



wwPDB X-ray Structure Validation Summary Report ⓘ

Apr 20, 2026 – 09:39 pm BST

PDB ID : 5OYA / pdb_00005oya
Title : Unusual posttranslational modifications revealed in crystal structures of di-atom Rubisco.
Authors : Valegard, K.; Andersson, I.
Deposited on : 2017-09-08
Resolution : 1.80 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	:	1.8.4, CSD as541be (2020)
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

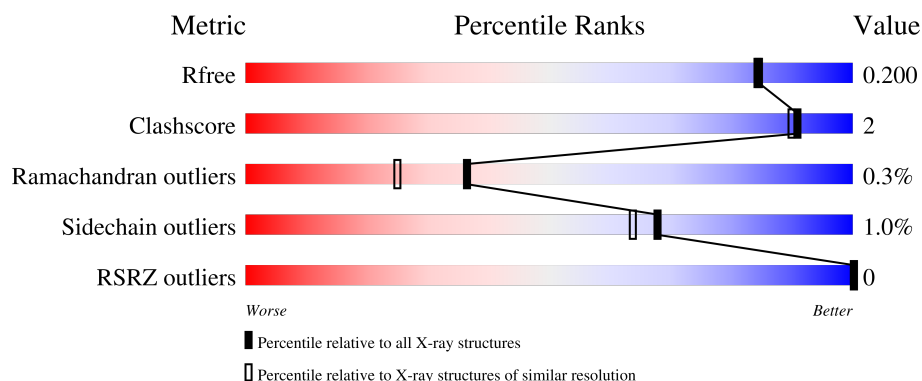
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

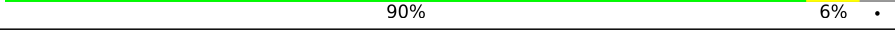
The reported resolution of this entry is 1.80 Å.

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	7662 (1.80-1.80)
Clashscore	190562	8479 (1.80-1.80)
Ramachandran outliers	187476	8391 (1.80-1.80)
Sidechain outliers	187428	8390 (1.80-1.80)
RSRZ outliers	180081	7663 (1.80-1.80)

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	490	 89%6% . .
1	B	490	 89%6% . .
1	D	490	 90%5% .
1	E	490	 90%6% .
1	F	490	 89%6% .

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Mol	Chain	Length	Quality of chain
1	G	490	 90% 5% . .
1	H	490	 90% 6% .
2	C	490	 89% 7% .
3	I	139	 99% .
3	J	139	 99% .
3	K	139	 99% .
3	L	139	 98% .
3	M	139	 98% .
3	N	139	 99% .
3	O	139	 94% 6%
3	P	139	 97% .

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 41512 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 Rubisco large subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	468	Total	C	N	O	S	0	2	0
			3664	2335	624	684	21			
1	B	469	Total	C	N	O	S	0	2	0
			3675	2341	628	685	21			
1	D	468	Total	C	N	O	S	0	2	0
			3664	2335	624	684	21			
1	E	469	Total	C	N	O	S	0	2	0
			3675	2341	628	685	21			
1	F	469	Total	C	N	O	S	0	2	0
			3675	2341	628	685	21			
1	G	469	Total	C	N	O	S	0	2	0
			3675	2341	628	685	21			
1	H	468	Total	C	N	O	S	0	2	0
			3664	2335	624	684	21			

- Molecule 2 is a protein called Rubisco large subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	468	Total	C	N	O	S	0	2	0
			3663	2335	624	683	21			

- Molecule 3 is a protein called Rubisco small subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	I	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			
3	J	139	Total	C	N	O	S	0	0	0
			1117	708	189	211	9			
3	K	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			
3	L	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			

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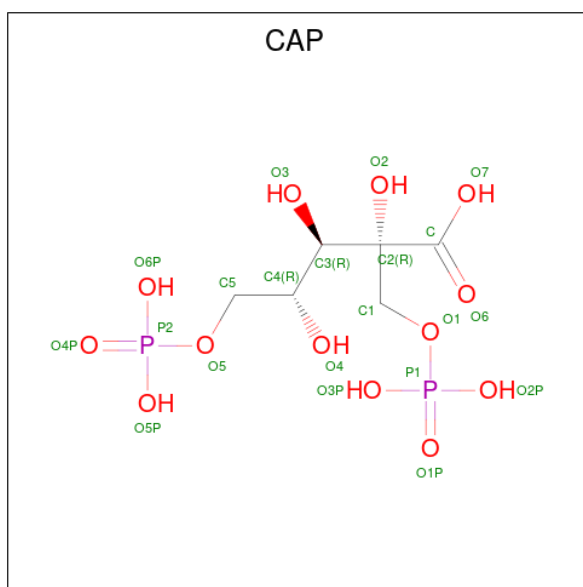
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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	M	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			
3	N	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			
3	O	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			
3	P	139	Total	C	N	O	S	0	0	0
			1118	708	189	212	9			

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Mg	0	0
			1	1		
4	B	1	Total	Mg	0	0
			1	1		
4	C	1	Total	Mg	0	0
			1	1		
4	D	1	Total	Mg	0	0
			1	1		
4	E	1	Total	Mg	0	0
			1	1		
4	F	1	Total	Mg	0	0
			1	1		
4	G	1	Total	Mg	0	0
			1	1		
4	H	1	Total	Mg	0	0
			1	1		
4	J	1	Total	Mg	0	0
			1	1		
4	N	1	Total	Mg	0	0
			1	1		

- Molecule 5 is 2-CARBOXYARABINITOL-1,5-DIPHOSPHATE (CCD ID: CAP) (formula: C₆H₁₄O₁₃P₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	O	P	0	0
			21	6	13	2		
5	B	1	Total	C	O	P	0	0
			21	6	13	2		
5	C	1	Total	C	O	P	0	0
			21	6	13	2		
5	D	1	Total	C	O	P	0	0
			21	6	13	2		
5	E	1	Total	C	O	P	0	0
			21	6	13	2		
5	F	1	Total	C	O	P	0	0
			21	6	13	2		
5	G	1	Total	C	O	P	0	0
			21	6	13	2		
5	H	1	Total	C	O	P	0	0
			21	6	13	2		

- Molecule 6 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	I	1	Total	C	O	0	0
			4	2	2		
6	I	1	Total	C	O	0	0
			4	2	2		
6	I	1	Total	C	O	0	0
			4	2	2		
6	J	1	Total	C	O	0	0
			4	2	2		
6	J	1	Total	C	O	0	0
			4	2	2		
6	J	1	Total	C	O	0	0
			4	2	2		
6	K	1	Total	C	O	0	0
			4	2	2		
6	K	1	Total	C	O	0	0
			4	2	2		
6	K	1	Total	C	O	0	0
			4	2	2		
6	L	1	Total	C	O	0	0
			4	2	2		
6	L	1	Total	C	O	0	0
			4	2	2		
6	L	1	Total	C	O	0	0
			4	2	2		
6	M	1	Total	C	O	0	0
			4	2	2		
6	M	1	Total	C	O	0	0
			4	2	2		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	M	1	Total C O 4 2 2	0	0
6	N	1	Total C O 4 2 2	0	0
6	N	1	Total C O 4 2 2	0	0
6	N	1	Total C O 4 2 2	0	0
6	O	1	Total C O 4 2 2	0	0
6	O	1	Total C O 4 2 2	0	0
6	O	1	Total C O 4 2 2	0	0
6	P	1	Total C O 4 2 2	0	0
6	P	1	Total C O 4 2 2	0	0
6	P	1	Total C O 4 2 2	0	0

- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	273	Total O 273 273	0	0
7	B	319	Total O 319 319	0	0
7	C	284	Total O 284 284	0	0
7	D	225	Total O 225 225	0	0
7	E	211	Total O 211 211	0	0
7	F	311	Total O 311 311	0	0
7	G	281	Total O 281 281	0	0
7	H	299	Total O 299 299	0	0
7	I	99	Total O 99 99	0	0

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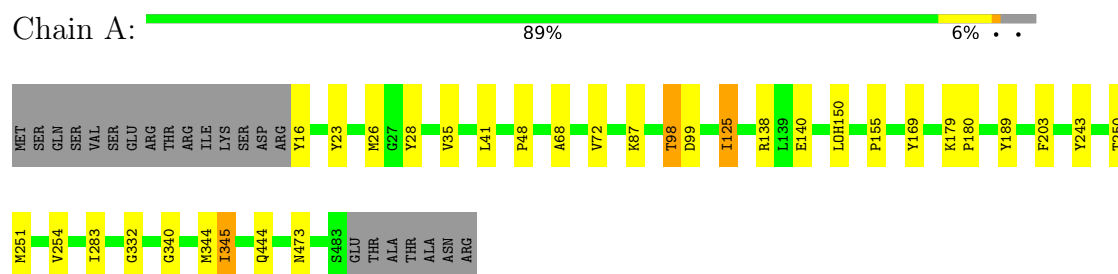
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	J	95	Total 95	O 95	0	0
7	K	75	Total 75	O 75	0	0
7	L	86	Total 86	O 86	0	0
7	M	107	Total 107	O 107	0	0
7	N	77	Total 77	O 77	0	0
7	O	103	Total 103	O 103	0	0
7	P	95	Total 95	O 95	0	0

