



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 12, 2026 – 07:06 PM UTC

PDB ID : 8W0B / pdb_00008w0b
Title : Crystal structure of Acetyl-CoA synthetase 2 from *Candida albicans* in complex with a cyclopropyl AMP ester inhibitor
Authors : Seattle Structural Genomics Center for Infectious Disease; Seattle Structural Genomics Center for Infectious Disease (SSGCID)
Deposited on : 2024-02-13
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 ⓘ](#)) 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

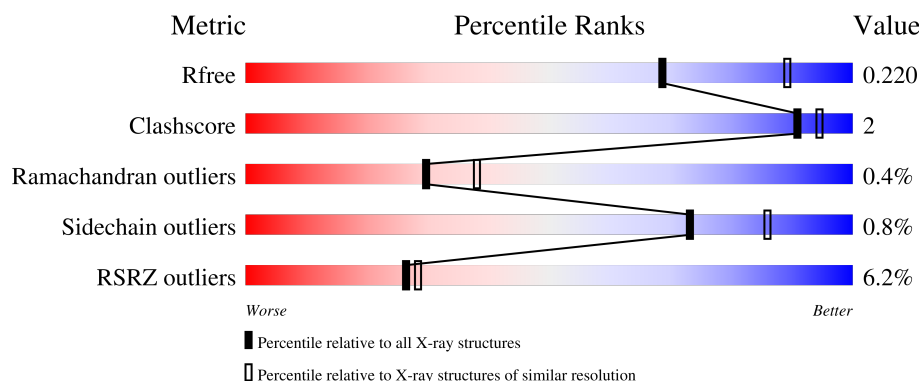
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (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	686	4% 91% 6% .
1	B	686	9% 87% 5% 8%
1	C	686	4% 74% . 23%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 14948 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 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	667	Total	C	N	O	S	0	1	0
			5168	3296	878	980	14			
1	B	632	Total	C	N	O	S	0	0	0
			4908	3138	835	921	14			
1	C	529	Total	C	N	O	S	0	1	0
			4150	2661	698	778	13			

There are 51 discrepancies between the modelled and reference sequences:

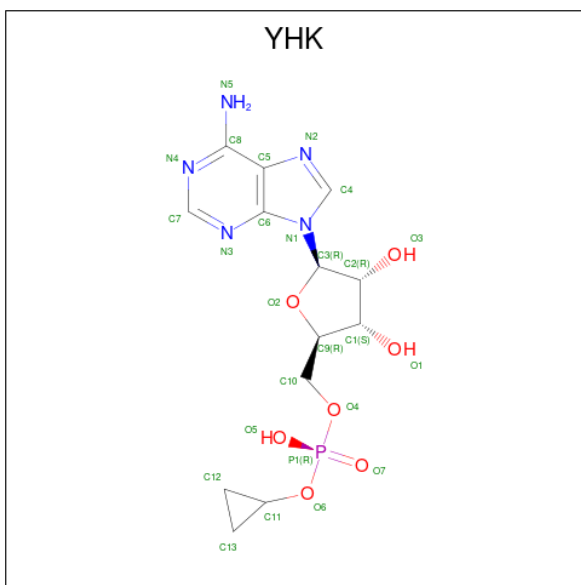
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q8NJJN3
A	2	HIS	-	expression tag	UNP Q8NJJN3
A	3	HIS	-	expression tag	UNP Q8NJJN3
A	4	HIS	-	expression tag	UNP Q8NJJN3
A	5	HIS	-	expression tag	UNP Q8NJJN3
A	6	HIS	-	expression tag	UNP Q8NJJN3
A	7	HIS	-	expression tag	UNP Q8NJJN3
A	8	HIS	-	expression tag	UNP Q8NJJN3
A	9	HIS	-	expression tag	UNP Q8NJJN3
A	10	GLU	-	expression tag	UNP Q8NJJN3
A	11	ASN	-	expression tag	UNP Q8NJJN3
A	12	LEU	-	expression tag	UNP Q8NJJN3
A	13	TYR	-	expression tag	UNP Q8NJJN3
A	14	PHE	-	expression tag	UNP Q8NJJN3
A	15	GLN	-	expression tag	UNP Q8NJJN3
A	16	GLY	-	expression tag	UNP Q8NJJN3
A	403	ALA	VAL	engineered mutation	UNP Q8NJJN3
B	1	MET	-	initiating methionine	UNP Q8NJJN3
B	2	HIS	-	expression tag	UNP Q8NJJN3
B	3	HIS	-	expression tag	UNP Q8NJJN3
B	4	HIS	-	expression tag	UNP Q8NJJN3
B	5	HIS	-	expression tag	UNP Q8NJJN3
B	6	HIS	-	expression tag	UNP Q8NJJN3

