



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 6, 2026 – 03:57 AM UTC

PDB ID : 2QF7 / pdb_00002qf7
Title : Crystal structure of a complete multifunctional pyruvate carboxylase from *Rhizobium etli*
Authors : St Maurice, M.; Surinya, K.H.; Rayment, I.
Deposited on : 2007-06-27
Resolution : 2.00 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

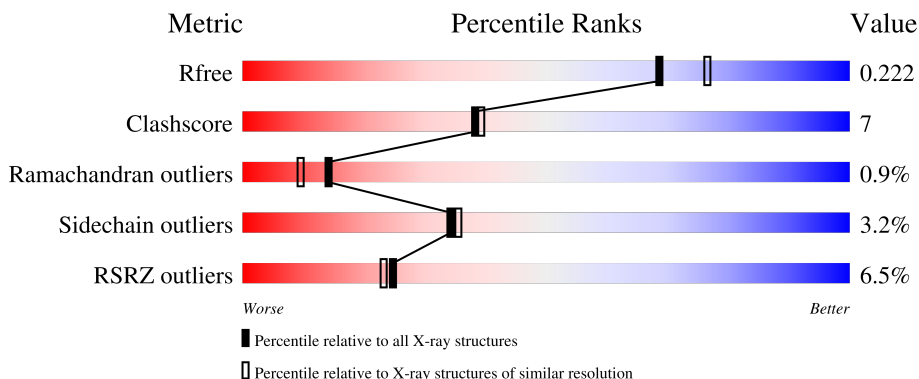
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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}	180053	10052 (2.00-2.00)
Clashscore	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)
RSRZ outliers	180081	10067 (2.00-2.00)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1165	
1	B	1165	

2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 17618 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 Pyruvate carboxylase protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1076	Total	C	N	O	S	0	31	0
			8286	5271	1411	1573	31			
1	B	1017	Total	C	N	O	S	0	33	0
			7896	5030	1342	1493	31			

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-10	MET	-	expression tag	UNP Q2K340
A	-9	HIS	-	expression tag	UNP Q2K340
A	-8	HIS	-	expression tag	UNP Q2K340
A	-7	HIS	-	expression tag	UNP Q2K340
A	-6	HIS	-	expression tag	UNP Q2K340
A	-5	HIS	-	expression tag	UNP Q2K340
A	-4	HIS	-	expression tag	UNP Q2K340
A	-3	HIS	-	expression tag	UNP Q2K340
A	-2	HIS	-	expression tag	UNP Q2K340
A	-1	HIS	-	expression tag	UNP Q2K340
A	0	GLY	-	expression tag	UNP Q2K340
A	1	GLY	-	expression tag	UNP Q2K340
A	718	KCX	LYS	modified residue	UNP Q2K340
B	-10	MET	-	expression tag	UNP Q2K340
B	-9	HIS	-	expression tag	UNP Q2K340
B	-8	HIS	-	expression tag	UNP Q2K340
B	-7	HIS	-	expression tag	UNP Q2K340
B	-6	HIS	-	expression tag	UNP Q2K340
B	-5	HIS	-	expression tag	UNP Q2K340
B	-4	HIS	-	expression tag	UNP Q2K340
B	-3	HIS	-	expression tag	UNP Q2K340
B	-2	HIS	-	expression tag	UNP Q2K340
B	-1	HIS	-	expression tag	UNP Q2K340
B	0	GLY	-	expression tag	UNP Q2K340
B	1	GLY	-	expression tag	UNP Q2K340

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Chain	Residue	Modelled	Actual	Comment	Reference
B	718	KCX	LYS	modified residue	UNP Q2K340

- Molecule 2 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	3	Total	Mg	0	0
			3	3		
2	B	3	Total	Mg	0	0
			3	3		

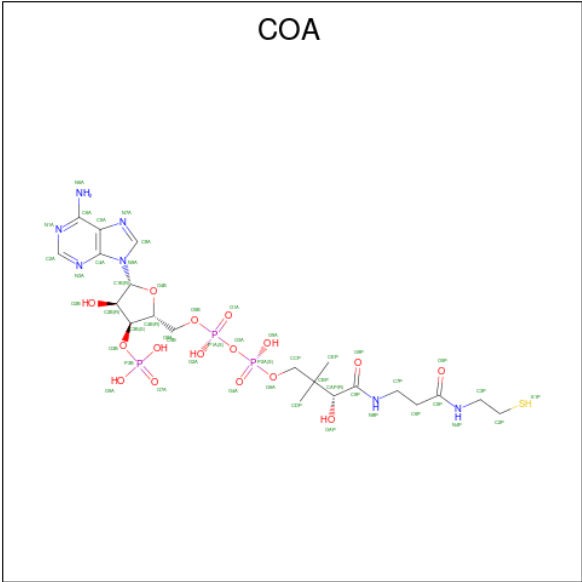
- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Zn	0	0
			1	1		
3	B	1	Total	Zn	0	0
			1	1		