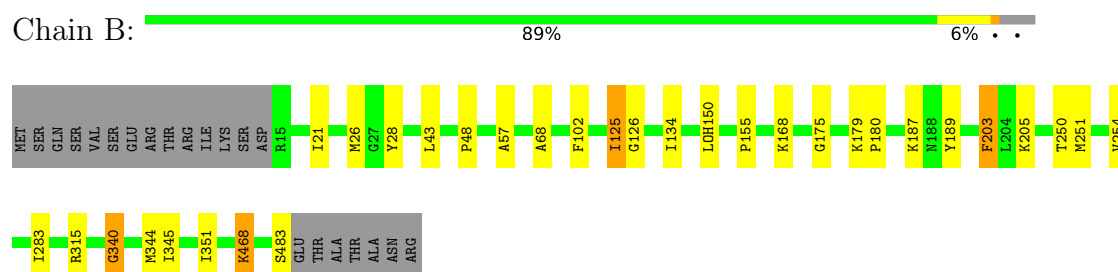
3 Residue-property plots [i](#)

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.

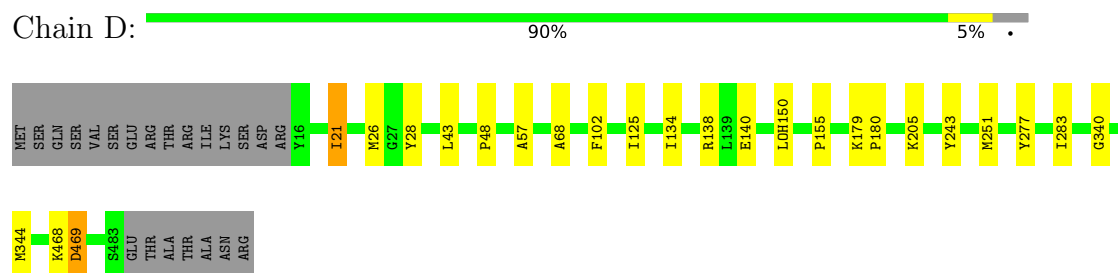
- Molecule 1: Rubisco large subunit



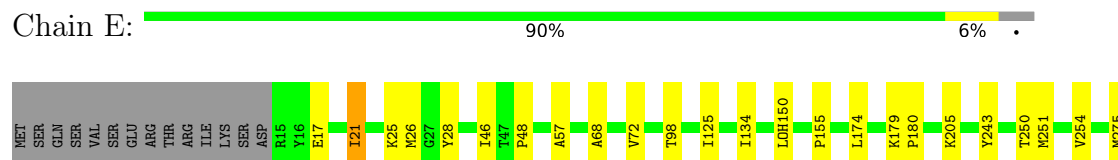
- Molecule 1: Rubisco large subunit



- Molecule 1: Rubisco large subunit



- Molecule 1: Rubisco large subunit





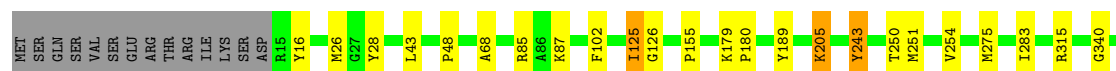
- Molecule 1: Rubisco large subunit

Chain F: 89% 6% .



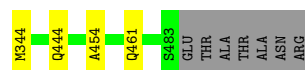
- Molecule 1: Rubisco large subunit

Chain G: 90% 5% . .



- Molecule 1: Rubisco large subunit

Chain H: 90% 6% .



- Molecule 2: Rubisco large subunit

Chain C: 89% 7% .



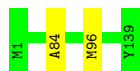
- Molecule 3: Rubisco small subunit

Chain I: 99% .



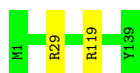
- Molecule 3: Rubisco small subunit

Chain J: 99%



- Molecule 3: Rubisco small subunit

Chain K: 99%



- Molecule 3: Rubisco small subunit

Chain L: 98%



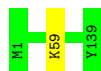
- Molecule 3: Rubisco small subunit

Chain M: 98%



- Molecule 3: Rubisco small subunit

Chain N: 99%



- Molecule 3: Rubisco small subunit

Chain O: 94% 6%



- Molecule 3: Rubisco small subunit

Chain P: 97%



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	118.17Å 219.11Å 220.23Å 90.00° 90.19° 90.00°	Depositor
Resolution (Å)	49.19 – 1.80 49.19 – 1.80	Depositor EDS
% Data completeness (in resolution range)	96.1 (49.19-1.80) 95.3 (49.19-1.80)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.01 (at 1.79Å)	Xtriage
Refinement program	REFMAC 5.8.0107	Depositor
R, R_{free}	0.167 , 0.192 0.177 , 0.200	Depositor DCC
R_{free} test set	24759 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	22.5	Xtriage
Anisotropy	0.466	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 24.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.449 for h,-k,-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	41512	wwPDB-VP
Average B, all atoms (Å ²)	28.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.14% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, KCX, CAP, M3L, SNC, HL2, EDO, HYP, CSO, LOH

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	0.80	0/3668	0.90	0/4966
1	B	0.83	0/3679	0.90	0/4980
1	D	0.78	0/3668	0.89	1/4966 (0.0%)
1	E	0.79	0/3679	0.89	0/4980
1	F	0.82	0/3679	0.90	1/4980 (0.0%)
1	G	0.81	0/3679	0.89	0/4980
1	H	0.78	0/3668	0.90	0/4966
2	C	0.82	0/3677	0.90	1/4981 (0.0%)
3	I	0.73	0/1149	0.86	1/1558 (0.1%)
3	J	0.74	0/1148	0.82	0/1558
3	K	0.73	0/1149	0.82	0/1558
3	L	0.74	0/1149	0.83	0/1558
3	M	0.75	0/1149	0.82	0/1558
3	N	0.72	0/1149	0.81	0/1558
3	O	0.75	0/1149	0.85	0/1558
3	P	0.74	0/1149	0.86	0/1558
All	All	0.79	0/38588	0.88	4/52263 (0.0%)

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	1
1	B	0	1
3	O	0	1
All	All	0	3

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	58	ILE	N-CA-C	-6.84	100.75	109.30
2	C	332	GLY	N-CA-C	5.82	117.47	111.95
1	F	443	ASN	N-CA-C	5.58	119.19	112.38
1	D	277	TYR	N-CA-C	5.43	117.20	111.28

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	203	PHE	Peptide
1	B	203	PHE	Peptide
3	O	57	ASP	Peptide

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	3664	0	3593	14	0
1	B	3675	0	3606	17	0
1	D	3664	0	3593	10	0
1	E	3675	0	3606	13	0
1	F	3675	0	3606	18	0
1	G	3675	0	3606	16	0
1	H	3664	0	3594	15	0
2	C	3663	0	3593	21	0
3	I	1118	0	1057	0	0
3	J	1117	0	1057	1	0
3	K	1118	0	1057	1	0
3	L	1118	0	1057	1	0
3	M	1118	0	1057	0	0
3	N	1118	0	1057	0	0
3	O	1118	0	1057	3	0
3	P	1118	0	1057	2	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
4	J	1	0	0	0	0
4	N	1	0	0	0	0
5	A	21	0	8	0	0
5	B	21	0	8	0	0
5	C	21	0	8	0	0
5	D	21	0	7	0	0
5	E	21	0	7	0	0
5	F	21	0	7	0	0
5	G	21	0	8	0	0
5	H	21	0	8	0	0
6	I	12	0	18	0	0
6	J	12	0	18	0	0
6	K	12	0	18	0	0
6	L	12	0	18	0	0
6	M	12	0	18	0	0
6	N	12	0	18	0	0
6	O	12	0	18	0	0
6	P	12	0	18	0	0
7	A	273	0	0	0	0
7	B	319	0	0	1	0
7	C	284	0	0	0	0
7	D	225	0	0	1	0
7	E	211	0	0	0	0
7	F	311	0	0	3	0
7	G	281	0	0	2	0
7	H	299	0	0	1	0
7	I	99	0	0	0	0
7	J	95	0	0	0	0
7	K	75	0	0	0	0
7	L	86	0	0	0	0
7	M	107	0	0	0	0
7	N	77	0	0	0	0
7	O	103	0	0	0	0
7	P	95	0	0	0	0
All	All	41512	0	37458	129	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.