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Chain	Residue	Modelled	Actual	Comment	Reference
B	7	HIS	-	expression tag	UNP Q8NJJ3
B	8	HIS	-	expression tag	UNP Q8NJJ3
B	9	HIS	-	expression tag	UNP Q8NJJ3
B	10	GLU	-	expression tag	UNP Q8NJJ3
B	11	ASN	-	expression tag	UNP Q8NJJ3
B	12	LEU	-	expression tag	UNP Q8NJJ3
B	13	TYR	-	expression tag	UNP Q8NJJ3
B	14	PHE	-	expression tag	UNP Q8NJJ3
B	15	GLN	-	expression tag	UNP Q8NJJ3
B	16	GLY	-	expression tag	UNP Q8NJJ3
B	403	ALA	VAL	engineered mutation	UNP Q8NJJ3
C	1	MET	-	initiating methionine	UNP Q8NJJ3
C	2	HIS	-	expression tag	UNP Q8NJJ3
C	3	HIS	-	expression tag	UNP Q8NJJ3
C	4	HIS	-	expression tag	UNP Q8NJJ3
C	5	HIS	-	expression tag	UNP Q8NJJ3
C	6	HIS	-	expression tag	UNP Q8NJJ3
C	7	HIS	-	expression tag	UNP Q8NJJ3
C	8	HIS	-	expression tag	UNP Q8NJJ3
C	9	HIS	-	expression tag	UNP Q8NJJ3
C	10	GLU	-	expression tag	UNP Q8NJJ3
C	11	ASN	-	expression tag	UNP Q8NJJ3
C	12	LEU	-	expression tag	UNP Q8NJJ3
C	13	TYR	-	expression tag	UNP Q8NJJ3
C	14	PHE	-	expression tag	UNP Q8NJJ3
C	15	GLN	-	expression tag	UNP Q8NJJ3
C	16	GLY	-	expression tag	UNP Q8NJJ3
C	403	ALA	VAL	engineered mutation	UNP Q8NJJ3

- Molecule 2 is 5'-O-[(R)-(cyclopropyloxy)(hydroxy)phosphoryl]adenosine (CCD ID: YHK) (formula: C₁₃H₁₈N₅O₇P) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 3 is SODIUM ION (CCD ID: NA) (formula: Na).

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

- Molecule 4 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



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

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



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

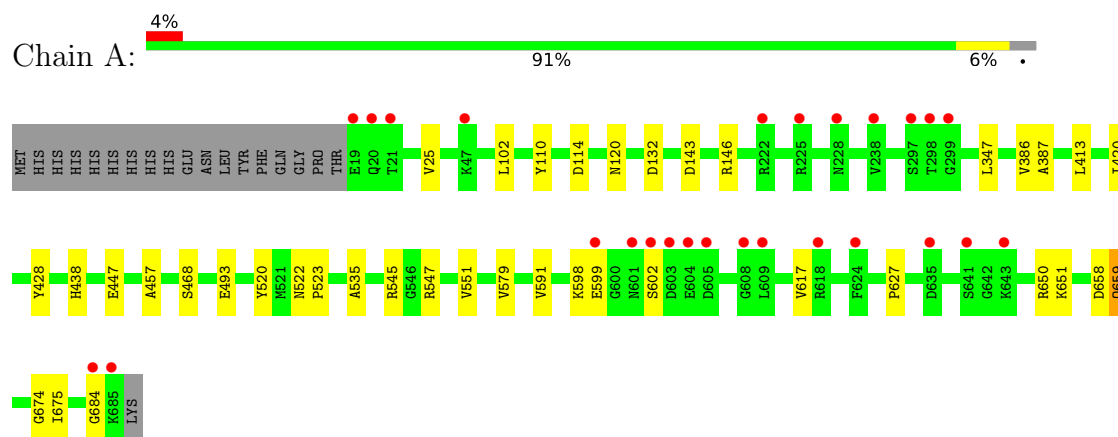
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	270	Total	O	0	0
			270	270		
6	B	242	Total	O	0	0
			242	242		
6	C	79	Total	O	0	0
			79	79		

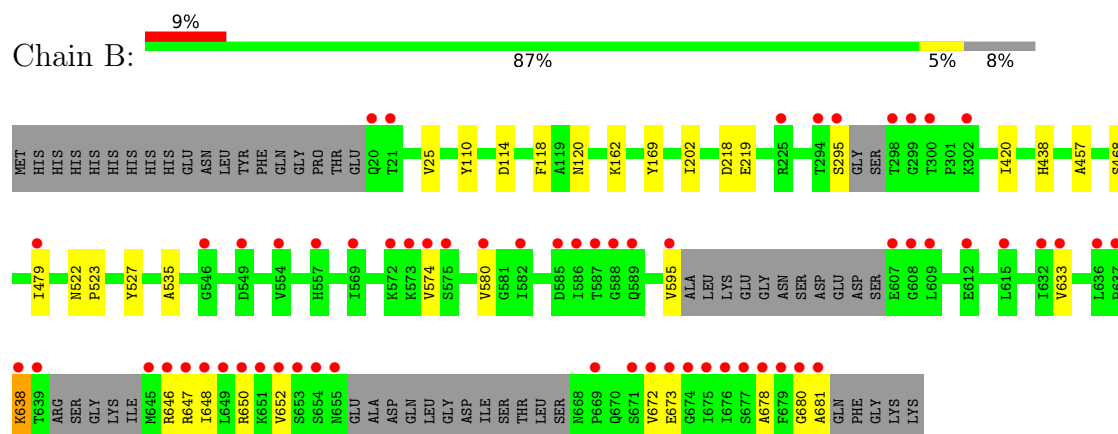
3 Residue-property plots [i](#)

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.