- Molecule 4 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

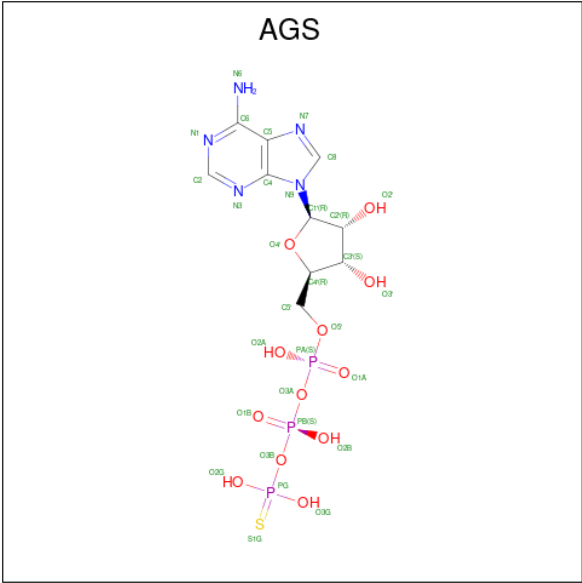
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Cl	0	0
			2	2		
4	B	2	Total	Cl	0	0
			2	2		

- Molecule 5 is COENZYME A (CCD ID: COA) (formula: C₂₁H₃₆N₇O₁₆P₃S).



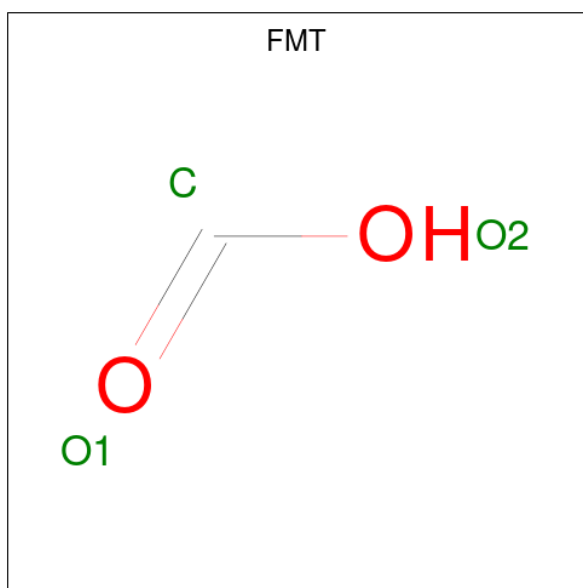
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
5	A	1	32	11	5	13	3	0	0

- Molecule 6 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (CCD ID: AGS) (formula: C₁₀H₁₆N₅O₁₂P₃S).



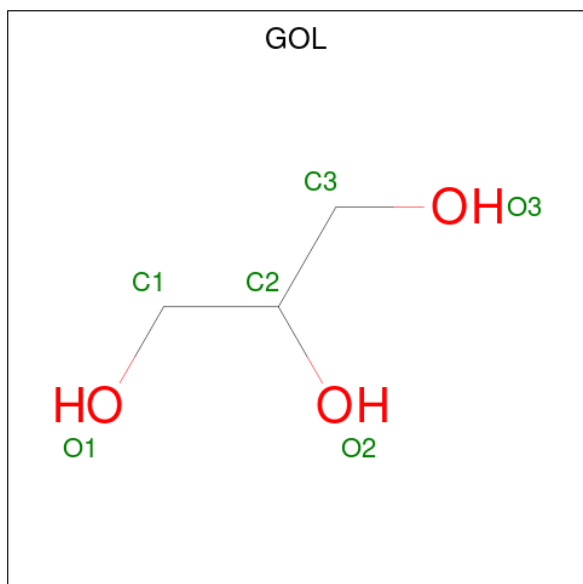
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
6	A	1	31	10	5	12	3	0	0
6	B	1	31	10	5	12	3	0	0

- Molecule 7 is FORMIC ACID (CCD ID: FMT) (formula: CH_2O_2).