The worst 5 of 129 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:E:57:ALA:HB1	1:E:134:ILE:HD11	1.55	0.88
1:G:26:MET:CE	7:G:797:HOH:O	2.25	0.82
1:F:21:ILE:HD11	7:F:605:HOH:O	1.79	0.81
1:H:23:TYR:HA	1:H:26:MET:HE3	1.74	0.69
1:E:21:ILE:O	1:E:26:MET:HE2	1.98	0.63

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	460/490 (94%)	447 (97%)	11 (2%)	2 (0%)	30	19
1	B	461/490 (94%)	447 (97%)	12 (3%)	2 (0%)	30	19
1	D	460/490 (94%)	445 (97%)	13 (3%)	2 (0%)	30	19
1	E	461/490 (94%)	445 (96%)	15 (3%)	1 (0%)	43	31
1	F	461/490 (94%)	446 (97%)	14 (3%)	1 (0%)	43	31
1	G	461/490 (94%)	447 (97%)	13 (3%)	1 (0%)	43	31
1	H	460/490 (94%)	447 (97%)	12 (3%)	1 (0%)	43	31
2	C	461/490 (94%)	446 (97%)	15 (3%)	0	100	100
3	I	137/139 (99%)	135 (98%)	1 (1%)	1 (1%)	18	8
3	J	137/139 (99%)	136 (99%)	1 (1%)	0	100	100
3	K	137/139 (99%)	135 (98%)	2 (2%)	0	100	100
3	L	137/139 (99%)	136 (99%)	1 (1%)	0	100	100
3	M	137/139 (99%)	134 (98%)	1 (1%)	2 (2%)	8	2
3	N	137/139 (99%)	135 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	O	137/139 (99%)	136 (99%)	1 (1%)	0	100	100
3	P	137/139 (99%)	135 (98%)	2 (2%)	0	100	100
All	All	4781/5032 (95%)	4652 (97%)	116 (2%)	13 (0%)	36	25

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	I	57	ASP
3	M	57	ASP
1	D	469	ASP
3	M	58	ILE
1	A	98	THR

5.3.2 Protein sidechains ⓘ

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	371/389 (95%)	362 (98%)	9 (2%)	43	31
1	B	372/389 (96%)	367 (99%)	5 (1%)	61	54
1	D	371/389 (95%)	368 (99%)	3 (1%)	73	70
1	E	372/389 (96%)	367 (99%)	5 (1%)	61	54
1	F	372/389 (96%)	367 (99%)	5 (1%)	61	54
1	G	372/389 (96%)	366 (98%)	6 (2%)	55	47
1	H	371/389 (95%)	366 (99%)	5 (1%)	61	54
2	C	372/390 (95%)	369 (99%)	3 (1%)	73	70
3	I	118/118 (100%)	118 (100%)	0	100	100
3	J	118/118 (100%)	118 (100%)	0	100	100
3	K	118/118 (100%)	117 (99%)	1 (1%)	73	70
3	L	118/118 (100%)	117 (99%)	1 (1%)	73	70
3	M	118/118 (100%)	117 (99%)	1 (1%)	73	70
3	N	118/118 (100%)	117 (99%)	1 (1%)	73	70

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	O	118/118 (100%)	117 (99%)	1 (1%)	73	70
3	P	118/118 (100%)	117 (99%)	1 (1%)	73	70
All	All	3917/4057 (96%)	3870 (99%)	47 (1%)	68	57

5 of 47 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	189	TYR
1	G	483	SER
1	F	243	TYR
1	G	125[B]	ILE
1	H	125[B]	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 26 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	395	HIS
1	F	211	ASN
1	H	461	GLN
1	F	167	ASN
1	G	127	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

63 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
2	LOH	C	150	2	9,10,11	0.56	0	6,12,14	1.21	1 (16%)
2	HYP	C	155	2	6,8,9	0.53	0	5,10,12	1.79	2 (40%)
1	HL2	F	174	1	7,8,9	0.81	0	7,10,12	0.37	0
1	M3L	A	346	1	10,11,12	0.60	0	9,14,16	0.61	0
1	HL2	D	174	1	7,8,9	0.62	0	7,10,12	0.63	0
1	SNC	F	457	1	4,7,8	0.93	0	1,7,9	1.12	0
1	HYP	A	48	1	6,8,9	0.61	0	5,10,12	1.63	1 (20%)
1	HYP	B	155	1	6,8,9	0.66	0	5,10,12	2.23	3 (60%)
1	LOH	E	150	1	9,10,11	0.31	0	6,12,14	1.19	1 (16%)
1	SNC	D	457	1	4,7,8	1.00	0	1,7,9	0.39	0
1	LOH	F	150	1	9,10,11	0.49	0	6,12,14	1.25	1 (16%)
1	HYP	H	48	1	6,8,9	0.63	0	5,10,12	1.54	2 (40%)
1	CSO	D	109	1	3,6,7	0.45	0	0,6,8	-	-
1	HYP	E	155	1	6,8,9	0.78	0	5,10,12	2.51	3 (60%)
1	M3L	D	346	1	10,11,12	0.67	0	9,14,16	0.46	0
1	SNC	A	457	1	4,7,8	0.88	0	1,7,9	0.22	0
1	CSO	E	109	1	3,6,7	0.61	0	0,6,8	-	-
1	LOH	G	150	1	9,10,11	0.72	0	6,12,14	0.88	0
1	HYP	F	155	1	6,8,9	0.82	0	5,10,12	1.30	1 (20%)
1	HYP	G	155	1	6,8,9	0.83	0	5,10,12	1.95	2 (40%)
1	HL2	A	174	1	7,8,9	0.74	0	7,10,12	0.56	0
1	KCX	G	205	1,4	9,11,12	2.05	2 (22%)	5,12,14	2.44	1 (20%)
1	KCX	E	205	1,4	9,11,12	2.22	1 (11%)	5,12,14	2.08	1 (20%)
1	CSO	G	109	1	3,6,7	0.70	0	0,6,8	-	-
1	KCX	F	205	1,4	9,11,12	0.67	0	5,12,14	1.05	1 (20%)
1	LOH	A	150	1	9,10,11	0.69	0	6,12,14	1.37	1 (16%)
1	HL2	H	174	1	7,8,9	0.54	0	7,10,12	0.64	0
1	HYP	B	48	1	6,8,9	0.59	0	5,10,12	1.61	2 (40%)
1	KCX	B	205	1,4	9,11,12	2.30	1 (11%)	5,12,14	2.35	2 (40%)
1	SNC	H	457	1	4,7,8	0.85	0	1,7,9	0.18	0
1	HYP	A	155	1	6,8,9	0.44	0	5,10,12	1.93	2 (40%)
1	HYP	E	48	1	6,8,9	0.72	0	5,10,12	1.92	2 (40%)
1	SNC	B	457	1	4,7,8	0.77	0	1,7,9	0.52	0
1	SNC	G	457	1	4,7,8	1.20	1 (25%)	1,7,9	0.54	0
1	HYP	F	48	1	6,8,9	0.70	0	5,10,12	1.47	1 (20%)
1	LOH	D	150	1	9,10,11	0.39	0	6,12,14	1.03	1 (16%)
1	HYP	D	155	1	6,8,9	1.17	1 (16%)	5,10,12	1.93	2 (40%)
1	HYP	G	48	1	6,8,9	0.50	0	5,10,12	1.74	2 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	HYP	H	155	1	6,8,9	0.73	0	5,10,12	0.90	0
1	CSO	B	109	1	3,6,7	0.61	0	0,6,8	-	-
1	HL2	G	174	1	7,8,9	0.70	0	7,10,12	0.65	0
1	KCX	D	205	1,4	9,11,12	0.69	0	5,12,14	1.13	1 (20%)
2	HL2	C	174	2	7,8,9	0.65	0	7,10,12	0.82	0
1	M3L	H	346	1	10,11,12	0.55	0	9,14,16	0.72	0
2	KCX	C	205	2,4	9,11,12	0.96	0	5,12,14	1.01	0
1	CSO	F	109	1	3,6,7	0.45	0	0,6,8	-	-
1	KCX	A	205	1,4	9,11,12	0.86	0	5,12,14	0.77	0
2	SNC	C	457	2	4,7,8	1.07	0	1,7,9	0.66	0
1	LOH	H	150	1	9,10,11	0.76	0	6,12,14	1.31	1 (16%)
2	M3L	C	346	2	10,11,12	0.57	0	9,14,16	0.78	0
2	CSO	C	109	2	3,6,7	0.67	0	0,6,8	-	-
1	KCX	H	205	1,4	9,11,12	2.23	1 (11%)	5,12,14	1.62	1 (20%)
1	LOH	B	150	1	9,10,11	0.93	0	6,12,14	1.38	2 (33%)
1	M3L	E	346	1	10,11,12	0.64	0	9,14,16	0.60	0
1	M3L	G	346	1	10,11,12	0.78	0	9,14,16	0.52	0
1	HL2	E	174	1	7,8,9	0.70	0	7,10,12	0.86	0
1	CSO	A	109	1	3,6,7	0.99	0	0,6,8	-	-
1	M3L	B	346	1	10,11,12	0.83	0	9,14,16	0.60	0
1	CSO	H	109	1	3,6,7	0.90	0	0,6,8	-	-
1	HL2	B	174	1	7,8,9	0.61	0	7,10,12	0.59	0
1	M3L	F	346	1	10,11,12	0.46	0	9,14,16	0.65	0
1	HYP	D	48	1	6,8,9	0.55	0	5,10,12	1.16	1 (20%)
1	SNC	E	457	1	4,7,8	0.98	0	1,7,9	0.71	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	LOH	C	150	2	-	0/12/13/15	-
2	HYP	C	155	2	-	0/0/11/13	0/1/1/1
1	HL2	F	174	1	-	1/9/10/12	-
1	M3L	A	346	1	-	1/9/10/12	-
1	HL2	D	174	1	-	1/9/10/12	-
1	SNC	F	457	1	-	0/0/6/8	-
1	HYP	A	48	1	-	0/0/11/13	0/1/1/1
1	HYP	B	155	1	-	0/0/11/13	0/1/1/1
1	LOH	E	150	1	-	0/12/13/15	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	SNC	D	457	1	-	0/0/6/8	-
1	LOH	F	150	1	-	0/12/13/15	-
1	HYP	H	48	1	-	0/0/11/13	0/1/1/1
1	CSO	D	109	1	-	0/1/5/7	-
1	HYP	E	155	1	-	0/0/11/13	0/1/1/1
1	M3L	D	346	1	-	1/9/10/12	-
1	SNC	A	457	1	-	0/0/6/8	-
1	CSO	E	109	1	-	0/1/5/7	-
1	LOH	G	150	1	-	1/12/13/15	-
1	HYP	F	155	1	-	0/0/11/13	0/1/1/1
1	HYP	G	155	1	-	0/0/11/13	0/1/1/1
1	HL2	A	174	1	-	2/9/10/12	-
1	KCX	G	205	1,4	-	0/9/10/12	-
1	KCX	E	205	1,4	-	0/9/10/12	-
1	CSO	G	109	1	-	0/1/5/7	-
1	KCX	F	205	1,4	-	0/9/10/12	-
1	LOH	A	150	1	-	0/12/13/15	-
1	HL2	H	174	1	-	2/9/10/12	-
1	HYP	B	48	1	-	0/0/11/13	0/1/1/1
1	KCX	B	205	1,4	-	0/9/10/12	-
1	SNC	H	457	1	-	0/0/6/8	-
1	HYP	A	155	1	-	0/0/11/13	0/1/1/1
1	HYP	E	48	1	-	0/0/11/13	0/1/1/1
1	SNC	B	457	1	-	0/0/6/8	-
1	SNC	G	457	1	-	0/0/6/8	-
1	HYP	F	48	1	-	0/0/11/13	0/1/1/1
1	LOH	D	150	1	-	0/12/13/15	-
1	HYP	D	155	1	-	0/0/11/13	0/1/1/1
1	HYP	G	48	1	-	0/0/11/13	0/1/1/1
1	HYP	H	155	1	-	0/0/11/13	0/1/1/1
1	CSO	B	109	1	-	0/1/5/7	-
1	HL2	G	174	1	-	1/9/10/12	-
1	KCX	D	205	1,4	-	0/9/10/12	-
2	HL2	C	174	2	-	1/9/10/12	-
1	M3L	H	346	1	-	1/9/10/12	-
2	KCX	C	205	2,4	-	0/9/10/12	-
1	CSO	F	109	1	-	0/1/5/7	-
1	KCX	A	205	1,4	-	0/9/10/12	-
2	SNC	C	457	2	-	0/0/6/8	-
1	LOH	H	150	1	-	0/12/13/15	-
2	M3L	C	346	2	-	1/9/10/12	-
2	CSO	C	109	2	-	0/1/5/7	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	KCX	H	205	1,4	-	0/9/10/12	-
1	LOH	B	150	1	-	1/12/13/15	-
1	M3L	E	346	1	-	1/9/10/12	-
1	M3L	G	346	1	-	1/9/10/12	-
1	HL2	E	174	1	-	1/9/10/12	-
1	CSO	A	109	1	-	0/1/5/7	-
1	M3L	B	346	1	-	1/9/10/12	-
1	CSO	H	109	1	-	0/1/5/7	-
1	HL2	B	174	1	-	1/9/10/12	-
1	M3L	F	346	1	-	4/9/10/12	-
1	HYP	D	48	1	-	0/0/11/13	0/1/1/1
1	SNC	E	457	1	-	0/0/6/8	-