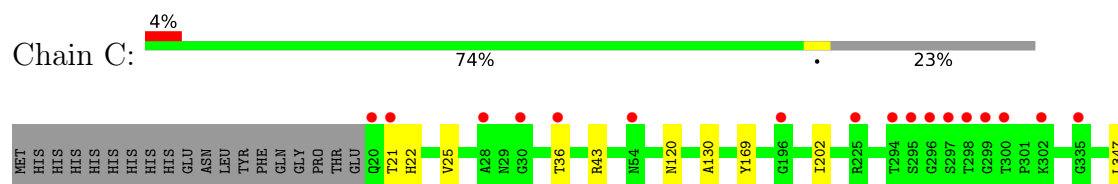
- Molecule 1: Acetyl-coenzyme A synthetase 2

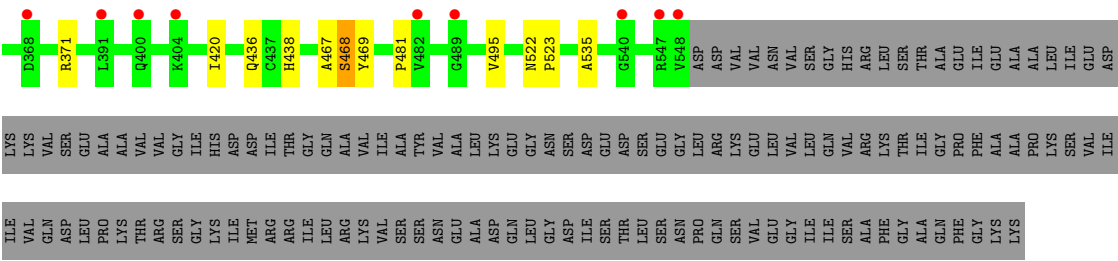


- Molecule 1: Acetyl-coenzyme A synthetase 2



- Molecule 1: Acetyl-coenzyme A synthetase 2





4 Data and refinement statistics

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α , β , γ	139.78Å 139.78Å 544.42Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.65 – 2.30 49.65 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.9 (49.65-2.30) 100.0 (49.65-2.30)	Depositor EDS
R_{merge}	0.22	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.94 (at 2.29Å)	Xtriage
Refinement program	PHENIX (dev_5233: ???)	Depositor
R, R_{free}	0.186 , 0.219 0.190 , 0.220	Depositor DCC
R_{free} test set	6943 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å ²)	45.0	Xtriage
Anisotropy	0.549	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 39.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.52$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	14948	wwPDB-VP
Average B, all atoms (Å ²)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.89% 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: GOL, SO4, NA, YHK

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	0.20	0/5301	0.42	0/7209
1	B	0.19	0/5033	0.40	0/6845
1	C	0.16	0/4273	0.35	0/5819
All	All	0.19	0/14607	0.40	0/19873

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	5168	0	5046	20	0
1	B	4908	0	4789	17	0
1	C	4150	0	4013	12	0
2	A	26	0	0	0	0
2	B	26	0	0	0	0
2	C	26	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	15	0	0	1	0
4	B	25	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	C	5	0	0	0	0
5	B	6	0	8	1	0
6	A	270	0	0	0	0
6	B	242	0	0	1	0
6	C	79	0	0	0	0
All	All	14948	0	13856	49	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 (49) 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:B:633:VAL:HG12	1:B:678:ALA:HB3	1.63	0.81
1:B:633:VAL:HG12	1:B:678:ALA:CB	2.28	0.62
1:B:25:VAL:HG22	1:B:535:ALA:HB1	1.87	0.56
1:A:493:GLU:OE1	1:A:545:ARG:NH1	2.37	0.54
1:A:650:ARG:NH2	4:A:703:SO4:O1	2.38	0.53
1:C:43:ARG:NH2	1:C:436:GLN:OE1	2.41	0.53
1:C:481:PRO:HG3	1:C:495:VAL:HG23	1.89	0.52
1:A:143:ASP:OD1	1:A:146:ARG:NH2	2.43	0.52
1:B:648:ILE:O	1:B:652:VAL:HG23	2.10	0.51
1:C:467:ALA:O	1:C:468:SER:OG	2.28	0.51
1:A:579:VAL:CG1	1:A:591:VAL:HG13	2.41	0.50
1:C:420:ILE:O	1:C:420:ILE:HG23	2.11	0.49
1:A:658:ASP:O	1:A:659:GLN:HB2	2.12	0.49
1:A:658:ASP:O	1:A:659:GLN:CB	2.61	0.48
1:A:102:LEU:HD22	1:B:118:PHE:CZ	2.49	0.47
1:B:479:ILE:HD11	1:B:527:TYR:CD2	2.51	0.46
1:C:522:ASN:N	1:C:523:PRO:CD	2.79	0.46
1:A:347:LEU:C	1:A:347:LEU:HD23	2.40	0.46
1:A:25:VAL:HG22	1:A:535:ALA:HB1	1.97	0.46
1:C:169:TYR:CZ	1:C:202:ILE:HD11	2.51	0.45
1:C:36:THR:HG22	1:C:438:HIS:ND1	2.31	0.45
1:A:413:LEU:HB3	1:A:428:TYR:CZ	2.51	0.45
1:A:438:HIS:CD2	1:A:457:ALA:HA	2.52	0.45
1:B:169:TYR:CZ	1:B:202:ILE:HD11	2.52	0.45
1:B:218:ASP:OD1	1:B:219:GLU:N	2.47	0.45
1:B:522:ASN:N	1:B:523:PRO:CD	2.80	0.45
1:B:479:ILE:HD11	1:B:527:TYR:CG	2.52	0.45
1:B:420:ILE:O	1:B:420:ILE:HG23	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:347:LEU:C	1:C:347:LEU:HD23	2.42	0.44
1:A:522:ASN:N	1:A:523:PRO:CD	2.81	0.44
1:B:680:GLY:O	1:B:681:ALA:C	2.61	0.43
1:A:547:ARG:HD2	1:A:551:VAL:HB	1.99	0.43
1:C:21:THR:HG22	1:C:22:HIS:N	2.33	0.43
1:C:25:VAL:HG22	1:C:535:ALA:HB1	2.00	0.43
1:B:438:HIS:CD2	1:B:457:ALA:HA	2.54	0.43
1:B:672:VAL:O	1:B:673:GLU:C	2.62	0.42
1:B:580:VAL:HB	1:B:650:ARG:HG2	2.02	0.41
5:B:703:GOL:H32	6:B:979:HOH:O	2.20	0.41
1:A:110:TYR:CD1	1:A:114:ASP:HB2	2.56	0.41
1:A:420:ILE:O	1:A:420:ILE:HG23	2.20	0.41
1:A:674:GLY:O	1:A:675:ILE:C	2.64	0.41
1:C:130:ALA:O	1:C:371:ARG:NH2	2.53	0.41
1:A:447:GLU:HG2	1:A:520:TYR:CZ	2.55	0.41
1:A:386:VAL:HG22	1:A:387:ALA:N	2.36	0.40
1:A:579:VAL:HG13	1:A:591:VAL:HG13	2.02	0.40
1:B:110:TYR:CD2	1:B:114:ASP:HB2	2.56	0.40
1:A:617:VAL:HG11	1:A:627:PRO:HD3	2.02	0.40
1:B:574:VAL:HG13	1:B:595:VAL:HG13	2.04	0.40
1:C:468:SER:OG	1:C:469:TYR:N	2.54	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	666/686 (97%)	645 (97%)	17 (3%)	4 (1%)	21	27
1	B	622/686 (91%)	604 (97%)	16 (3%)	2 (0%)	36	46
1	C	528/686 (77%)	510 (97%)	17 (3%)	1 (0%)	43	55
All	All	1816/2058 (88%)	1759 (97%)	50 (3%)	7 (0%)	30	38