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

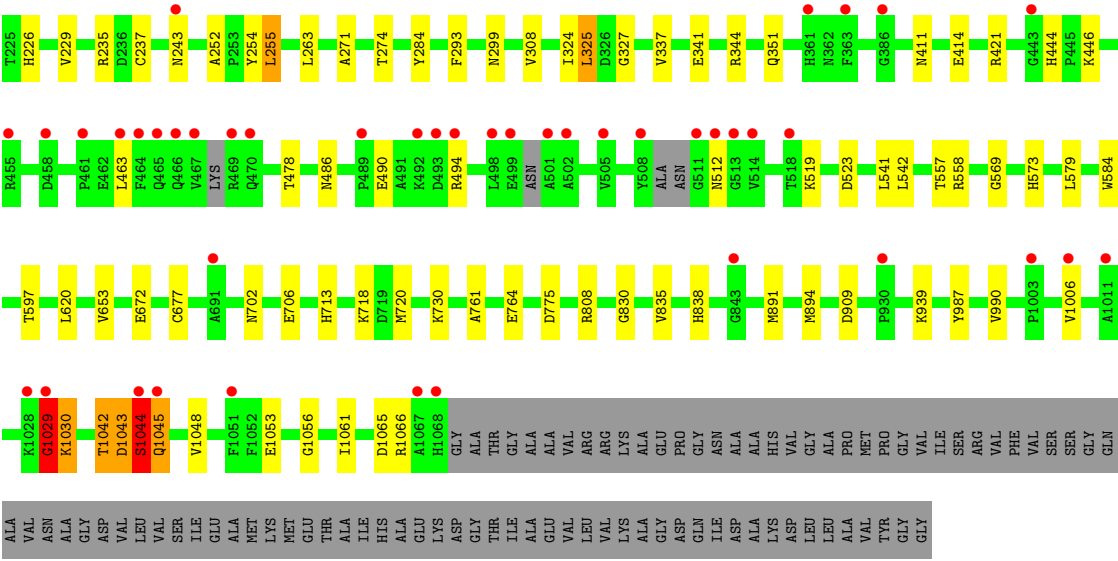
- Molecule 8 is GLYCEROL (CCD ID: GOL) (formula: $\text{C}_3\text{H}_8\text{O}_3$).



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

- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	687	Total 687	O 687	0	0
9	B	631	Total 631	O 631	0	0



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	234.73Å 93.26Å 137.22Å 90.00° 107.33° 90.00°	Depositor
Resolution (Å)	131.31 – 2.00 130.99 – 2.00	Depositor EDS
% Data completeness (in resolution range)	96.9 (131.31-2.00) 96.9 (130.99-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.09 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.178 , 0.223 0.178 , 0.222	Depositor DCC
R_{free} test set	9277 reflections (4.88%)	wwPDB-VP
Wilson B-factor (Å ²)	24.8	Xtriage
Anisotropy	0.236	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 41.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	17618	wwPDB-VP
Average B, all atoms (Å ²)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.97% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: COA, GOL, KCX, AGS, MG, ZN, FMT, CL

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	0.96	3/8518 (0.0%)	1.02	30/11577 (0.3%)
1	B	0.93	2/8107 (0.0%)	0.96	11/11005 (0.1%)
All	All	0.95	5/16625 (0.0%)	0.99	41/22582 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	B	0	4
All	All	0	9

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	337	VAL	CA-CB	6.96	1.59	1.54
1	A	1124	ILE	CA-CB	6.69	1.61	1.54
1	B	1006	VAL	CA-CB	6.18	1.61	1.54
1	A	302	ILE	CA-CB	5.89	1.59	1.54
1	A	715	ILE	CA-CB	5.13	1.60	1.54

The worst 5 of 41 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1139	ALA	N-CA-C	12.50	129.78	109.40
1	A	1084	ALA	N-CA-C	9.14	125.12	113.88
1	B	163	VAL	N-CA-C	9.02	123.19	109.20
1	A	882[A]	THR	CA-C-N	7.23	131.47	123.73

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	882[A]	THR	C-N-CA	7.23	131.47	123.73

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1074	ALA	Peptide
1	A	1083	ASN	Peptide
1	A	1084	ALA	Peptide
1	A	1138	LYS	Peptide
1	A	1139	ALA	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8286	0	8123	140	0
1	B	7896	0	7704	83	0
2	A	3	0	0	0	0
2	B	3	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
5	A	32	0	11	4	0
6	A	31	0	12	0	0
6	B	31	0	12	0	0
7	A	3	0	1	0	0
7	B	3	0	1	0	0
8	B	6	0	8	0	0
9	A	687	0	0	15	0
9	B	631	0	0	10	0
All	All	17618	0	15872	223	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 7.

The worst 5 of 223 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:1139:ALA:HB1	1:A:1141:ASP:H	0.99	1.14
1:A:1137:VAL:HA	1:A:1138:LYS:CB	1.79	1.11
1:A:511:GLY:HA2	1:A:512:ASN:HB2	1.33	1.09
1:A:1095:ILE:HG12	1:A:1139:ALA:HB3	1.28	1.09
1:A:210:LEU:HB3	1:A:211:VAL:CA	1.87	1.03

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	1096/1165 (94%)	1055 (96%)	29 (3%)	12 (1%)	11	7
1	B	1032/1165 (89%)	1001 (97%)	24 (2%)	7 (1%)	18	14
All	All	2128/2330 (91%)	2056 (97%)	53 (2%)	19 (1%)	14	9

5 of 19 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	210	LEU
1	A	512	ASN
1	A	1138	LYS
1	B	145	LEU
1	B	1044	SER

