



Full wwPDB X-ray Structure Validation Report

Sep 20, 2023 – 07:01 AM EDT

PDB ID : 5K85
Title : Crystal Structure of Acetyl-CoA Synthetase in Complex with Adenosine-5'-p
ropylphosphate and Coenzyme A from *Cryptococcus neoformans* H99
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SSGCID
Deposited on : 2016-05-27
Resolution : 2.30 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](#) ①) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.35.1
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) : 2.35.1

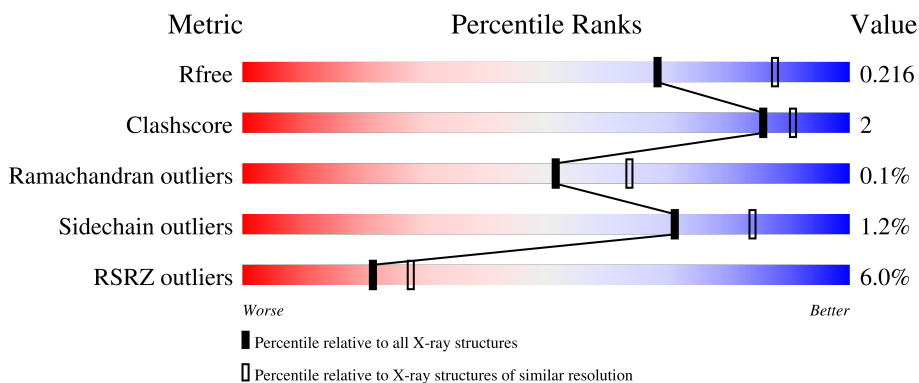
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	694	 3% 89% 5% 6%
1	B	694	 2% 87% 6% 7%
1	C	694	 11% 79% 5% 16%

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 15536 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 Acetyl-coenzyme A synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	652	5090	3252	864	947	27	0	10	0
1	B	647	5121	3269	871	954	27	0	15	0
1	C	584	4413	2824	749	816	24	0	0	0

There are 45 discrepancies between the modelled and reference sequences:

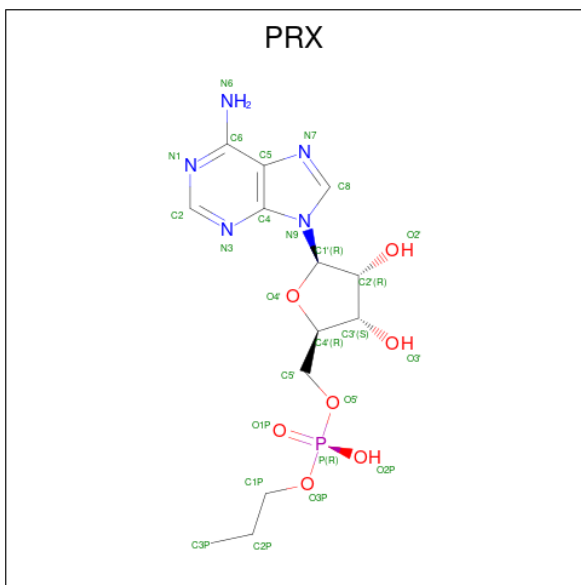
Chain	Residue	Modelled	Actual	Comment	Reference
A	-13	MET	-	initiating methionine	UNP J9VFT1
A	-12	HIS	-	expression tag	UNP J9VFT1
A	-11	HIS	-	expression tag	UNP J9VFT1
A	-10	HIS	-	expression tag	UNP J9VFT1
A	-9	HIS	-	expression tag	UNP J9VFT1
A	-8	HIS	-	expression tag	UNP J9VFT1
A	-7	HIS	-	expression tag	UNP J9VFT1
A	-6	HIS	-	expression tag	UNP J9VFT1
A	-5	HIS	-	expression tag	UNP J9VFT1
A	-4	GLU	-	expression tag	UNP J9VFT1
A	-3	ASN	-	expression tag	UNP J9VFT1
A	-2	LEU	-	expression tag	UNP J9VFT1
A	-1	TYR	-	expression tag	UNP J9VFT1
A	0	PHE	-	expression tag	UNP J9VFT1
A	1	GLN	-	expression tag	UNP J9VFT1
B	-13	MET	-	initiating methionine	UNP J9VFT1
B	-12	HIS	-	expression tag	UNP J9VFT1
B	-11	HIS	-	expression tag	UNP J9VFT1
B	-10	HIS	-	expression tag	UNP J9VFT1
B	-9	HIS	-	expression tag	UNP J9VFT1
B	-8	HIS	-	expression tag	UNP J9VFT1
B	-7	HIS	-	expression tag	UNP J9VFT1
B	-6	HIS	-	expression tag	UNP J9VFT1

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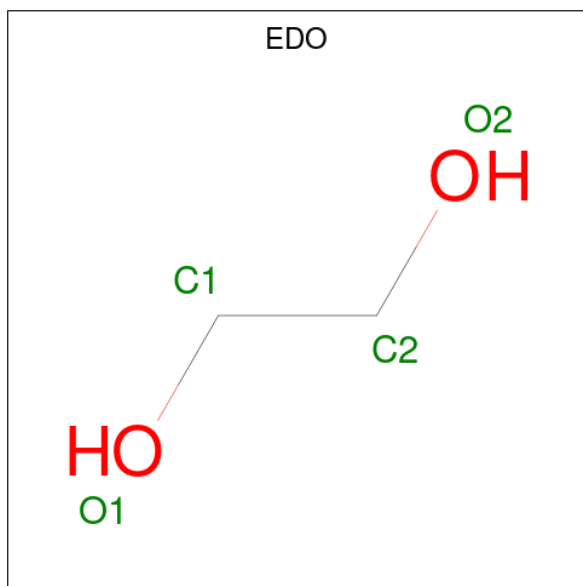
Chain	Residue	Modelled	Actual	Comment	Reference
B	-5	HIS	-	expression tag	UNP J9VFT1
B	-4	GLU	-	expression tag	UNP J9VFT1
B	-3	ASN	-	expression tag	UNP J9VFT1
B	-2	LEU	-	expression tag	UNP J9VFT1
B	-1	TYR	-	expression tag	UNP J9VFT1
B	0	PHE	-	expression tag	UNP J9VFT1
B	1	GLN	-	expression tag	UNP J9VFT1
C	-13	MET	-	initiating methionine	UNP J9VFT1
C	-12	HIS	-	expression tag	UNP J9VFT1
C	-11	HIS	-	expression tag	UNP J9VFT1
C	-10	HIS	-	expression tag	UNP J9VFT1
C	-9	HIS	-	expression tag	UNP J9VFT1
C	-8	HIS	-	expression tag	UNP J9VFT1
C	-7	HIS	-	expression tag	UNP J9VFT1
C	-6	HIS	-	expression tag	UNP J9VFT1
C	-5	HIS	-	expression tag	UNP J9VFT1
C	-4	GLU	-	expression tag	UNP J9VFT1
C	-3	ASN	-	expression tag	UNP J9VFT1
C	-2	LEU	-	expression tag	UNP J9VFT1
C	-1	TYR	-	expression tag	UNP J9VFT1
C	0	PHE	-	expression tag	UNP J9VFT1
C	1	GLN	-	expression tag	UNP J9VFT1