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	684	GLY
1	C	468	SER
1	A	468	SER
1	A	602	SER
1	A	659	GLN
1	B	468	SER
1	B	638	LYS

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	544/568 (96%)	539 (99%)	5 (1%)	70	84
1	B	516/568 (91%)	510 (99%)	6 (1%)	63	79
1	C	436/568 (77%)	435 (100%)	1 (0%)	87	94
All	All	1496/1704 (88%)	1484 (99%)	12 (1%)	73	86

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	120	ASN
1	A	132	ASP
1	A	598	LYS
1	A	599	GLU
1	A	651	LYS
1	B	120	ASN
1	B	162	LYS
1	B	295	SER
1	B	638	LYS
1	B	646	ARG
1	B	647	ARG
1	C	120	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	GLN
1	A	120	ASN
1	A	156	GLN
1	A	429	ASN
1	A	659	GLN
1	B	46	ASN
1	B	51	HIS
1	B	668	ASN
1	C	51	HIS
1	C	120	ASN
1	C	156	GLN
1	C	258	HIS
1	C	435	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 2 are monoatomic - leaving 13 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
2	YHK	A	701	-	29,29,29	0.55	0	40,44,44	0.44	0
2	YHK	B	701	-	29,29,29	0.56	0	40,44,44	0.54	0
2	YHK	C	701	-	29,29,29	0.55	0	40,44,44	0.43	0
4	SO4	B	704	-	4,4,4	0.71	0	6,6,6	0.10	0
4	SO4	B	708	-	4,4,4	0.74	0	6,6,6	0.08	0
4	SO4	B	705	-	4,4,4	0.67	0	6,6,6	0.14	0
4	SO4	A	703	-	4,4,4	0.68	0	6,6,6	0.31	0
4	SO4	B	706	-	4,4,4	0.74	0	6,6,6	0.16	0
4	SO4	C	702	-	4,4,4	0.69	0	6,6,6	0.13	0
4	SO4	B	707	-	4,4,4	0.69	0	6,6,6	0.12	0
4	SO4	A	704	-	4,4,4	0.76	0	6,6,6	0.22	0
5	GOL	B	703	-	5,5,5	0.30	0	5,5,5	0.40	0
4	SO4	A	705	-	4,4,4	0.73	0	6,6,6	0.32	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
2	YHK	A	701	-	-	0/13/33/33	0/4/4/4
2	YHK	B	701	-	-	0/13/33/33	0/4/4/4
2	YHK	C	701	-	-	0/13/33/33	0/4/4/4
5	GOL	B	703	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