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	205	KCX	OQ1-CX	6.54	1.33	1.21
1	E	205	KCX	OQ1-CX	6.41	1.33	1.21
1	H	205	KCX	OQ1-CX	6.28	1.33	1.21
1	G	205	KCX	OQ1-CX	5.40	1.31	1.21
1	D	155	HYP	CB-CA	-2.54	1.48	1.54

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	205	KCX	OQ1-CX-NZ	-5.43	116.53	124.96
1	E	205	KCX	OQ1-CX-NZ	-4.59	117.84	124.96
1	B	205	KCX	OQ1-CX-NZ	-4.52	117.95	124.96
1	H	205	KCX	OQ1-CX-NZ	-3.54	119.46	124.96
1	E	155	HYP	CB-CG-CD	3.42	107.46	103.27

There are no chirality outliers.

5 of 23 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	174	HL2	O-C-CA-CB
1	B	174	HL2	O-C-CA-CB
1	D	174	HL2	O-C-CA-CB
1	E	174	HL2	O-C-CA-CB
1	F	174	HL2	O-C-CA-CB

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	G	205	KCX	1	0
2	C	205	KCX	1	0
1	E	174	HL2	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 42 ligands modelled in this entry, 10 are monoatomic - leaving 32 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	EDO	J	203	-	3,3,3	0.41	0	2,2,2	0.21	0
6	EDO	N	203	-	3,3,3	0.40	0	2,2,2	0.71	0
6	EDO	I	201	-	3,3,3	0.51	0	2,2,2	0.03	0
6	EDO	K	203	-	3,3,3	0.44	0	2,2,2	0.50	0
6	EDO	L	201	-	3,3,3	0.56	0	2,2,2	0.19	0
5	CAP	C	502	4	17,20,20	0.92	0	22,31,31	1.00	1 (4%)
5	CAP	E	502	4	17,20,20	0.83	0	22,31,31	1.32	3 (13%)
5	CAP	A	502	4	17,20,20	0.77	0	22,31,31	1.13	3 (13%)
5	CAP	H	502	4	17,20,20	0.76	0	22,31,31	1.23	3 (13%)
5	CAP	G	502	4	17,20,20	0.83	0	22,31,31	0.94	1 (4%)
6	EDO	I	202	-	3,3,3	0.39	0	2,2,2	0.51	0
6	EDO	M	202	-	3,3,3	0.44	0	2,2,2	0.38	0
6	EDO	I	203	-	3,3,3	0.54	0	2,2,2	0.29	0
5	CAP	D	502	4	17,20,20	0.83	0	22,31,31	1.25	3 (13%)
6	EDO	L	203	-	3,3,3	0.50	0	2,2,2	0.28	0
6	EDO	M	203	-	3,3,3	0.59	0	2,2,2	0.27	0
6	EDO	O	202	-	3,3,3	0.44	0	2,2,2	0.56	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	CAP	B	502	4	17,20,20	0.85	0	22,31,31	1.12	1 (4%)
6	EDO	P	202	-	3,3,3	0.29	0	2,2,2	0.58	0
6	EDO	P	201	-	3,3,3	0.52	0	2,2,2	0.32	0
6	EDO	N	204	-	3,3,3	0.45	0	2,2,2	0.37	0
6	EDO	L	202	-	3,3,3	0.46	0	2,2,2	0.53	0
6	EDO	P	203	-	3,3,3	0.53	0	2,2,2	0.34	0
6	EDO	K	201	-	3,3,3	0.49	0	2,2,2	0.08	0
6	EDO	O	201	-	3,3,3	0.54	0	2,2,2	0.05	0
6	EDO	M	201	-	3,3,3	0.46	0	2,2,2	0.10	0
6	EDO	J	204	-	3,3,3	0.57	0	2,2,2	0.39	0
6	EDO	O	203	-	3,3,3	0.58	0	2,2,2	0.36	0
6	EDO	J	202	-	3,3,3	0.46	0	2,2,2	0.12	0
6	EDO	K	202	-	3,3,3	0.44	0	2,2,2	0.69	0
6	EDO	N	202	-	3,3,3	0.60	0	2,2,2	0.14	0
5	CAP	F	502	4	17,20,20	0.89	0	22,31,31	0.89	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
6	EDO	J	203	-	-	0/1/1/1	-
6	EDO	N	203	-	-	0/1/1/1	-
6	EDO	I	201	-	-	0/1/1/1	-
6	EDO	K	203	-	-	0/1/1/1	-
6	EDO	L	201	-	-	0/1/1/1	-
5	CAP	C	502	4	-	8/29/29/29	-
5	CAP	E	502	4	-	8/29/29/29	-
5	CAP	A	502	4	-	7/29/29/29	-
5	CAP	H	502	4	-	7/29/29/29	-
5	CAP	G	502	4	-	9/29/29/29	-
6	EDO	I	202	-	-	0/1/1/1	-
6	EDO	M	202	-	-	0/1/1/1	-
6	EDO	I	203	-	-	0/1/1/1	-
5	CAP	D	502	4	-	8/29/29/29	-
6	EDO	L	203	-	-	0/1/1/1	-
6	EDO	M	203	-	-	0/1/1/1	-
6	EDO	O	202	-	-	0/1/1/1	-
5	CAP	B	502	4	-	7/29/29/29	-
6	EDO	P	202	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	EDO	P	201	-	-	0/1/1/1	-
6	EDO	N	204	-	-	0/1/1/1	-
6	EDO	L	202	-	-	0/1/1/1	-
6	EDO	P	203	-	-	0/1/1/1	-
6	EDO	K	201	-	-	1/1/1/1	-
6	EDO	O	201	-	-	0/1/1/1	-
6	EDO	M	201	-	-	0/1/1/1	-
6	EDO	J	204	-	-	0/1/1/1	-
6	EDO	O	203	-	-	0/1/1/1	-
6	EDO	J	202	-	-	0/1/1/1	-
6	EDO	K	202	-	-	0/1/1/1	-
6	EDO	N	202	-	-	0/1/1/1	-
5	CAP	F	502	4	-	9/29/29/29	-