- Molecule 2 is ADENOSINE-5'-MONOPHOSPHATE-PROPYL ESTER (three-letter code: PRX) (formula: C₁₃H₂₀N₅O₇P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total 26	C 13	N 5	O 7	P 1	0	0
2	B	1	Total 26	C 13	N 5	O 7	P 1	0	0
2	C	1	Total 26	C 13	N 5	O 7	P 1	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



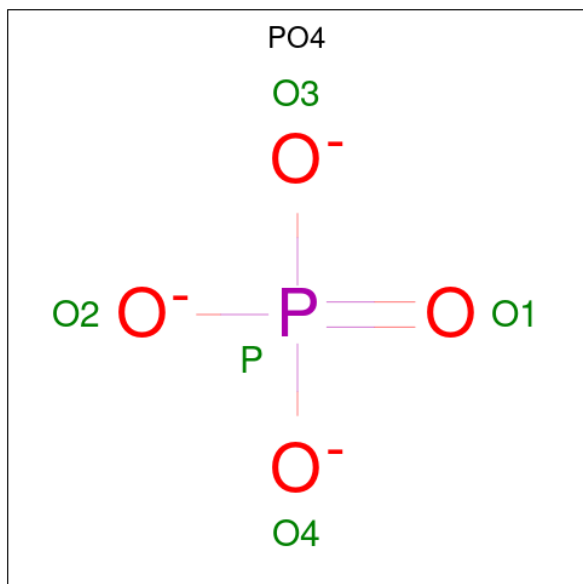
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	A	1	Total 4	C 2	O 2	0	0
3	B	1	Total 4	C 2	O 2	0	0
3	B	1	Total 4	C 2	O 2	0	0

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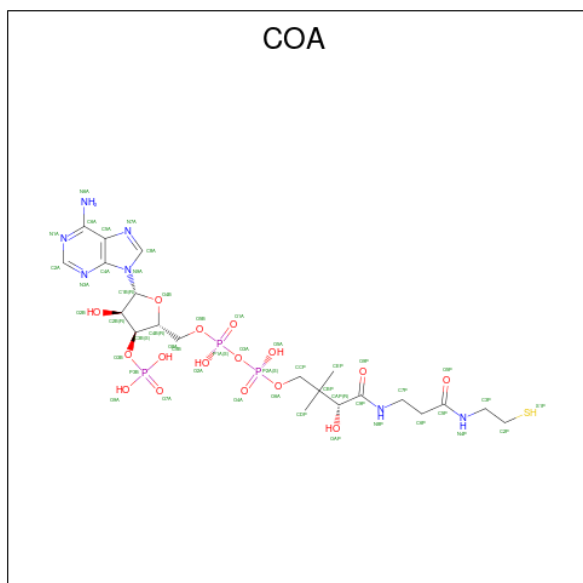
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total	C	O	0	0
			4	2	2		

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	O	P	0	0
			5	4	1		

- Molecule 5 is COENZYME A (three-letter code: COA) (formula: C₂₁H₃₆N₇O₁₆P₃S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	N	O	P			S
5	C	1	48	21	7	16	3	1	0	0

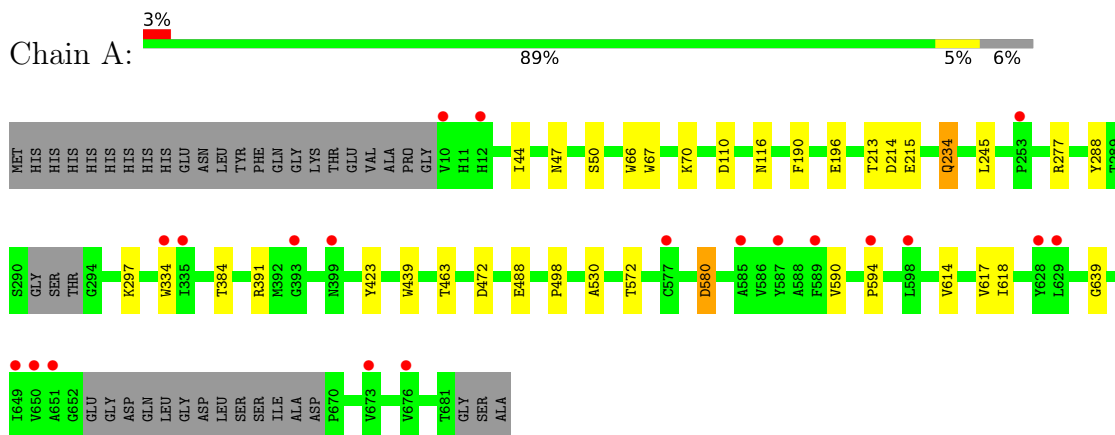
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	303	Total 303	O 303	0	0
6	B	280	Total 280	O 280	0	0
6	C	158	Total 158	O 158	0	0

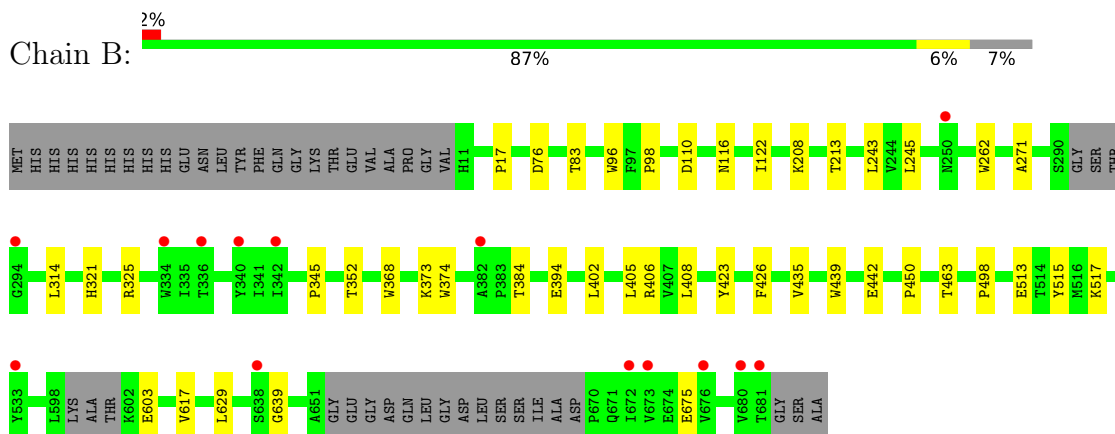
3 Residue-property plots [i](#)

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.