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	843/934 (90%)	807 (96%)	36 (4%)	26	25
1	B	803/934 (86%)	784 (98%)	19 (2%)	43	47
All	All	1646/1868 (88%)	1591 (97%)	55 (3%)	34	34

5 of 55 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	956	LEU
1	A	1143	ILE
1	B	1042	THR
1	B	584	TRP
1	A	1083	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 32 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	642	GLN
1	B	713	HIS
1	A	820	GLN
1	A	713	HIS
1	B	820	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

2 non-standard protein/DNA/RNA residues 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
1	KCX	A	718[A]	1,3	10,11,12	2.01	2 (20%)	6,12,14	4.34	1 (16%)
1	KCX	B	718[A]	1,3	10,11,12	1.66	1 (10%)	6,12,14	4.03	2 (33%)

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
1	KCX	A	718[A]	1,3	-	1/9/10/12	-
1	KCX	B	718[A]	1,3	-	1/9/10/12	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	718[A]	KCX	OQ1-CX	5.48	1.31	1.21
1	B	718[A]	KCX	OQ1-CX	4.53	1.30	1.21
1	A	718[A]	KCX	CE-NZ	2.25	1.51	1.46

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	718[A]	KCX	OQ1-CX-NZ	-10.52	108.94	124.92
1	B	718[A]	KCX	OQ1-CX-NZ	-8.71	111.69	124.92
1	B	718[A]	KCX	CE-NZ-CX	4.25	129.20	121.98

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	718[A]	KCX	O-C-CA-CB
1	B	718[A]	KCX	O-C-CA-CB

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 18 ligands modelled in this entry, 12 are monoatomic - leaving 6 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
6	AGS	A	1162	2	32,33,33	2.60	8 (25%)	45,52,52	1.83	11 (24%)
8	GOL	B	1162	-	5,5,5	0.29	0	5,5,5	0.69	0
7	FMT	B	1163	-	2,2,2	0.56	0	1,1,1	0.50	0
7	FMT	A	1163	-	2,2,2	0.79	0	1,1,1	0.30	0
6	AGS	B	1161	2	32,33,33	2.46	8 (25%)	45,52,52	1.85	10 (22%)
5	COA	A	1161	-	34,34,50	1.06	2 (5%)	50,53,75	1.87	12 (24%)

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	COA	A	1161	-	-	6/24/40/64	0/3/3/3
6	AGS	A	1162	2	-	9/21/38/38	0/3/3/3
8	GOL	B	1162	-	-	2/4/4/4	-
6	AGS	B	1161	2	-	4/21/38/38	0/3/3/3

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1162	AGS	PG-O2G	7.48	1.79	1.54
6	A	1162	AGS	PG-O3G	7.38	1.78	1.54
6	B	1161	AGS	PG-O2G	7.36	1.78	1.54
6	B	1161	AGS	PG-O3G	6.99	1.77	1.54
6	B	1161	AGS	C5-C4	5.77	1.49	1.39

The worst 5 of 33 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1161	COA	N3A-C2A-N1A	-6.07	119.39	128.58
6	A	1162	AGS	C5-C4-N3	-5.58	119.03	126.72
5	A	1161	COA	C5A-C4A-N3A	-5.10	119.69	126.72
6	B	1161	AGS	C5-C4-N3	-4.85	120.05	126.72
6	B	1161	AGS	N3-C4-N9	4.60	134.99	127.17

There are no chirality outliers.

5 of 21 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1162	AGS	PB-O3B-PG-O2G
6	A	1162	AGS	C5'-O5'-PA-O1A
6	A	1162	AGS	C5'-O5'-PA-O2A
6	A	1162	AGS	C5'-O5'-PA-O3A
6	A	1162	AGS	O4'-C4'-C5'-O5'