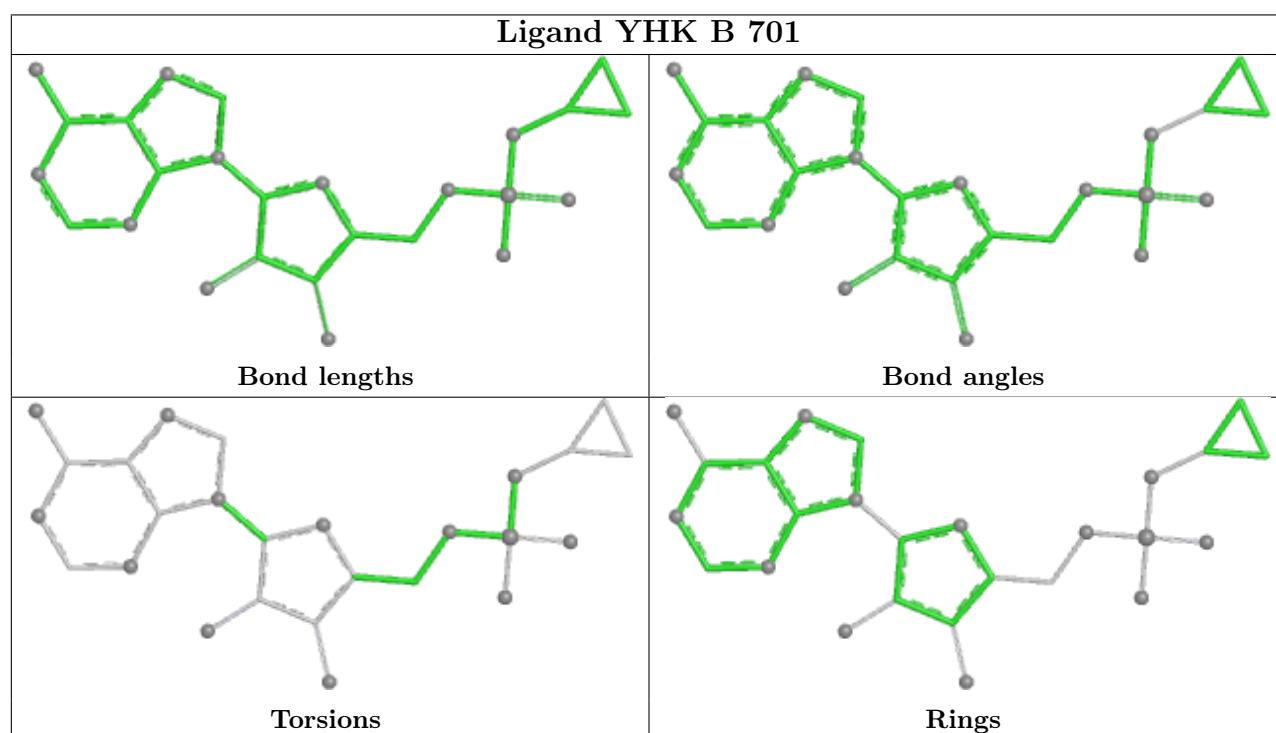
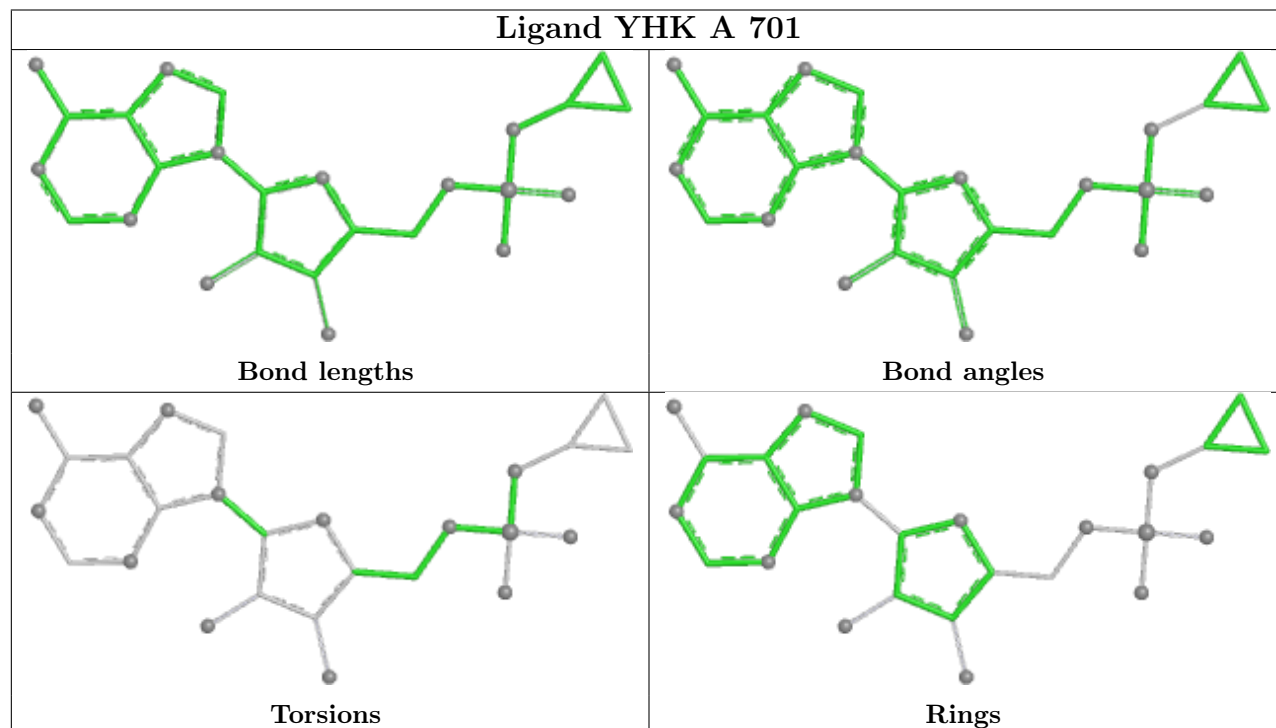
There are no ring outliers.