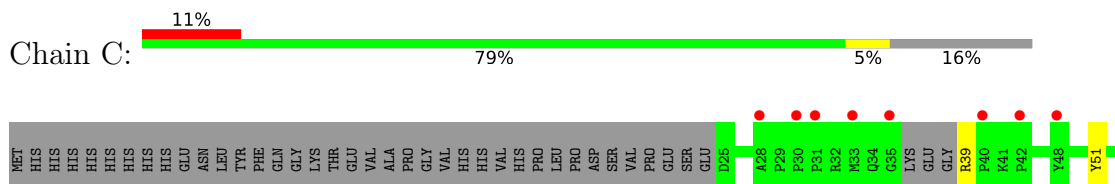
- Molecule 1: Acetyl-coenzyme A synthetase

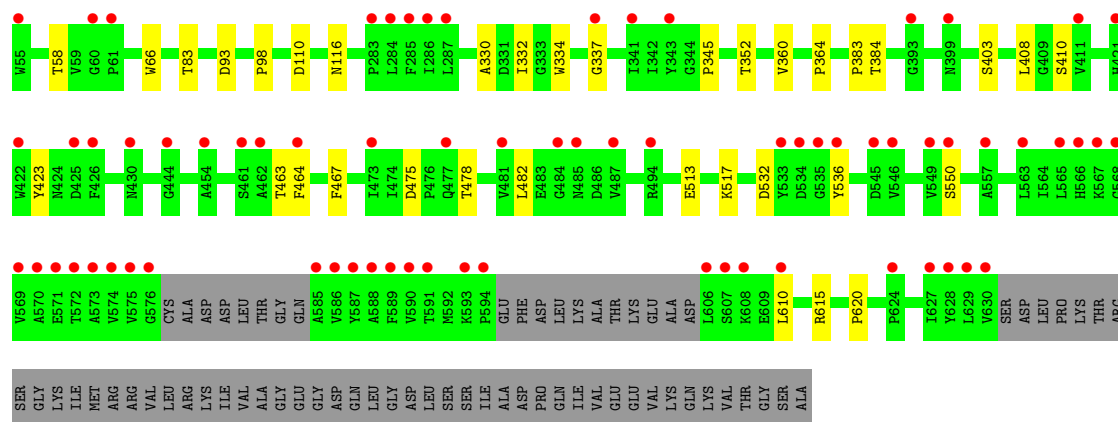


- Molecule 1: Acetyl-coenzyme A synthetase



- Molecule 1: Acetyl-coenzyme A synthetase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	72.80Å 186.09Å 85.32Å 90.00° 93.80° 90.00°	Depositor
Resolution (Å)	27.57 – 2.30 48.70 – 2.30	Depositor EDS
% Data completeness (in resolution range)	97.5 (27.57-2.30) 97.5 (48.70-2.30)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.10 (at 2.29Å)	Xtrriage
Refinement program	PHENIX (DEV_2443: ???)	Depositor
R, R_{free}	0.179 , 0.217 0.179 , 0.216	Depositor DCC
R_{free} test set	1996 reflections (2.04%)	wwPDB-VP
Wilson B-factor (Å ²)	36.3	Xtrriage
Anisotropy	0.281	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 46.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	15536	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.33% 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: PRX, COA, PO4, EDO

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	0.37	0/5250	0.52	0/7164
1	B	0.35	0/5282	0.52	0/7196
1	C	0.33	0/4541	0.49	0/6209
All	All	0.35	0/15073	0.51	0/20569

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5090	0	4836	20	0
1	B	5121	0	4902	20	0
1	C	4413	0	4084	22	0
2	A	26	0	19	1	0
2	B	26	0	19	1	0
2	C	26	0	19	0	0
3	A	28	0	42	3	0
3	B	8	0	12	0	0
3	C	4	0	6	0	0
4	B	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	48	0	32	5	0
6	A	303	0	0	1	0
6	B	280	0	0	1	0
6	C	158	0	0	0	0
All	All	15536	0	13971	62	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 2.

All (62) 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:50:SER:HB2	3:A:702:EDO:H21	1.70	0.74
1:C:39:ARG:NH2	1:C:403:SER:O	2.29	0.65
1:A:384:THR:HG21	1:A:639:GLY:HA3	1.79	0.63
1:B:513:GLU:HA	1:B:517:LYS:HG3	1.80	0.63
1:B:368:TRP:HB3	1:B:402:LEU:HD21	1.80	0.63
1:C:615:ARG:HG2	1:C:620:PRO:HA	1.80	0.62
1:B:384[A]:THR:HG21	1:B:639:GLY:HA3	1.81	0.61
1:A:234:GLN:NE2	6:A:805:HOH:O	2.36	0.58
1:A:617:VAL:HG23	1:A:618:ILE:HG13	1.86	0.58
1:A:439:TRP:CE2	2:A:701:PRX:H3P1	2.38	0.58
1:C:615:ARG:NH2	5:C:801:COA:O8A	2.35	0.56
1:C:334:TRP:CD1	5:C:801:COA:H31	2.41	0.56
1:A:47:ASN:HA	3:A:706:EDO:H22	1.86	0.55
1:B:439:TRP:CE2	2:B:702:PRX:H3P1	2.41	0.55
1:A:44:ILE:HG23	3:A:702:EDO:H22	1.91	0.53
1:A:196:GLU:OE1	1:A:196:GLU:N	2.41	0.50
1:C:332:ILE:HA	1:C:337:GLY:HA3	1.93	0.50
1:A:391:ARG:HH11	1:A:594:PRO:HD3	1.77	0.49
1:B:442:GLU:HG2	1:B:515:TYR:CZ	2.48	0.49
1:B:603:GLU:HG3	1:B:629:LEU:HD22	1.95	0.49
1:C:360:VAL:HA	1:C:364:PRO:HA	1.94	0.49
5:C:801:COA:HN8	5:C:801:COA:H131	1.77	0.49
1:B:405:LEU:HD13	1:B:408:LEU:HD21	1.93	0.49
1:C:408:LEU:HB3	1:C:423:TYR:CZ	2.48	0.49
1:A:190[A]:PHE:HZ	1:A:334[A]:TRP:HB2	1.77	0.49
1:C:475:ASP:HB3	1:C:478:THR:HB	1.93	0.49
1:B:17:PRO:HB3	1:B:617:VAL:HG11	1.94	0.48
1:B:314:LEU:HD22	1:B:345:PRO:HA	1.96	0.48
1:C:334:TRP:HD1	5:C:801:COA:H31	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:330:ALA:HB1	5:C:801:COA:H32	1.97	0.47
1:C:463:THR:OG1	1:C:464:PHE:N	2.47	0.47
1:B:373:LYS:HE3	1:B:374:TRP:NE1	2.29	0.47
1:A:190[A]:PHE:CZ	1:A:334[A]:TRP:HB2	2.50	0.47
1:C:58:THR:HG21	1:C:467:PHE:HB3	1.95	0.47
1:C:83:THR:O	1:C:98:PRO:HD2	2.15	0.47
1:A:288:TYR:HA	1:A:297:LYS:O	2.16	0.46
1:A:66:TRP:CZ2	1:A:70:LYS:HE3	2.52	0.45
1:A:67:TRP:CZ3	1:A:498:PRO:HG2	2.52	0.45
1:A:580:ASP:OD1	1:A:580:ASP:N	2.42	0.44
1:B:213:THR:HG22	1:B:245:LEU:HB3	1.99	0.44
1:A:614:VAL:HG13	1:A:618:ILE:HD12	2.00	0.44
1:C:532:ASP:OD2	1:C:536:TYR:HB2	2.18	0.44
1:C:345:PRO:HB2	1:C:352:THR:HB	1.99	0.43
1:C:513:GLU:HA	1:C:517:LYS:HG3	2.00	0.43
1:B:243:LEU:HD11	1:B:262:TRP:HA	2.01	0.43
1:C:384:THR:OG1	1:C:550:SER:HA	2.18	0.43
1:B:83:THR:O	1:B:98:PRO:HD2	2.20	0.42
1:C:58:THR:HG22	1:C:66:TRP:CD2	2.54	0.42
1:B:271:ALA:HB3	1:C:93:ASP:HB3	2.01	0.42
1:B:321:HIS:HD2	1:B:406[B]:ARG:HH22	1.68	0.42
1:B:435:VAL:HG12	1:B:450:PRO:HG2	2.02	0.42
1:B:122:ILE:HA	1:B:352:THR:O	2.20	0.42
1:A:488[A]:GLU:HG3	1:A:530:ALA:HB2	2.01	0.42
1:B:208:LYS:NZ	6:B:825:HOH:O	2.53	0.41
1:A:214:ASP:OD1	1:A:215:GLU:N	2.52	0.41
1:B:96:TRP:CD1	1:B:498:PRO:HA	2.54	0.41
1:A:213:THR:HG22	1:A:245:LEU:HB3	2.02	0.41
1:C:383:PRO:HG3	1:C:410:SER:OG	2.21	0.40
1:C:475:ASP:HB2	1:C:482:LEU:HD21	2.02	0.40
1:B:394:GLU:HG2	1:B:426:PHE:CZ	2.57	0.40
1:C:408:LEU:HB3	1:C:423:TYR:CE2	2.56	0.40
1:A:572:THR:HG22	1:A:590:VAL:HA	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	656/694 (94%)	637 (97%)	18 (3%)	1 (0%)	47	58
1	B	654/694 (94%)	634 (97%)	19 (3%)	1 (0%)	47	58
1	C	576/694 (83%)	555 (96%)	21 (4%)	0	100	100
All	All	1886/2082 (91%)	1826 (97%)	58 (3%)	2 (0%)	51	64