There are no bond length outliers.

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	502	CAP	O2P-P1-O1	-2.94	98.91	106.73
5	B	502	CAP	O6P-P2-O5P	2.75	118.16	107.64
5	E	502	CAP	O3P-P1-O2P	2.66	117.79	107.64
5	C	502	CAP	O6P-P2-O5P	2.57	117.47	107.64
5	D	502	CAP	O3P-P1-O2P	2.54	117.36	107.64

There are no chirality outliers.

5 of 64 torsion outliers are listed below:

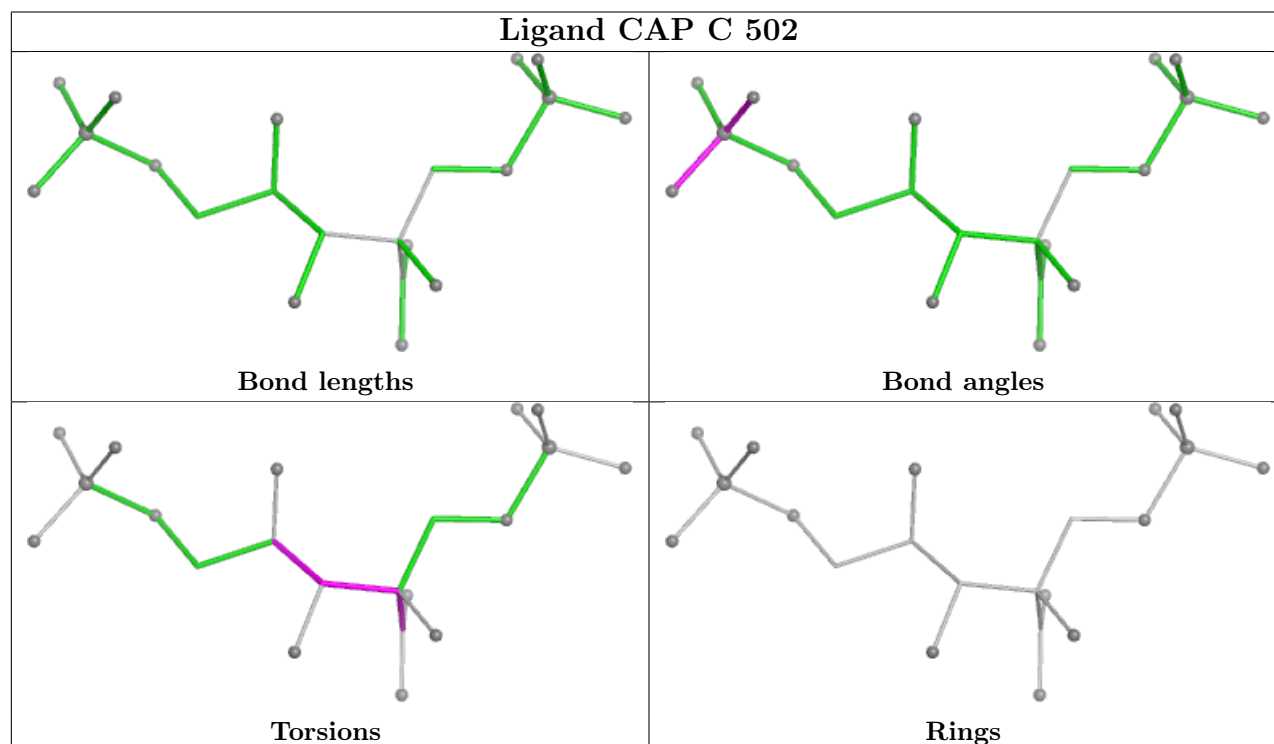
Mol	Chain	Res	Type	Atoms
5	A	502	CAP	O6-C-C2-C1
5	A	502	CAP	O7-C-C2-C1
5	A	502	CAP	O6-C-C2-O2
5	A	502	CAP	O7-C-C2-O2
5	A	502	CAP	C2-C3-C4-O4

There are no ring outliers.

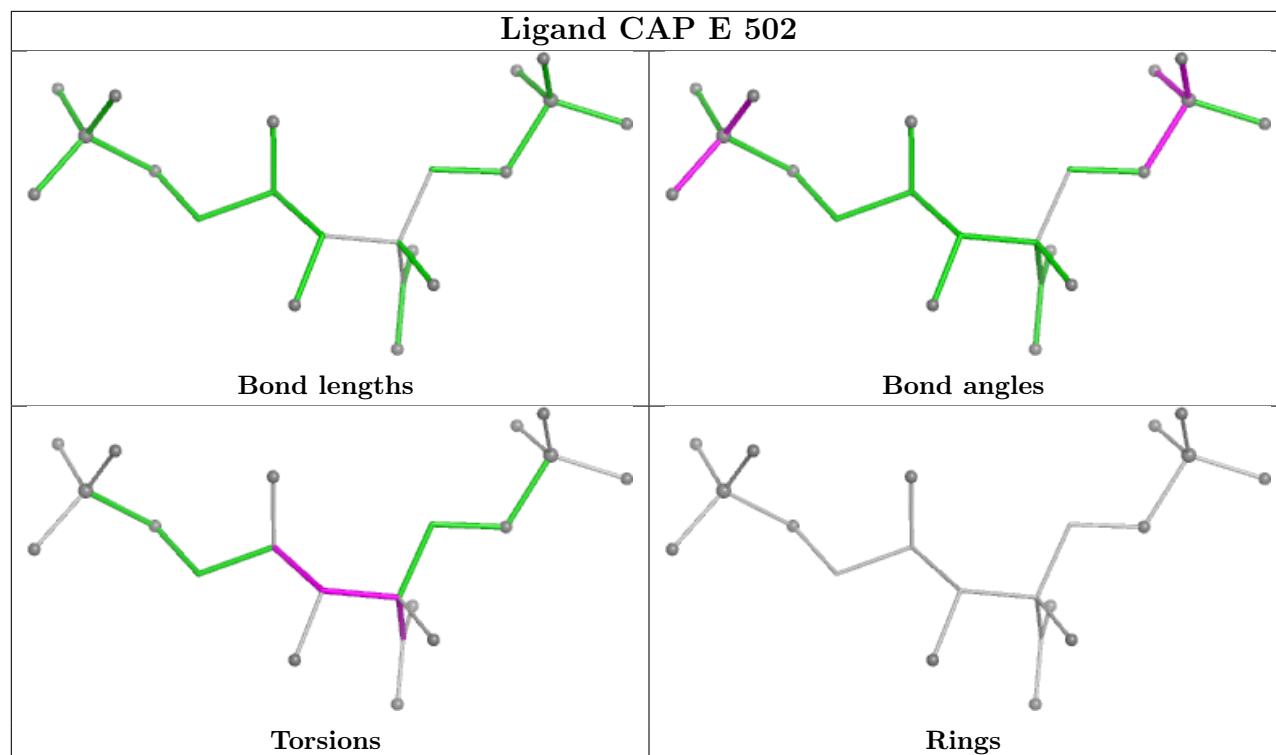
No monomer is involved in short contacts.