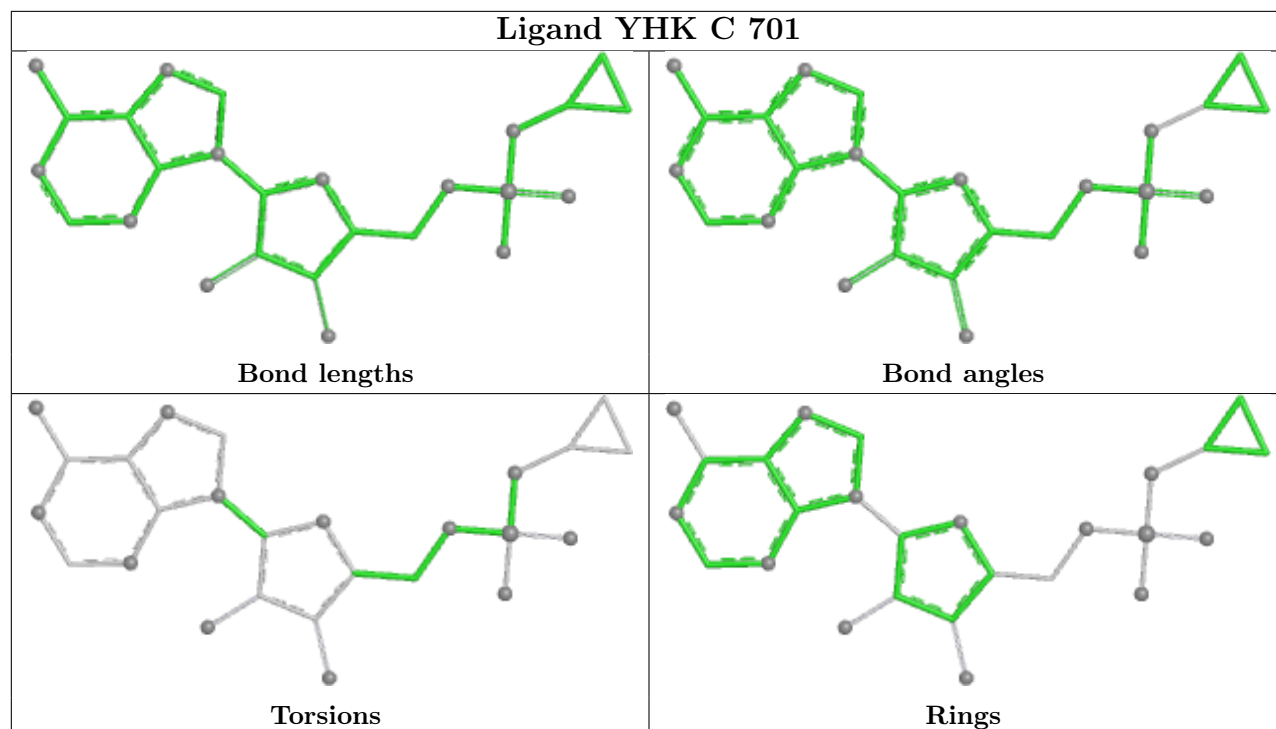
2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	703	SO4	1	0
5	B	703	GOL	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 [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	667/686 (97%)	0.03	26 (3%)	43	45	34, 48, 83, 140	1 (0%)
1	B	632/686 (92%)	0.29	61 (9%)	13	15	37, 52, 127, 198	0
1	C	529/686 (77%)	0.41	26 (4%)	35	36	35, 67, 102, 161	1 (0%)
All	All	1828/2058 (88%)	0.23	113 (6%)	26	28	34, 54, 102, 198	2 (0%)

All (113) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	681	ALA	7.3
1	B	672	VAL	7.2
1	B	586	ILE	5.7
1	B	639	THR	5.7
1	B	676	ILE	5.5
1	C	20	GLN	5.2
1	B	295	SER	5.1
1	B	679	PHE	5.0
1	A	20	GLN	4.9
1	B	20	GLN	4.9
1	A	298	THR	4.8
1	C	298	THR	4.7
1	C	297	SER	4.6
1	B	298	THR	4.6
1	C	548	VAL	4.6
1	B	675	ILE	4.5
1	B	636	LEU	4.3
1	A	604	GLU	4.2
1	A	601	ASN	4.2
1	A	299	GLY	4.0
1	B	549	ASP	4.0
1	B	573	LYS	4.0
1	B	607	GLU	4.0