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	463	THR
1	B	463	THR

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	518/576 (90%)	511 (99%)	7 (1%)	67	81
1	B	528/576 (92%)	521 (99%)	7 (1%)	69	82
1	C	427/576 (74%)	423 (99%)	4 (1%)	78	89
All	All	1473/1728 (85%)	1455 (99%)	18 (1%)	71	84

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	110	ASP

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Mol	Chain	Res	Type
1	A	116	ASN
1	A	234	GLN
1	A	277	ARG
1	A	423	TYR
1	A	472	ASP
1	A	580	ASP
1	B	76	ASP
1	B	110	ASP
1	B	116	ASN
1	B	325[A]	ARG
1	B	325[B]	ARG
1	B	423	TYR
1	B	675	GLU
1	C	51	TYR
1	C	110	ASP
1	C	116	ASN
1	C	610	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	321	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

15 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	EDO	A	707	-	3,3,3	0.41	0	2,2,2	0.45	0
3	EDO	A	702	-	3,3,3	0.59	0	2,2,2	0.07	0
3	EDO	B	704	-	3,3,3	0.45	0	2,2,2	0.37	0
4	PO4	B	701	-	4,4,4	0.93	0	6,6,6	0.41	0
3	EDO	A	706	-	3,3,3	0.42	0	2,2,2	0.36	0
3	EDO	A	705	-	3,3,3	0.46	0	2,2,2	0.32	0
3	EDO	A	708	-	3,3,3	0.46	0	2,2,2	0.44	0
2	PRX	B	702	-	25,28,28	2.44	6 (24%)	27,41,41	2.31	4 (14%)
5	COA	C	801	-	41,50,50	3.57	14 (34%)	52,75,75	1.12	4 (7%)
3	EDO	A	704	-	3,3,3	0.53	0	2,2,2	0.30	0
2	PRX	C	802	-	25,28,28	2.50	6 (24%)	27,41,41	2.25	4 (14%)
3	EDO	B	703	-	3,3,3	0.48	0	2,2,2	0.59	0
3	EDO	A	703	-	3,3,3	0.50	0	2,2,2	0.23	0
2	PRX	A	701	-	25,28,28	2.40	6 (24%)	27,41,41	2.35	4 (14%)
3	EDO	C	803	-	3,3,3	0.43	0	2,2,2	0.47	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	A	707	-	-	0/1/1/1	-
3	EDO	A	702	-	-	1/1/1/1	-
3	EDO	B	704	-	-	0/1/1/1	-
3	EDO	A	706	-	-	0/1/1/1	-
3	EDO	A	705	-	-	0/1/1/1	-
3	EDO	A	708	-	-	0/1/1/1	-
2	PRX	B	702	-	-	1/11/31/31	0/3/3/3
5	COA	C	801	-	-	15/44/64/64	0/3/3/3
3	EDO	A	704	-	-	0/1/1/1	-
2	PRX	C	802	-	-	0/11/31/31	0/3/3/3
3	EDO	B	703	-	-	0/1/1/1	-
3	EDO	A	703	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PRX	A	701	-	-	0/11/31/31	0/3/3/3
3	EDO	C	803	-	-	0/1/1/1	-

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	801	COA	C2B-C3B	-11.74	1.26	1.52
5	C	801	COA	C2B-C1B	9.10	1.67	1.53
5	C	801	COA	O4B-C1B	-9.02	1.28	1.41
5	C	801	COA	C9P-N8P	7.62	1.50	1.33
5	C	801	COA	C5P-N4P	7.27	1.49	1.33
2	C	802	PRX	C8-N7	-7.16	1.22	1.34
2	B	702	PRX	C8-N7	-7.02	1.22	1.34
2	A	701	PRX	C8-N7	-6.53	1.23	1.34
2	C	802	PRX	C2-N3	6.34	1.42	1.32
2	A	701	PRX	C2-N3	6.32	1.42	1.32
2	B	702	PRX	C2-N3	6.06	1.41	1.32
2	C	802	PRX	C5-C4	4.66	1.53	1.40
2	A	701	PRX	C5-C4	4.54	1.52	1.40
5	C	801	COA	O4B-C4B	4.48	1.55	1.45
2	B	702	PRX	C5-C4	4.46	1.52	1.40
5	C	801	COA	C5B-C4B	-4.19	1.38	1.51
5	C	801	COA	P3B-O3B	3.73	1.66	1.59
2	C	802	PRX	C6-C5	-3.63	1.29	1.43
2	B	702	PRX	C6-C5	-3.60	1.29	1.43
2	A	701	PRX	C6-C5	-3.32	1.31	1.43
2	A	701	PRX	C6-N6	3.20	1.45	1.34
2	B	702	PRX	C6-N6	3.18	1.45	1.34
2	C	802	PRX	C6-N6	3.10	1.45	1.34
5	C	801	COA	C6A-N6A	2.83	1.44	1.34
5	C	801	COA	OAP-CAP	-2.64	1.37	1.42
5	C	801	COA	O9P-C9P	-2.27	1.18	1.23
5	C	801	COA	C6P-C5P	2.26	1.55	1.51
5	C	801	COA	O3B-C3B	2.25	1.52	1.44
5	C	801	COA	P1A-O5B	2.17	1.68	1.59
2	A	701	PRX	C6-N1	-2.17	1.27	1.37
2	B	702	PRX	C6-N1	-2.13	1.27	1.37
2	C	802	PRX	C6-N1	-2.09	1.27	1.37