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

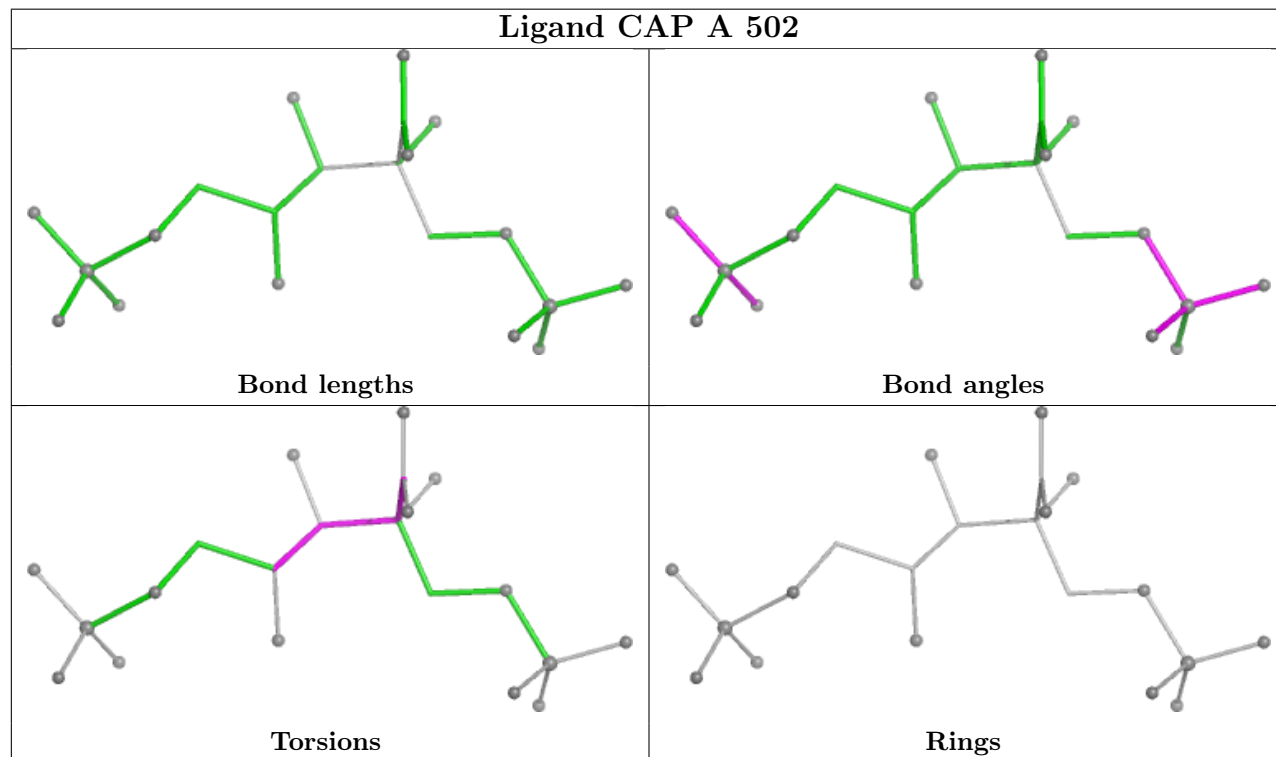
within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question 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.

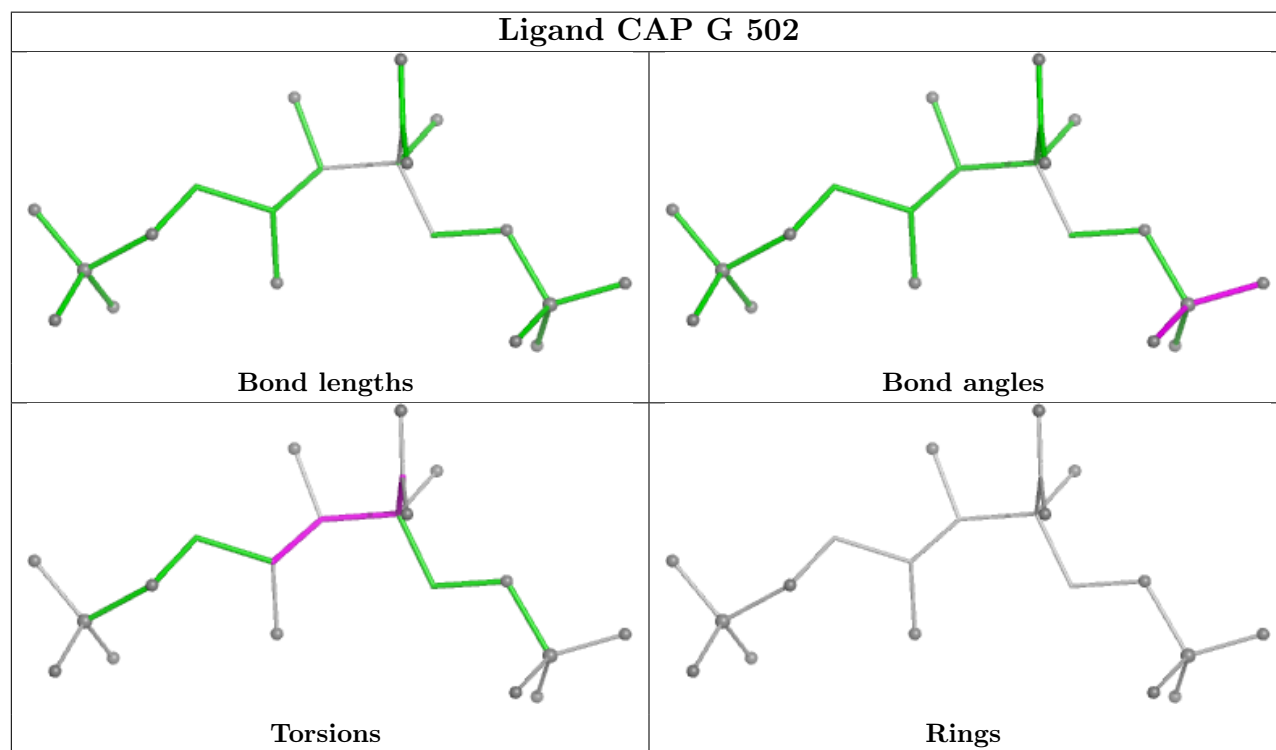
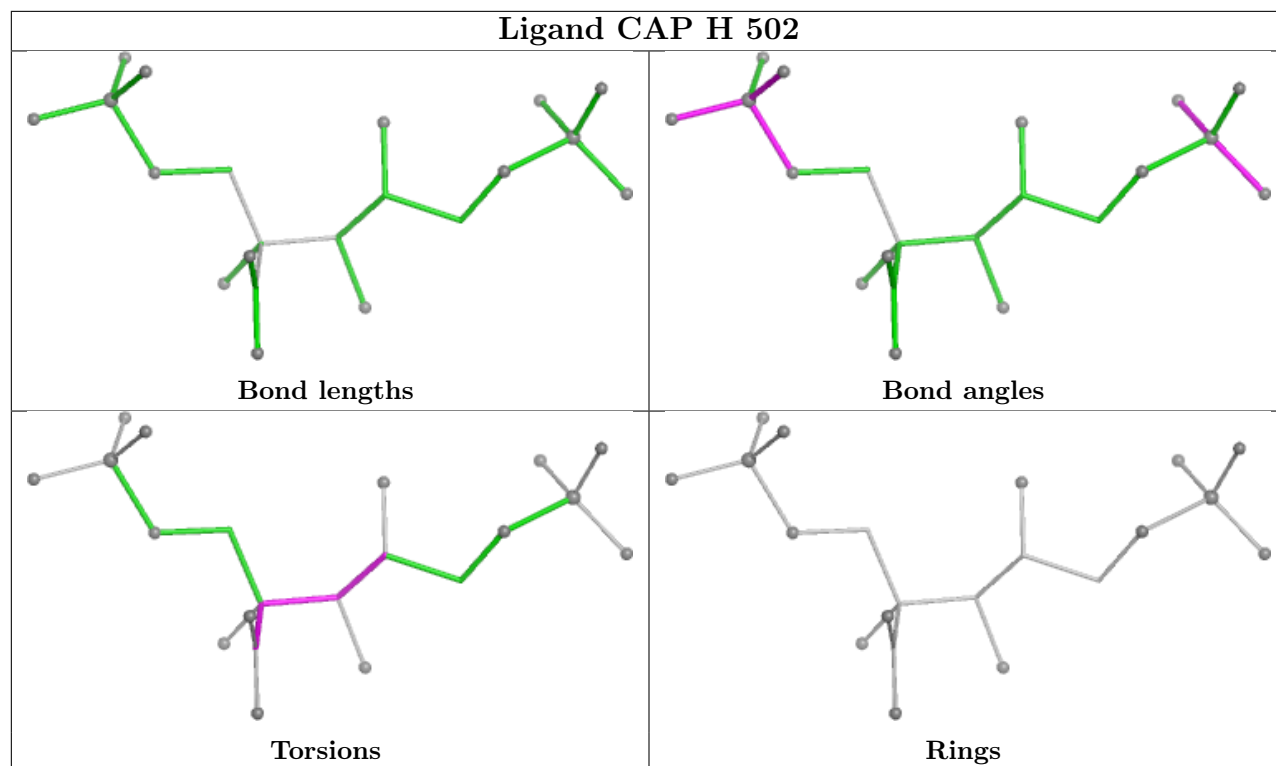