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Mol	Chain	Res	Type	RSRZ
1	B	669	PRO	4.0
1	A	685	LYS	4.0
1	B	632	ILE	3.9
1	A	684	GLY	3.9
1	B	638	LYS	3.8
1	B	678	ALA	3.8
1	C	295	SER	3.7
1	B	609	LEU	3.6
1	B	588	GLY	3.6
1	B	648	ILE	3.5
1	A	603	ASP	3.4
1	B	647	ARG	3.4
1	B	651	LYS	3.4
1	B	645	MET	3.3
1	A	635	ASP	3.3
1	B	654	SER	3.3
1	B	655	ASN	3.3
1	A	19	GLU	3.3
1	A	297	SER	3.2
1	B	633	VAL	3.2
1	B	680	GLY	3.1
1	C	302	LYS	3.0
1	B	608	GLY	3.0
1	C	54	ASN	3.0
1	A	602	SER	2.9
1	C	482	VAL	2.9
1	B	572	LYS	2.9
1	B	569	ILE	2.9
1	B	21	THR	2.9
1	B	649	LEU	2.9
1	B	294	THR	2.9
1	B	652	VAL	2.8
1	A	47	LYS	2.8
1	B	637	PRO	2.8
1	A	609	LEU	2.8
1	C	225	ARG	2.8
1	A	618	ARG	2.8
1	B	300	THR	2.8
1	C	489	GLY	2.7
1	B	677	SER	2.7
1	B	595	VAL	2.6
1	B	479	ILE	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	557	HIS	2.6
1	C	296	GLY	2.6
1	C	299	GLY	2.6
1	C	368	ASP	2.6
1	B	554	VAL	2.6
1	B	580	VAL	2.6
1	A	599	GLU	2.5
1	B	575	SER	2.5
1	B	225	ARG	2.5
1	C	28	ALA	2.5
1	B	574	VAL	2.5
1	B	299	GLY	2.5
1	B	587	THR	2.5
1	C	21	THR	2.4
1	B	612	GLU	2.4
1	B	673	GLU	2.4
1	B	615	LEU	2.4
1	A	225	ARG	2.4
1	C	547	ARG	2.4
1	B	674	GLY	2.3
1	C	30	GLY	2.3
1	C	335	GLY	2.3
1	B	671	SER	2.3
1	C	300	THR	2.3
1	B	582	ILE	2.3
1	A	641	SER	2.2
1	B	646	ARG	2.2
1	B	650	ARG	2.2
1	A	228	ASN	2.2
1	B	585	ASP	2.2
1	A	238	VAL	2.2
1	A	624	PHE	2.2
1	C	404	LYS	2.2
1	C	400	GLN	2.2
1	A	21	THR	2.2
1	C	36	THR	2.2
1	B	302	LYS	2.1
1	B	546	GLY	2.1
1	C	540	GLY	2.1
1	A	643	LYS	2.1
1	C	391	LEU	2.1
1	C	196	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	294	THR	2.1
1	B	653	SER	2.0
1	A	605	ASP	2.0
1	A	608	GLY	2.0
1	B	589	GLN	2.0
1	A	222	ARG	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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.

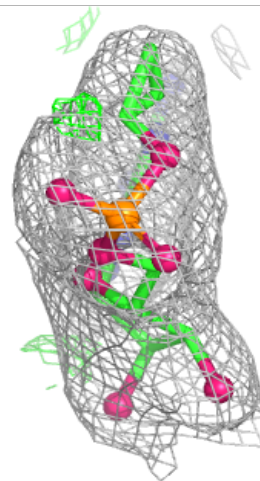
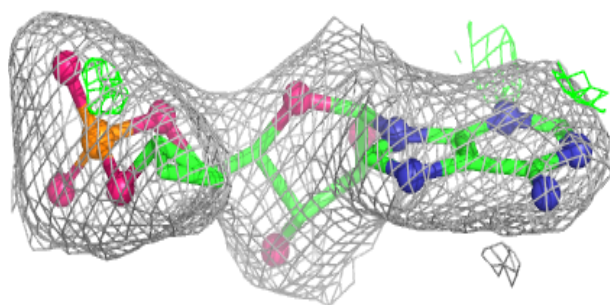
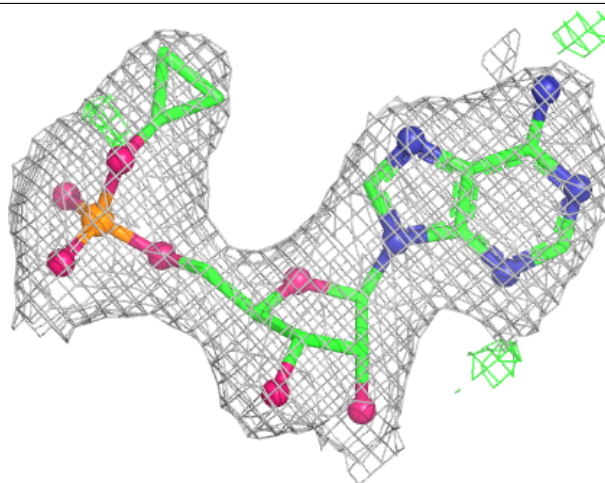
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	SO4	B	708	5/5	0.49	0.24	68,83,108,111	0
5	GOL	B	703	6/6	0.60	0.23	50,63,64,65	0
4	SO4	C	702	5/5	0.65	0.15	95,104,114,121	0
4	SO4	A	704	5/5	0.67	0.17	67,73,90,103	0
4	SO4	B	706	5/5	0.70	0.21	85,87,94,115	0
4	SO4	A	705	5/5	0.71	0.19	67,70,90,96	0
4	SO4	B	705	5/5	0.71	0.17	97,108,118,122	0
4	SO4	B	704	5/5	0.74	0.10	89,96,116,118	0
4	SO4	B	707	5/5	0.78	0.12	74,91,97,106	0
4	SO4	A	703	5/5	0.84	0.12	60,69,83,84	0
2	YHK	C	701	26/26	0.95	0.09	57,70,75,76	0
2	YHK	B	701	26/26	0.97	0.07	40,45,48,49	0
2	YHK	A	701	26/26	0.98	0.06	36,40,43,45	0
3	NA	A	702	1/1	0.99	0.06	40,40,40,40	0
3	NA	B	702	1/1	0.99	0.03	41,41,41,41	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.