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	701	PRX	C4-C5-N7	-8.63	100.41	109.40
2	B	702	PRX	C4-C5-N7	-8.28	100.77	109.40
2	C	802	PRX	C4-C5-N7	-8.28	100.77	109.40
2	B	702	PRX	N3-C2-N1	-5.69	119.79	128.68
2	A	701	PRX	N3-C2-N1	-5.54	120.02	128.68
2	C	802	PRX	N3-C2-N1	-5.47	120.13	128.68
2	B	702	PRX	C2-N1-C6	4.29	126.10	118.75
2	A	701	PRX	C2-N1-C6	4.25	126.03	118.75
2	C	802	PRX	C2-N1-C6	4.16	125.87	118.75
5	C	801	COA	N3A-C2A-N1A	-3.99	122.45	128.68
2	B	702	PRX	C1'-N9-C4	-3.62	120.28	126.64
2	A	701	PRX	C1'-N9-C4	-3.60	120.32	126.64
2	C	802	PRX	C1'-N9-C4	-3.02	121.33	126.64
5	C	801	COA	C3B-C2B-C1B	2.63	105.72	99.89
5	C	801	COA	CAP-C9P-N8P	2.25	121.06	116.58
5	C	801	COA	C7P-C6P-C5P	2.02	115.72	112.36

There are no chirality outliers.

All (17) torsion outliers are listed below:

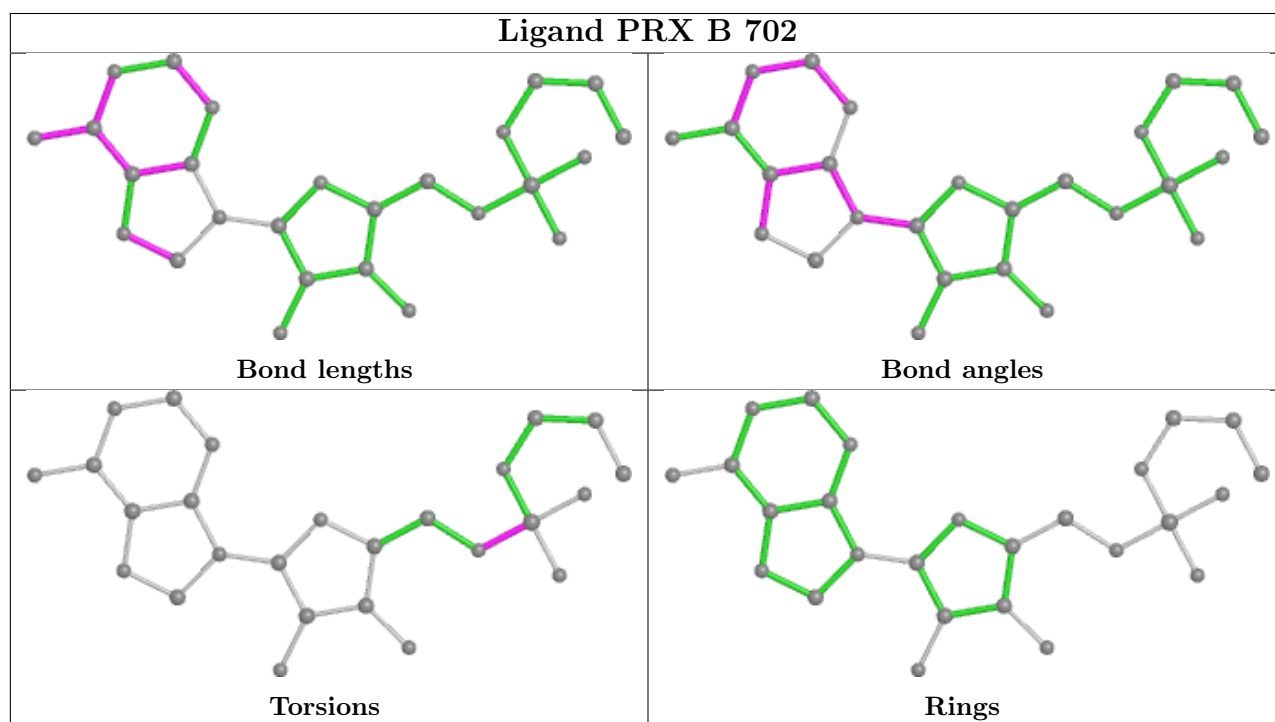
Mol	Chain	Res	Type	Atoms
5	C	801	COA	C3B-O3B-P3B-O9A
5	C	801	COA	C5B-O5B-P1A-O1A
5	C	801	COA	C5B-O5B-P1A-O3A
5	C	801	COA	CCP-O6A-P2A-O3A
5	C	801	COA	CCP-O6A-P2A-O5A
5	C	801	COA	O9P-C9P-CAP-CBP
5	C	801	COA	N8P-C9P-CAP-CBP
5	C	801	COA	O9P-C9P-CAP-OAP
5	C	801	COA	N8P-C9P-CAP-OAP
5	C	801	COA	C5P-C6P-C7P-N8P
5	C	801	COA	S1P-C2P-C3P-N4P
5	C	801	COA	C6P-C7P-N8P-C9P
5	C	801	COA	CCP-O6A-P2A-O4A
3	A	702	EDO	O1-C1-C2-O2
5	C	801	COA	CEP-CBP-CCP-O6A
2	B	702	PRX	C5'-O5'-P-O1P
5	C	801	COA	C5B-O5B-P1A-O2A

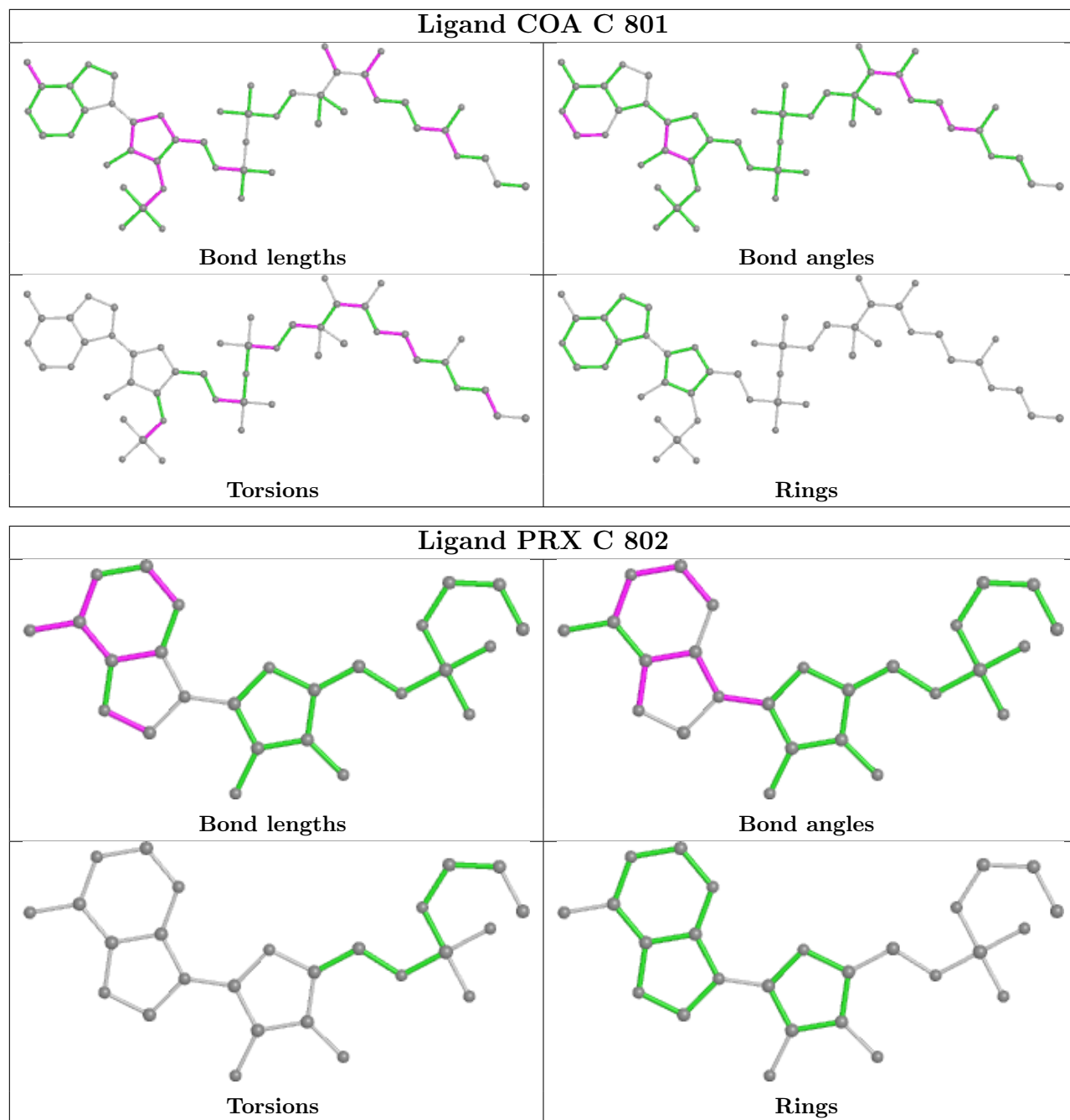
There are no ring outliers.