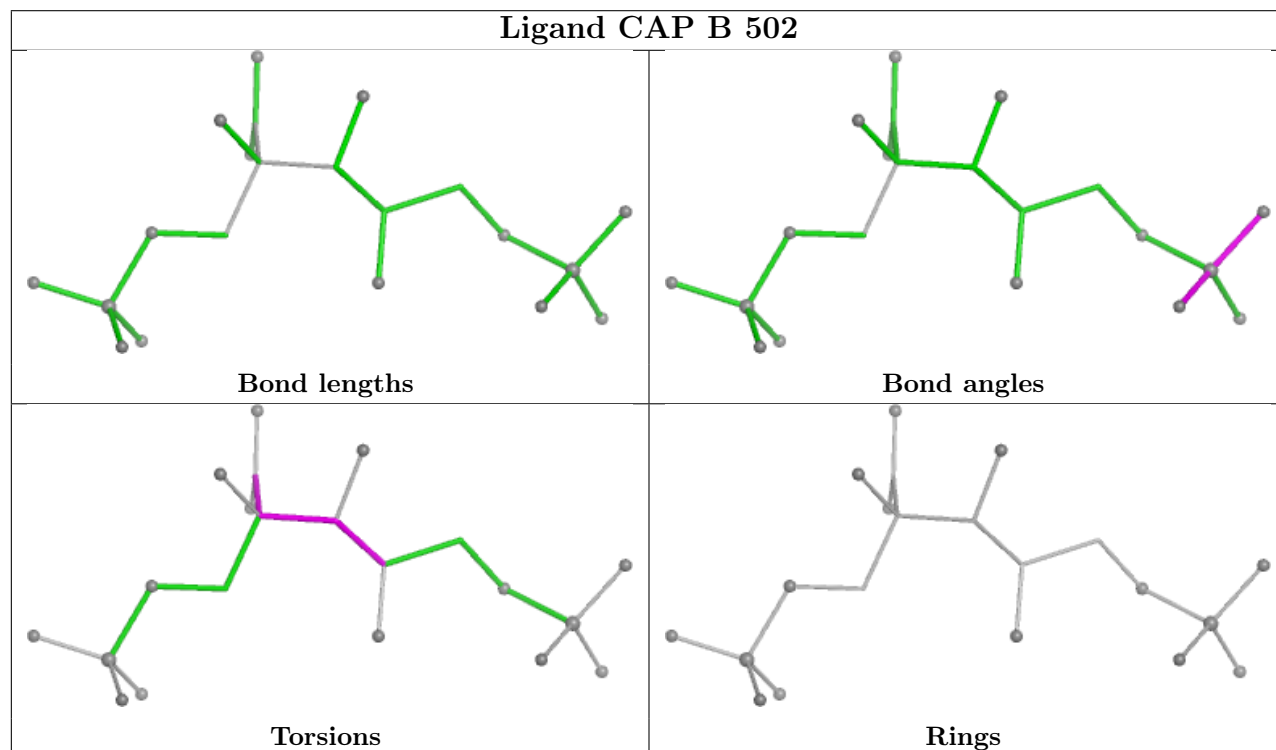
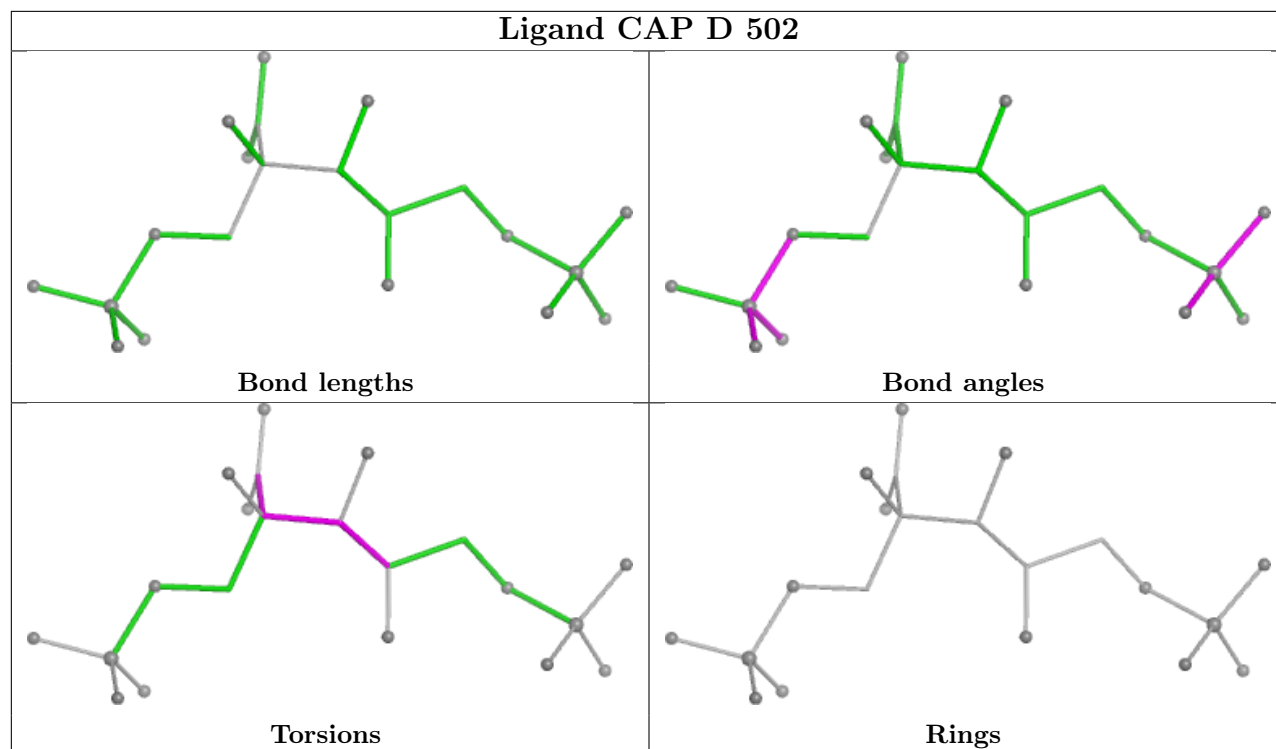
Ligand CAP E 502