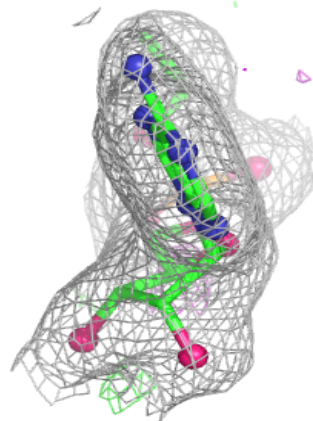
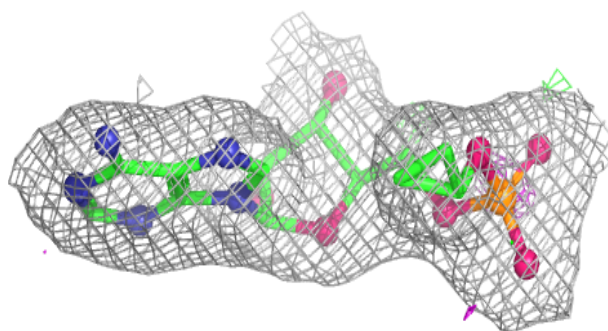
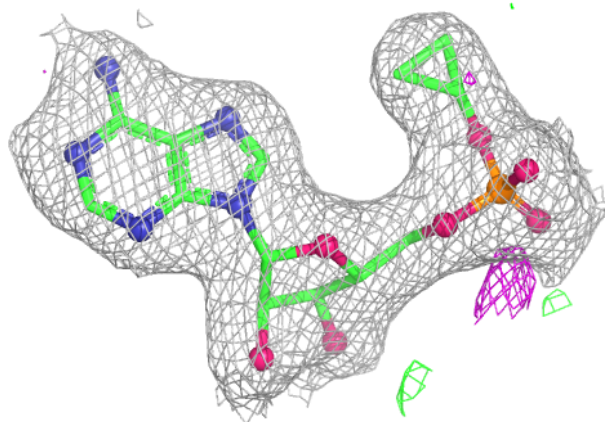
Electron density around YHK C 701:

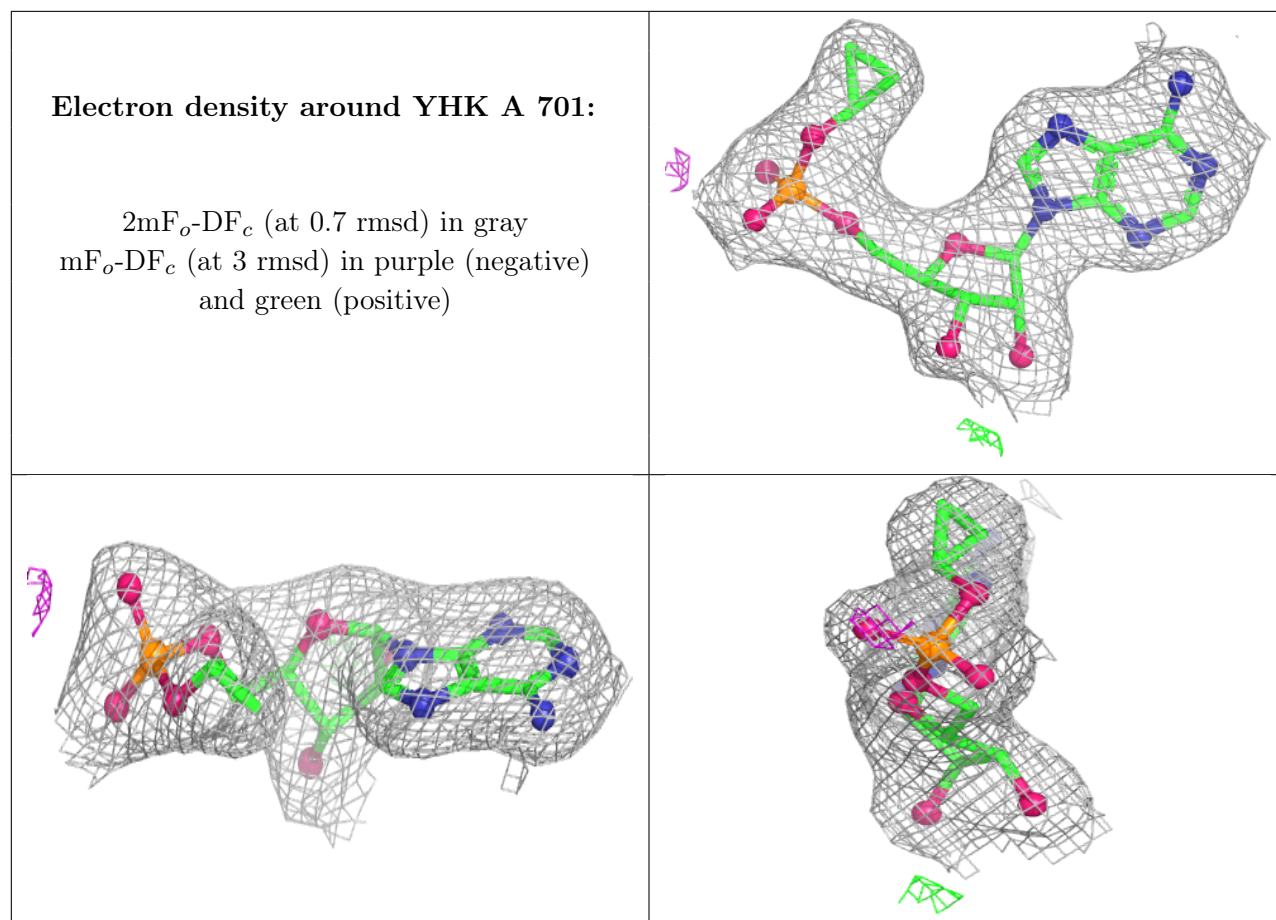
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around YHK 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 ⓘ

There are no such residues in this entry.