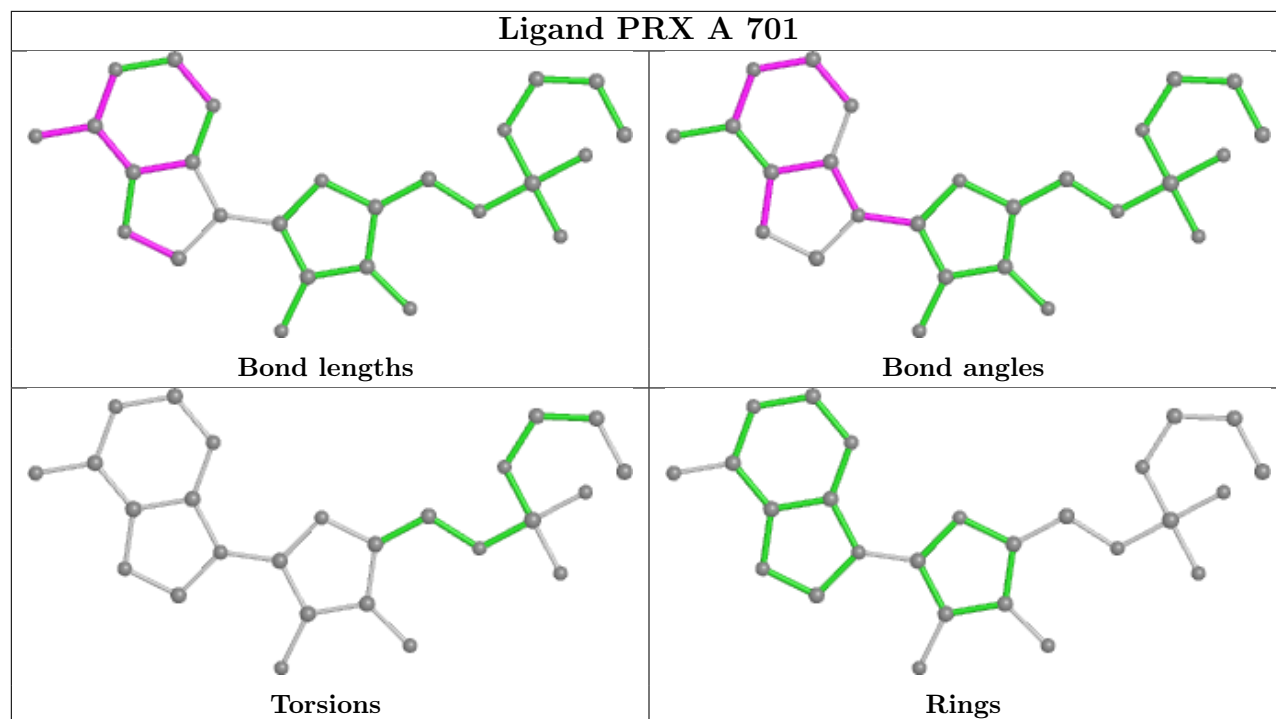
5 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	702	EDO	2	0
3	A	706	EDO	1	0
2	B	702	PRX	1	0
5	C	801	COA	5	0
2	A	701	PRX	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 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.







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, 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	652/694 (93%)	-0.00	20 (3%) 49 56	23, 41, 79, 97	0
1	B	647/694 (93%)	-0.02	14 (2%) 62 69	27, 41, 71, 104	0
1	C	584/694 (84%)	0.64	79 (13%) 3 4	27, 57, 100, 114	0
All	All	1883/2082 (90%)	0.19	113 (6%) 21 28	23, 44, 88, 114	0

All (113) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	629	LEU	8.3
1	C	587	TYR	7.3
1	C	628	TYR	6.6
1	C	533	TYR	6.3
1	C	534	ASP	5.9
1	B	334[A]	TRP	5.6
1	C	606	LEU	5.6
1	B	676	VAL	5.3
1	C	31	PRO	5.3
1	C	570	ALA	5.1
1	C	42	PRO	5.0
1	C	627	ILE	4.9
1	A	577	CYS	4.7
1	C	48	TYR	4.7
1	C	589	PHE	4.6
1	C	575	VAL	4.5
1	C	607	SER	4.4
1	C	535	GLY	4.2
1	C	630	VAL	4.1
1	C	585	ALA	4.0
1	C	399	ASN	3.9
1	C	422	TRP	3.9
1	C	484	GLY	3.9