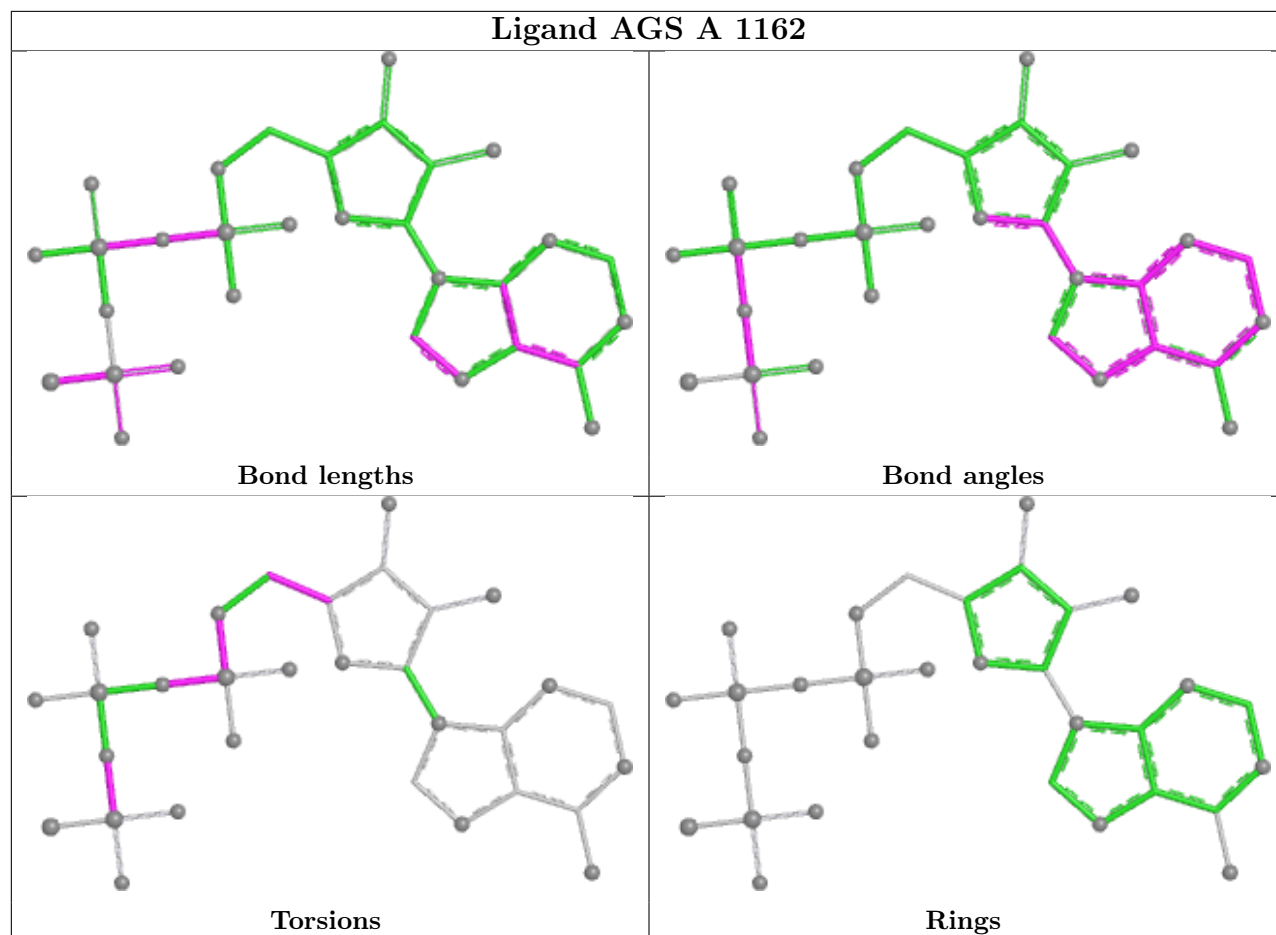
There are no ring outliers.

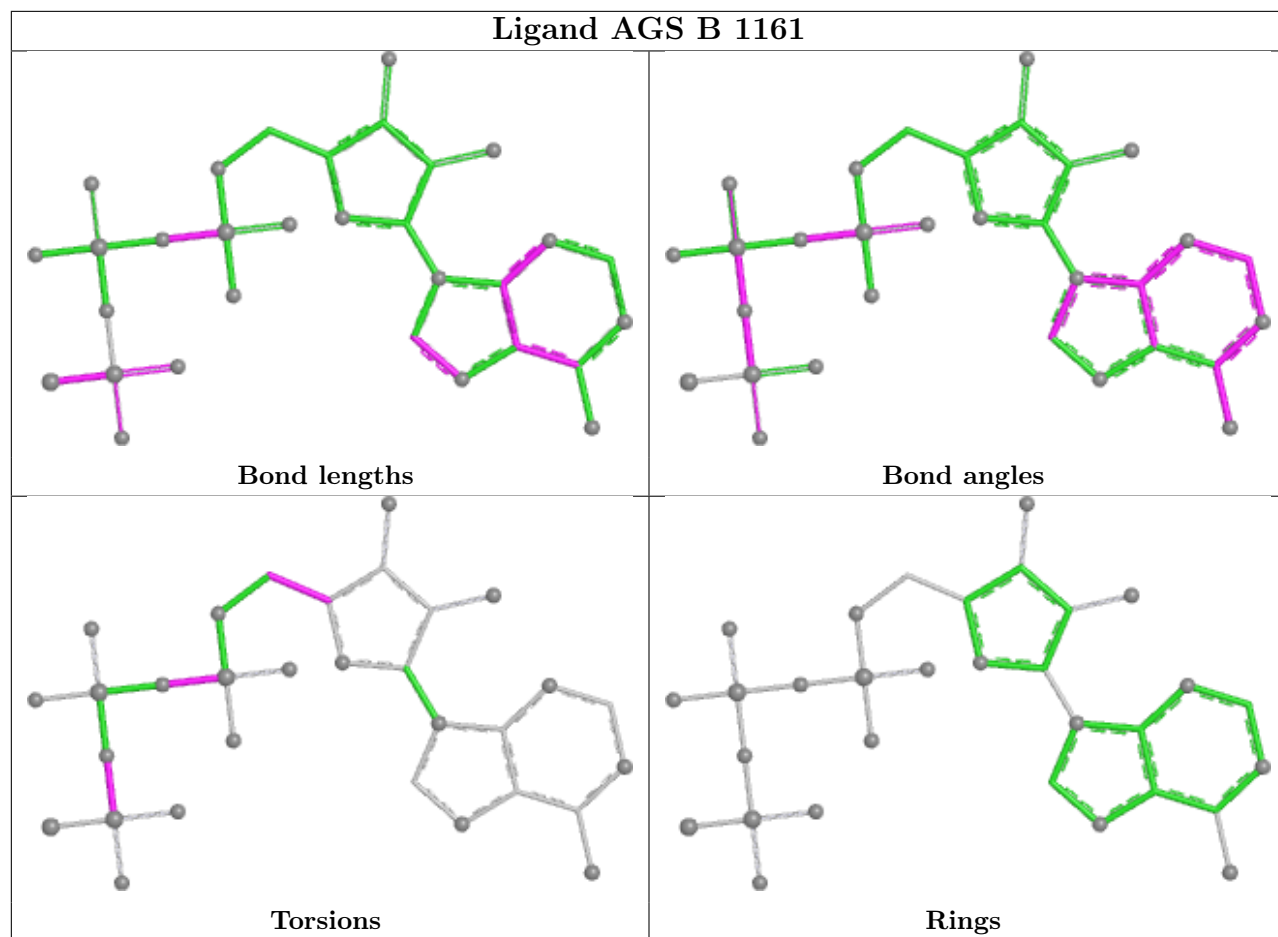
1 monomer is involved in 4 short contacts:

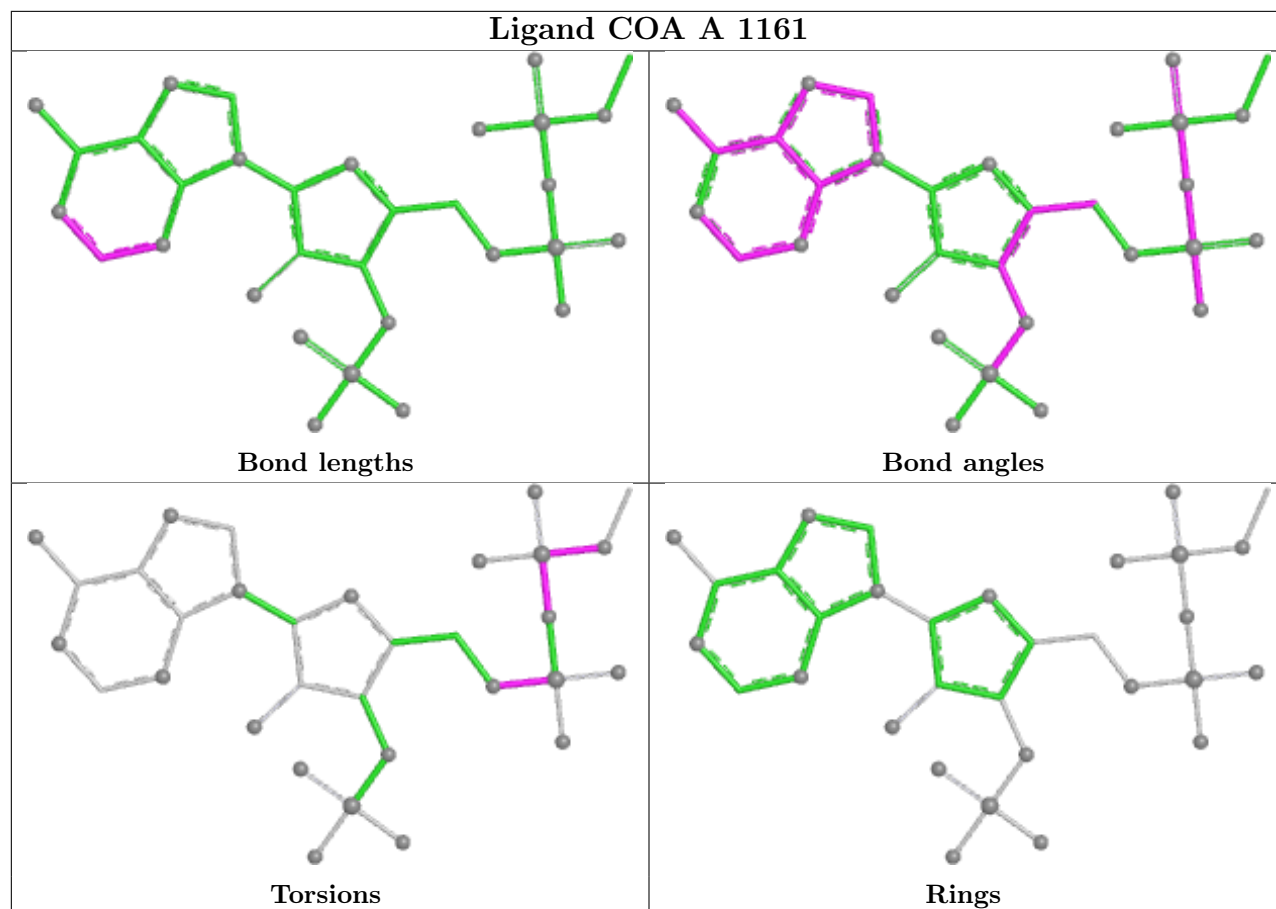
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1161	COA	4	0

