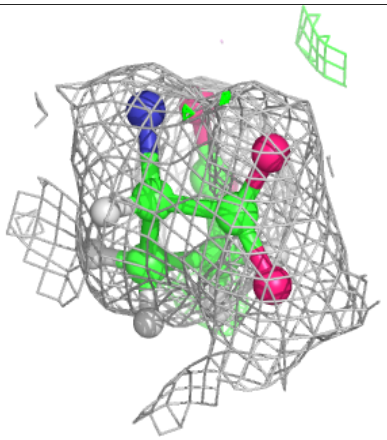


Electron density around GLU B 702:

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

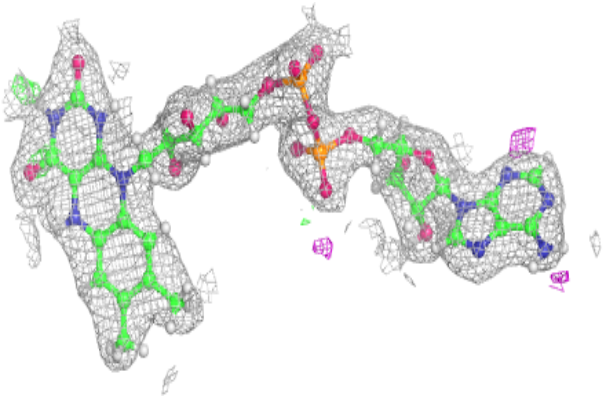


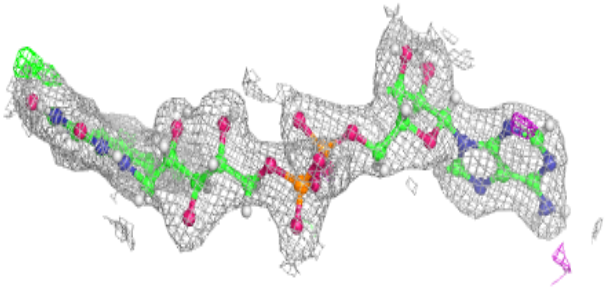


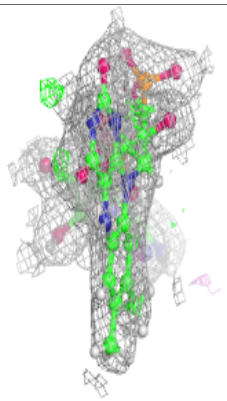


Electron density around FDA C 701:

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

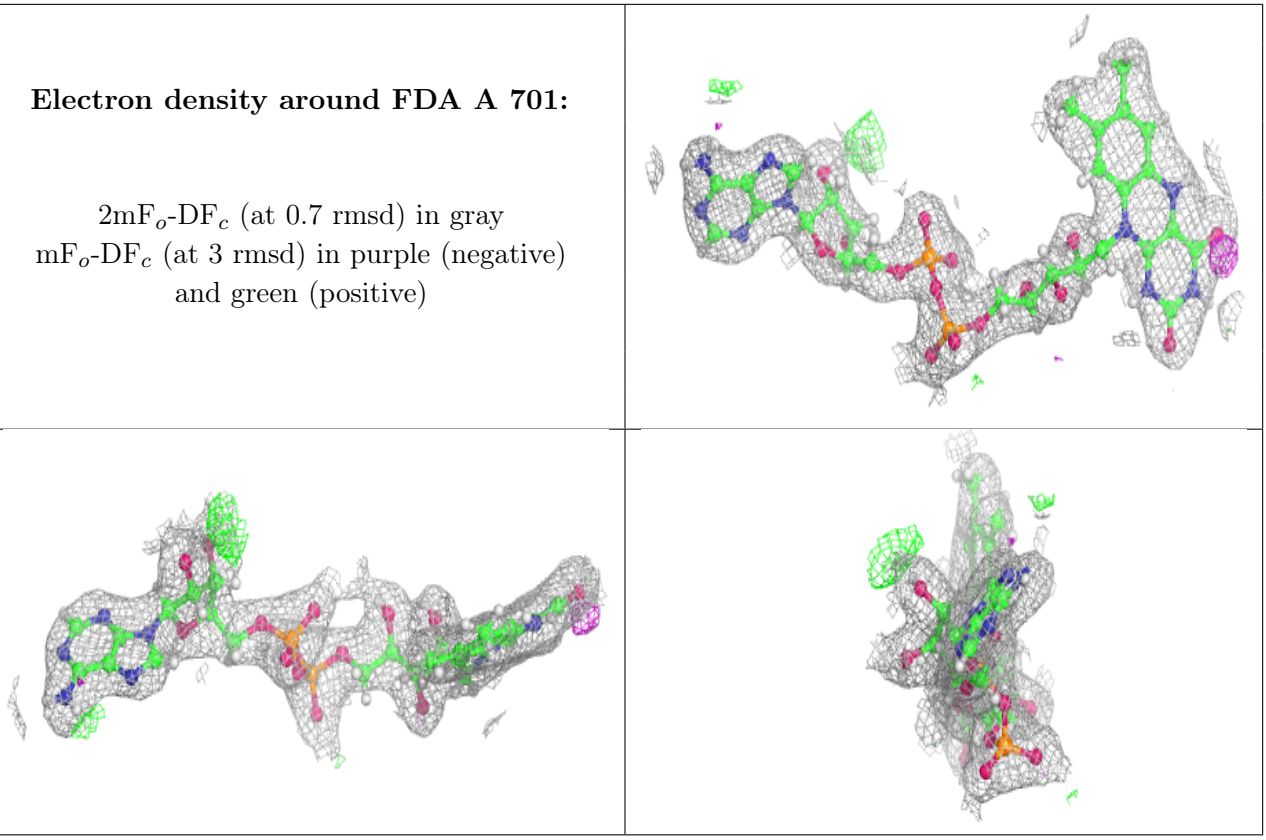






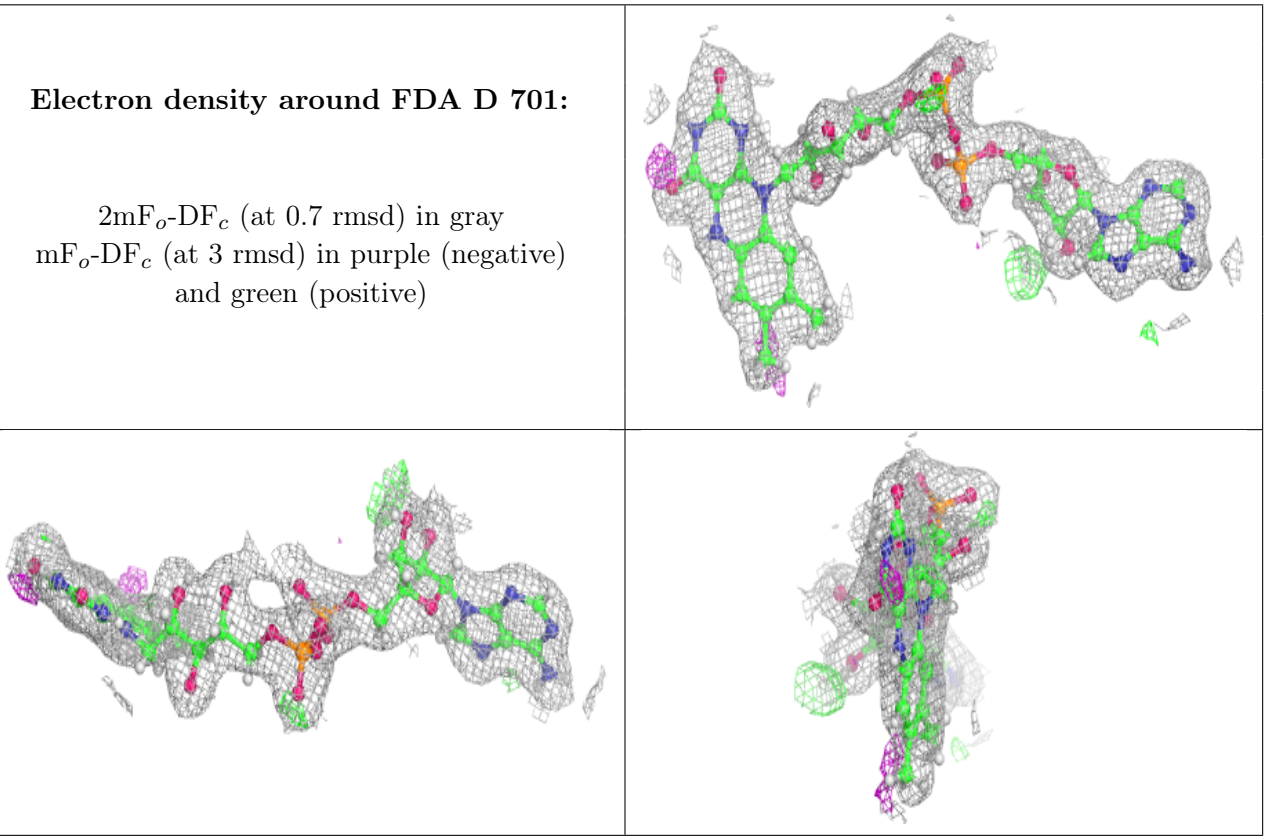
Electron density around FDA A 701:

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



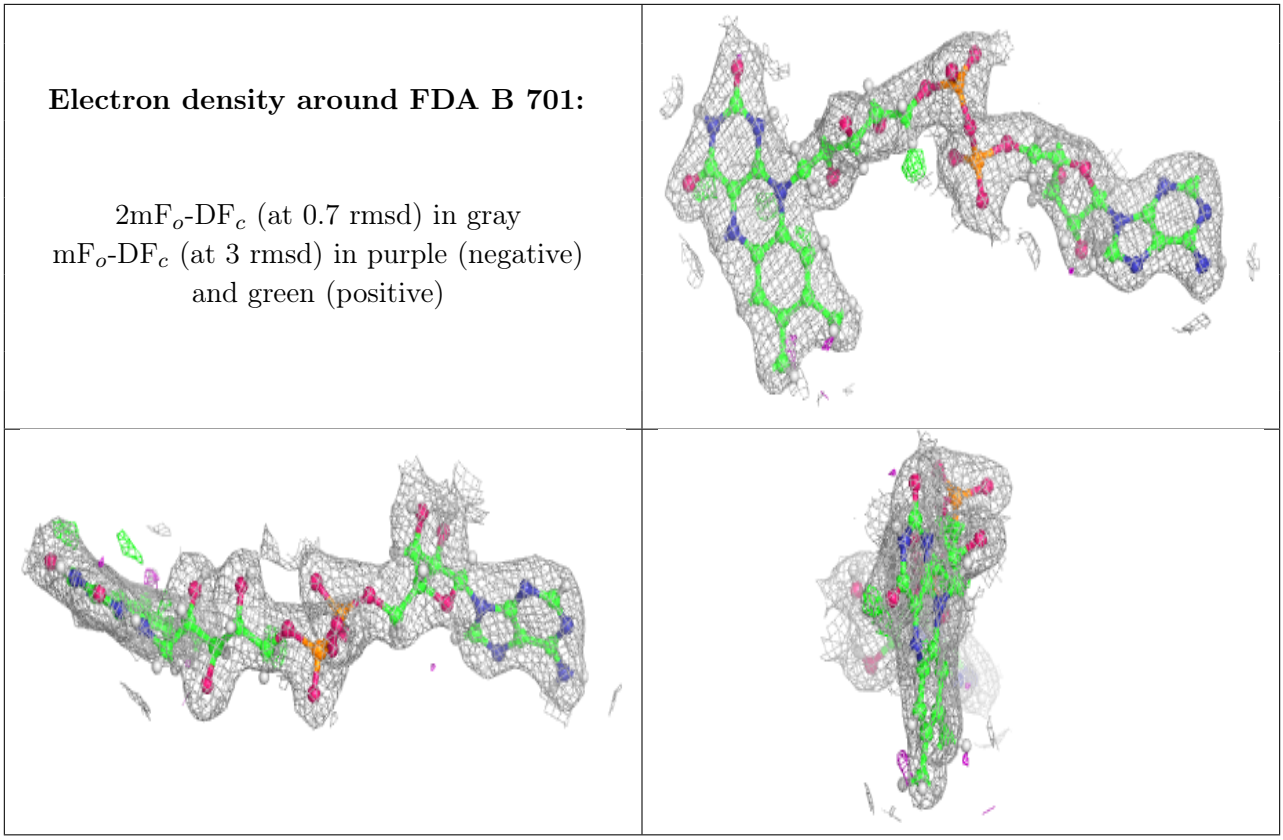
Electron density around FDA D 701:

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



Electron density around FDA B 701:

$2mF_o$-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.