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Mol	Chain	Res	Type	RSRZ
1	A	629	LEU	3.8
1	B	533	TYR	3.8
1	C	568	GLY	3.7
1	A	649	ILE	3.6
1	C	591	THR	3.6
1	C	485	ASN	3.5
1	C	30	PRO	3.5
1	C	588	ALA	3.4
1	C	565	LEU	3.4
1	C	566	HIS	3.3
1	C	569	VAL	3.3
1	A	587	TYR	3.3
1	C	610	LEU	3.3
1	C	35	GLY	3.3
1	C	590	VAL	3.3
1	C	426	PHE	3.3
1	C	536	TYR	3.2
1	C	586	VAL	3.2
1	A	10	VAL	3.2
1	C	33	MET	3.2
1	A	334[A]	TRP	3.2
1	C	567	LYS	3.2
1	B	673	VAL	3.1
1	B	680	VAL	3.0
1	A	650	VAL	3.0
1	C	571	GLU	3.0
1	C	594	PRO	2.9
1	C	572	THR	2.9
1	C	574	VAL	2.9
1	C	454	ALA	2.9
1	C	425	ASP	2.8
1	B	681	THR	2.8
1	C	473	ILE	2.8
1	C	608	LYS	2.8
1	A	399	ASN	2.8
1	C	61	PRO	2.7
1	C	549	VAL	2.7
1	A	12	HIS	2.7
1	C	550	SER	2.7
1	A	598	LEU	2.7
1	C	593	LYS	2.7
1	C	461	SER	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	253	PRO	2.6
1	C	285	PHE	2.6
1	A	651	ALA	2.6
1	C	343	TYR	2.6
1	C	462	ALA	2.6
1	C	487	VAL	2.5
1	C	286	ILE	2.5
1	C	545	ASP	2.5
1	C	284	LEU	2.4
1	A	594	PRO	2.4
1	C	287	LEU	2.4
1	C	576	GLY	2.4
1	C	481	VAL	2.4
1	C	393	GLY	2.4
1	C	464	PHE	2.4
1	C	624	PRO	2.3
1	A	628	TYR	2.3
1	C	494	ARG	2.3
1	A	673	VAL	2.3
1	C	444	GLY	2.2
1	B	340	TYR	2.2
1	B	382	ALA	2.2
1	C	60	GLY	2.2
1	C	421	HIS	2.2
1	C	430	ASN	2.2
1	C	573	ALA	2.2
1	C	563	LEU	2.2
1	C	40	PRO	2.2
1	A	676	VAL	2.2
1	A	589	PHE	2.2
1	C	55	TRP	2.2
1	C	477	GLN	2.2
1	B	250	ASN	2.1
1	C	546	VAL	2.1
1	C	341	ILE	2.1
1	C	283	PRO	2.1
1	B	336	THR	2.1
1	B	672	ILE	2.1
1	B	294	GLY	2.1
1	B	342	ILE	2.1
1	B	638	SER	2.1
1	A	393	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	335	ILE	2.1
1	A	585	ALA	2.0
1	C	28	ALA	2.0
1	C	337	GLY	2.0
1	C	557	ALA	2.0
1	C	411	VAL	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.

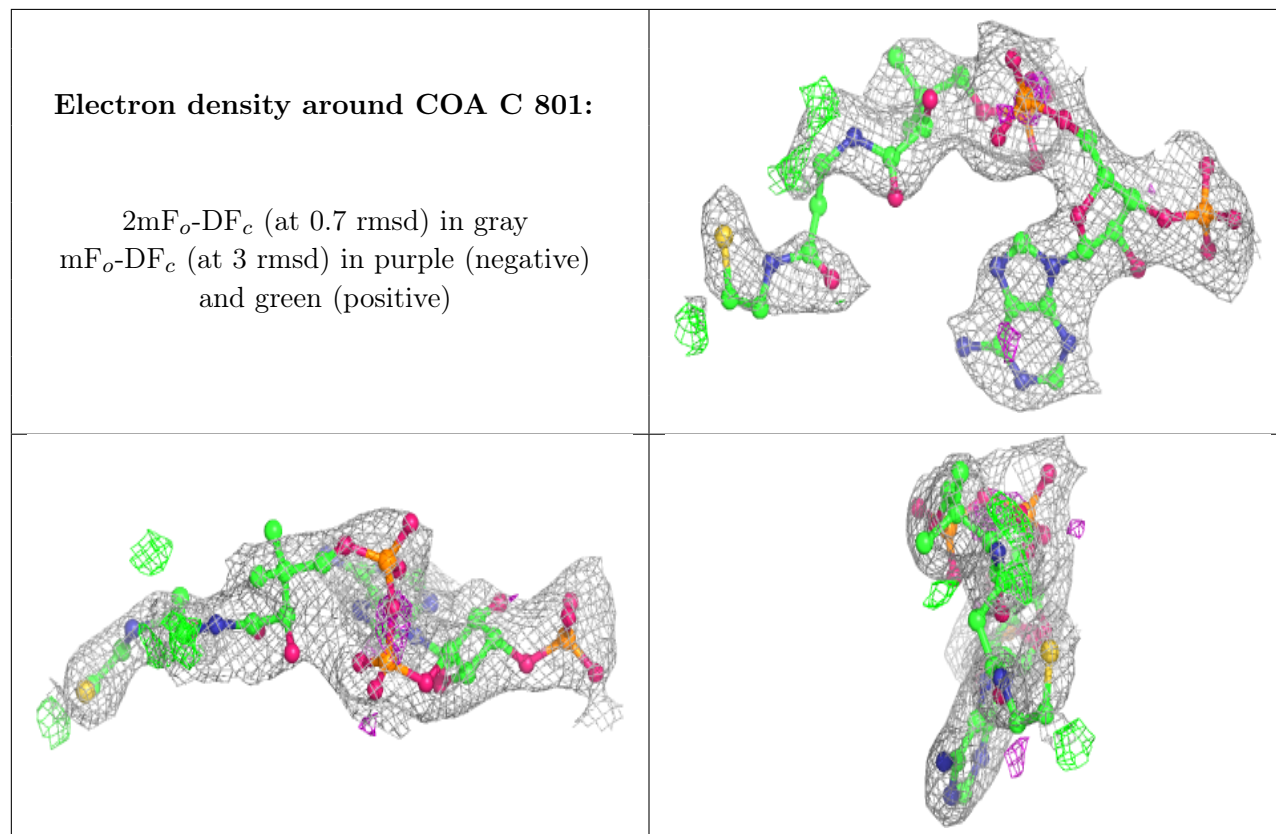
6.4 Ligands [i](#)

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, 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
3	EDO	A	702	4/4	0.72	0.24	55,56,56,57	0
3	EDO	A	708	4/4	0.74	0.24	75,75,76,76	0
5	COA	C	801	48/48	0.75	0.26	96,101,104,104	0
3	EDO	A	704	4/4	0.85	0.19	58,58,59,59	0
4	PO4	B	701	5/5	0.89	0.22	93,94,94,94	0
3	EDO	A	705	4/4	0.90	0.20	63,63,63,63	0
2	PRX	C	802	26/26	0.91	0.15	55,60,62,62	0
3	EDO	A	703	4/4	0.91	0.28	58,58,58,58	0
3	EDO	A	707	4/4	0.91	0.11	46,46,46,46	0
3	EDO	B	703	4/4	0.92	0.14	42,43,43,43	0
3	EDO	B	704	4/4	0.94	0.14	57,57,57,57	0
3	EDO	A	706	4/4	0.95	0.20	58,58,59,59	0
3	EDO	C	803	4/4	0.95	0.08	45,45,45,46	0
2	PRX	B	702	26/26	0.97	0.19	29,31,35,35	0
2	PRX	A	701	26/26	0.97	0.16	30,32,32,32	0