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

Ligand AGS A 1162







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th 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	1075/1165 (92%)	0.43	66 (6%) 27 26	7, 24, 37, 52	43 (4%)
1	B	1016/1165 (87%)	0.46	70 (6%) 23 21	10, 24, 39, 64	40 (3%)
All	All	2091/2330 (89%)	0.45	136 (6%) 25 23	7, 24, 38, 64	83 (3%)

The worst 5 of 136 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	209	LYS	8.2
1	A	509	ALA	8.0
1	A	1075	VAL	7.7
1	B	207	LEU	7.3
1	B	162	PRO	5.7

6.2 Non-standard residues in protein, DNA, RNA chains [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, 95th 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
1	KCX	A	718[A]	12/13	0.92	0.10	21,23,25,27	0
1	KCX	B	718[A]	12/13	0.94	0.08	21,23,28,29	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands

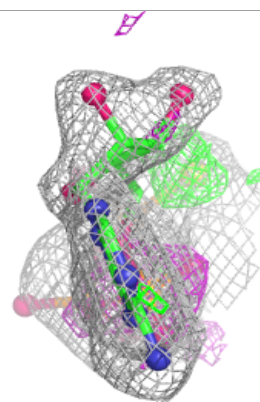
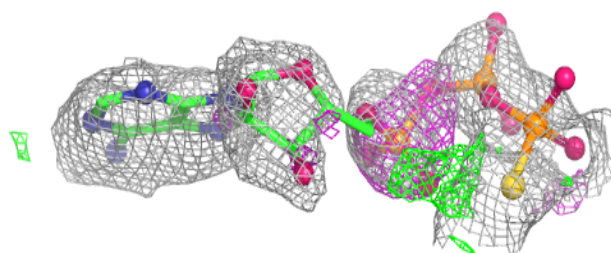
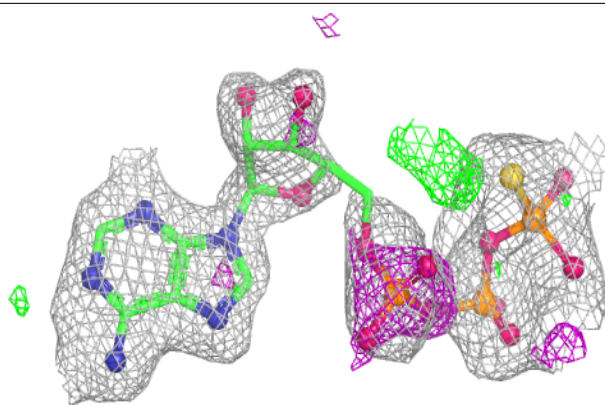
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	AGS	A	1162	31/31	0.73	0.18	36,48,50,52	12
6	AGS	B	1161	31/31	0.76	0.17	24,39,43,44	9
8	GOL	B	1162	6/6	0.85	0.18	30,34,39,46	0
5	COA	A	1161	32/48	0.87	0.15	16,20,25,27	32
2	MG	A	1156	1/1	0.87	0.14	39,39,39,39	0
2	MG	B	1158	1/1	0.93	0.17	24,24,24,24	0
2	MG	B	1157	1/1	0.94	0.14	34,34,34,34	0
4	CL	B	1160	1/1	0.95	0.13	38,38,38,38	0
7	FMT	A	1163	3/3	0.96	0.15	18,18,19,19	0
7	FMT	B	1163	3/3	0.97	0.16	18,18,18,19	0
2	MG	A	1158	1/1	0.97	0.22	17,17,17,17	0
4	CL	B	1159	1/1	0.98	0.14	28,28,28,28	0
2	MG	A	1155	1/1	0.98	0.05	13,13,13,13	1
4	CL	A	1159	1/1	0.98	0.20	24,24,24,24	0
4	CL	A	1160	1/1	0.98	0.17	35,35,35,35	0
2	MG	B	1156	1/1	0.99	0.07	20,20,20,20	0
3	ZN	A	1157	1/1	0.99	0.14	15,15,15,15	0
3	ZN	B	1155	1/1	1.00	0.12	16,16,16,16	0