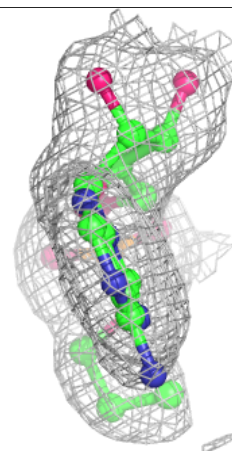
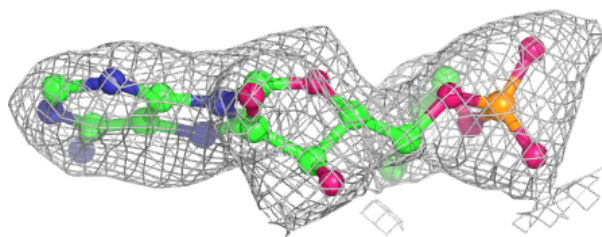
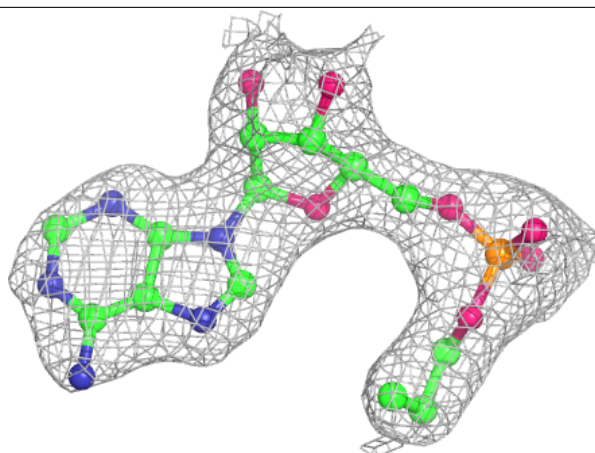
The following is a graphical depiction of the model fit to experimental electron density of all

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.



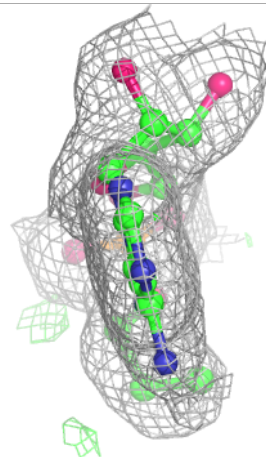
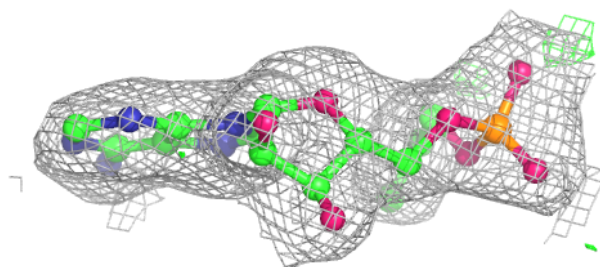
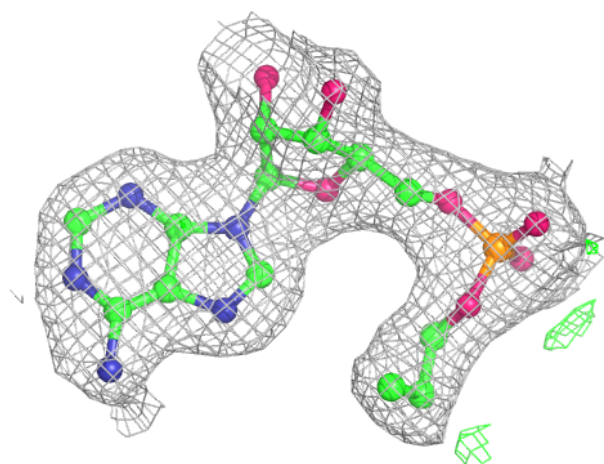
Electron density around PRX C 802:

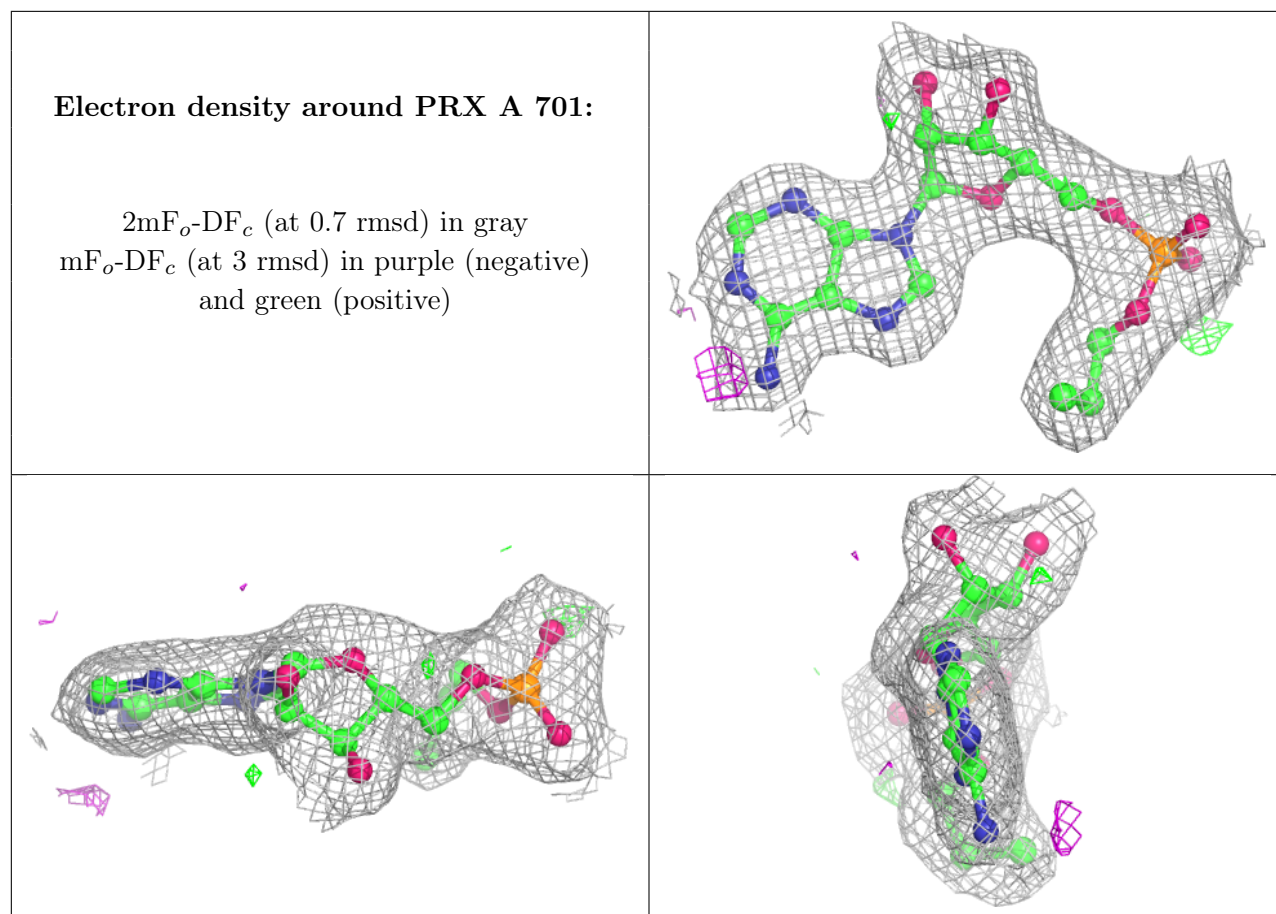
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around PRX 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)





6.5 Other polymers [i](#)

There are no such residues in this entry.