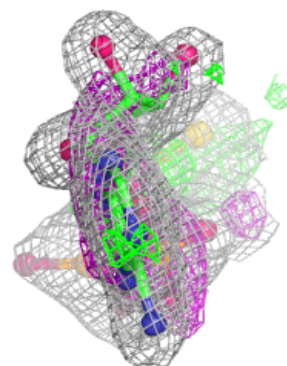
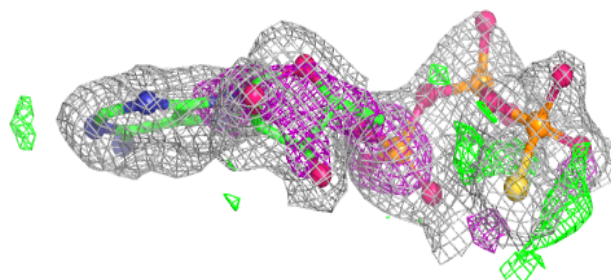
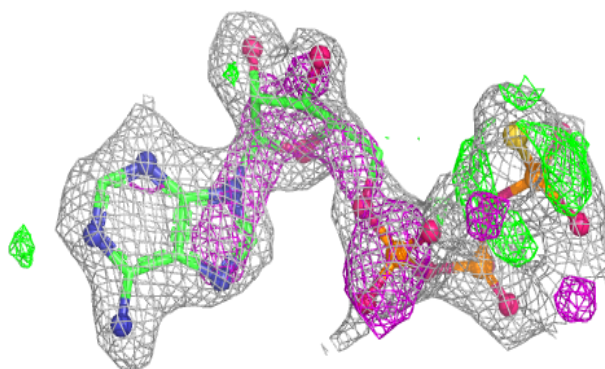
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around AGS A 1162:

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

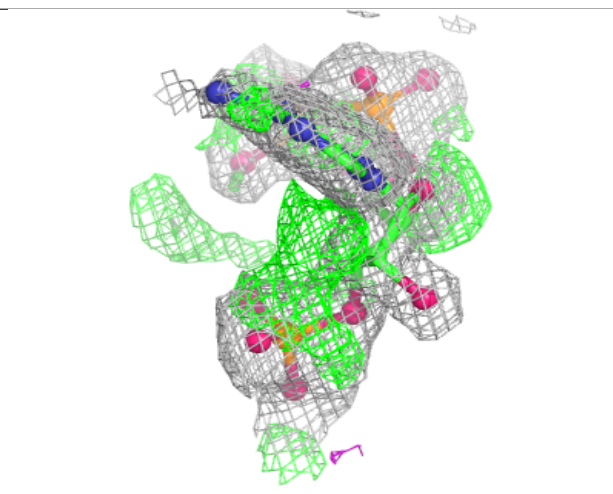
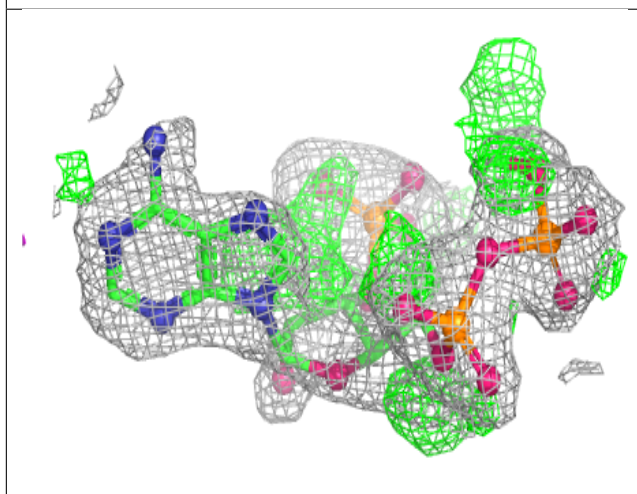
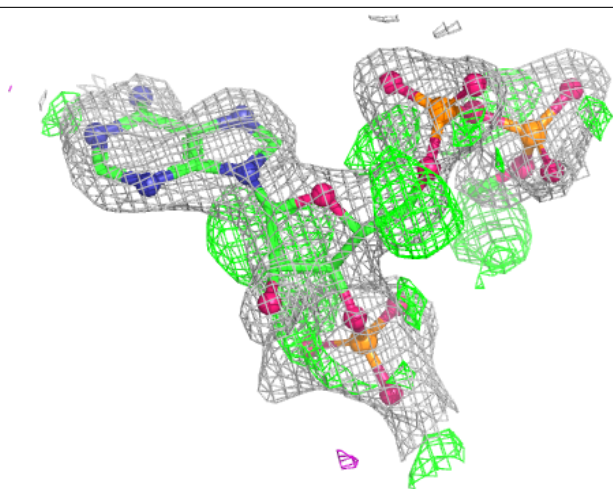
**Electron density around AGS B 1161:**

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



Electron density around COA A 1161:

$2mF_o-DF_c$ (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.