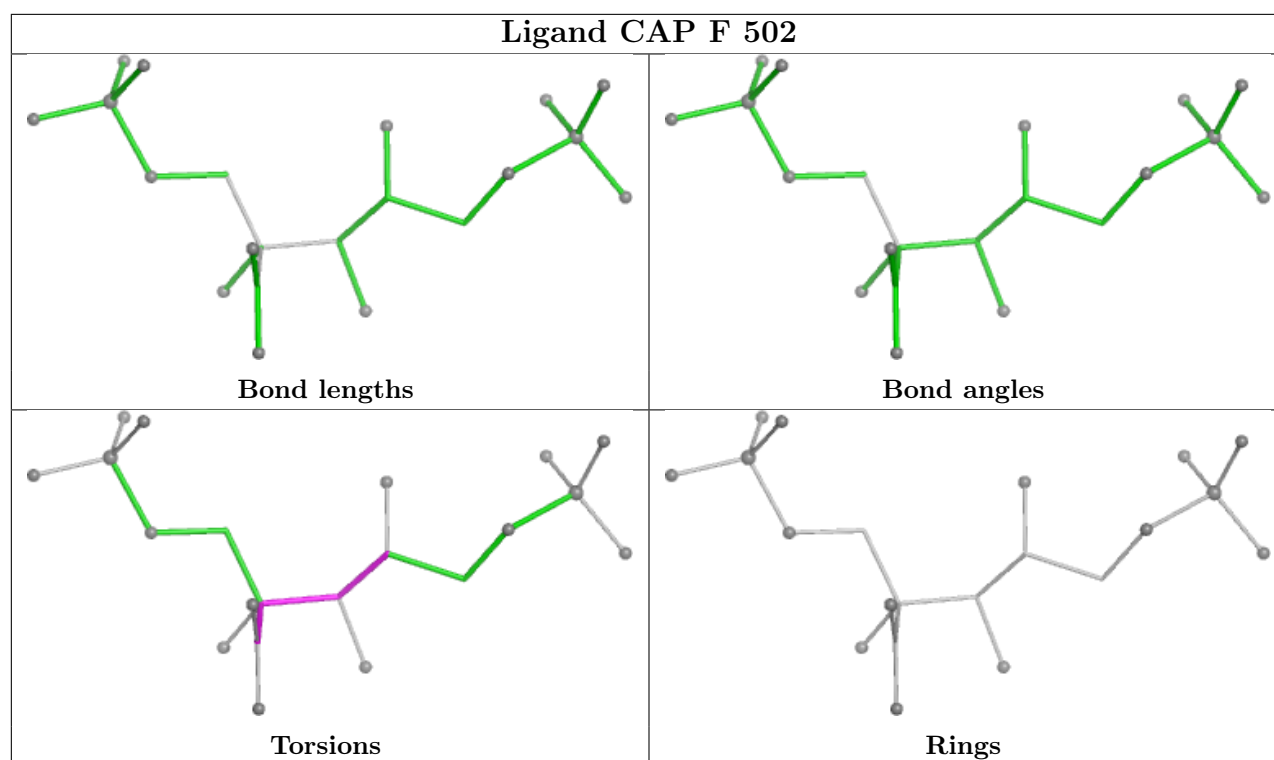


Ligand CAP A 502









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	460/490 (93%)	-1.44	0 100 100	11, 23, 42, 59	2 (0%)
1	B	461/490 (94%)	-1.44	0 100 100	12, 22, 35, 62	2 (0%)
1	D	460/490 (93%)	-1.26	0 100 100	17, 31, 50, 65	2 (0%)
1	E	461/490 (94%)	-1.26	0 100 100	17, 30, 49, 66	2 (0%)
1	F	461/490 (94%)	-1.43	0 100 100	10, 23, 39, 66	2 (0%)
1	G	461/490 (94%)	-1.43	0 100 100	10, 23, 40, 54	2 (0%)
1	H	460/490 (93%)	-1.38	0 100 100	12, 25, 43, 57	2 (0%)
2	C	461/490 (94%)	-1.45	0 100 100	11, 22, 35, 56	2 (0%)
3	I	139/139 (100%)	-1.34	0 100 100	15, 28, 42, 62	0
3	J	139/139 (100%)	-1.35	0 100 100	16, 30, 46, 72	0
3	K	139/139 (100%)	-1.26	0 100 100	19, 35, 50, 59	0
3	L	139/139 (100%)	-1.36	0 100 100	19, 32, 46, 58	0
3	M	139/139 (100%)	-1.35	0 100 100	17, 31, 45, 59	0
3	N	139/139 (100%)	-1.28	0 100 100	16, 34, 51, 66	0
3	O	139/139 (100%)	-1.33	0 100 100	19, 31, 49, 78	0
3	P	139/139 (100%)	-1.37	0 100 100	18, 29, 42, 57	0
All	All	4797/5032 (95%)	-1.37	0 100 100	10, 26, 45, 78	16 (0%)

There are no RSRZ outliers to report.

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

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
1	HYP	A	48	8/9	0.98	0.04	29,30,30,31	0
1	HYP	E	48	8/9	0.98	0.05	42,43,43,44	0
1	HYP	H	48	8/9	0.98	0.04	31,32,32,33	0
1	HYP	B	48	8/9	0.99	0.03	26,27,27,27	0
1	HYP	F	48	8/9	0.99	0.04	23,23,24,24	0
1	HYP	G	48	8/9	0.99	0.03	23,24,24,24	0
1	HYP	D	48	8/9	0.99	0.04	43,43,44,45	0
1	LOH	A	150	11/12	0.99	0.02	14,15,16,16	0
1	LOH	B	150	11/12	0.99	0.03	19,20,22,22	0
1	LOH	D	150	11/12	0.99	0.03	20,20,22,23	0
1	LOH	E	150	11/12	0.99	0.03	21,22,23,23	0
1	LOH	F	150	11/12	0.99	0.02	15,16,18,18	0
1	LOH	G	150	11/12	0.99	0.02	16,17,18,18	0
1	LOH	H	150	11/12	0.99	0.03	16,16,17,17	0
1	HYP	A	155	8/9	0.99	0.02	16,16,16,16	0
1	HYP	D	155	8/9	0.99	0.03	21,22,22,22	0
1	HYP	E	155	8/9	0.99	0.03	21,22,23,23	0
1	HYP	F	155	8/9	0.99	0.02	17,17,17,18	0
1	HL2	B	174	9/10	0.99	0.02	19,20,21,22	0
1	HL2	E	174	9/10	0.99	0.03	26,28,29,29	0
1	HL2	F	174	9/10	0.99	0.03	22,23,24,25	0
1	HL2	G	174	9/10	0.99	0.03	23,24,25,26	0
1	HL2	H	174	9/10	0.99	0.03	22,23,24,25	0
1	KCX	B	205	12/13	0.99	0.03	16,17,17,17	0
1	KCX	D	205	12/13	0.99	0.03	25,26,28,29	0
1	KCX	E	205	12/13	0.99	0.03	24,25,26,27	0
1	KCX	F	205	12/13	0.99	0.03	19,19,20,21	0
1	KCX	G	205	12/13	0.99	0.03	19,20,20,20	0
1	M3L	B	346	12/13	0.99	0.03	22,25,28,28	0
1	M3L	D	346	12/13	0.99	0.04	33,40,46,46	0
1	M3L	E	346	12/13	0.99	0.04	34,37,41,41	0
1	M3L	F	346	12/13	0.99	0.03	22,27,32,33	0
1	M3L	G	346	12/13	0.99	0.03	23,27,31,31	0
1	M3L	H	346	12/13	0.99	0.03	24,28,32,32	0
1	SNC	A	457	8/9	0.99	0.03	36,38,39,41	0
1	SNC	B	457	8/9	0.99	0.03	28,28,29,30	0
1	SNC	D	457	8/9	0.99	0.04	40,42,43,46	0
1	SNC	E	457	8/9	0.99	0.04	38,40,40,42	0
1	SNC	F	457	8/9	0.99	0.03	36,39,41,43	0
1	SNC	G	457	8/9	0.99	0.03	39,40,41,43	0
1	SNC	H	457	8/9	0.99	0.04	37,39,40,41	0
2	HYP	C	155	8/9	0.99	0.03	17,18,18,19	0
2	HL2	C	174	9/10	0.99	0.02	18,20,21,21	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	KCX	C	205	12/13	0.99	0.02	16,16,16,16	0
2	M3L	C	346	12/13	0.99	0.03	21,25,30,31	0
2	SNC	C	457	8/9	0.99	0.03	28,29,29,30	0
1	CSO	G	109	7/8	1.00	0.02	17,18,19,19	0
1	CSO	H	109	7/8	1.00	0.02	19,20,20,21	0
1	CSO	A	109	7/8	1.00	0.02	18,20,21,24	0
1	HYP	B	155	8/9	1.00	0.02	17,18,18,18	0
1	KCX	A	205	12/13	1.00	0.02	18,19,21,21	0
1	CSO	B	109	7/8	1.00	0.03	22,23,24,24	0
1	CSO	D	109	7/8	1.00	0.02	24,26,27,29	0
1	CSO	E	109	7/8	1.00	0.03	25,26,26,27	0
1	HYP	G	155	8/9	1.00	0.02	16,17,17,17	0
1	HYP	H	155	8/9	1.00	0.02	16,16,17,17	0
2	CSO	C	109	7/8	1.00	0.02	22,23,25,25	0
2	LOH	C	150	11/12	1.00	0.02	19,20,22,22	0
1	KCX	H	205	12/13	1.00	0.02	20,20,21,21	0
1	M3L	A	346	12/13	1.00	0.03	23,29,34,35	0
1	HL2	A	174	9/10	1.00	0.02	20,21,23,24	0
1	CSO	F	109	7/8	1.00	0.02	17,18,19,21	0
1	HL2	D	174	9/10	1.00	0.03	26,28,30,30	0

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
5	CAP	D	502	21/21	0.99	0.03	22,28,28,29	0
5	CAP	E	502	21/21	0.99	0.03	23,28,30,31	0
6	EDO	I	203	4/4	0.99	0.02	19,19,19,19	0
6	EDO	J	203	4/4	0.99	0.04	26,27,28,28	0
6	EDO	K	202	4/4	0.99	0.03	26,26,27,28	0
6	EDO	L	202	4/4	0.99	0.03	21,22,23,25	0
6	EDO	L	203	4/4	0.99	0.03	18,19,19,20	0
6	EDO	M	203	4/4	0.99	0.03	18,19,19,19	0

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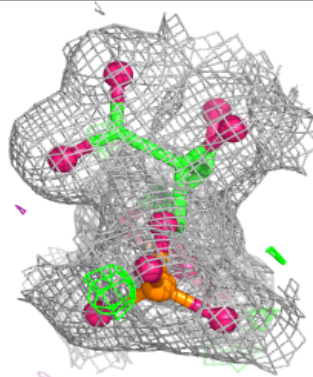
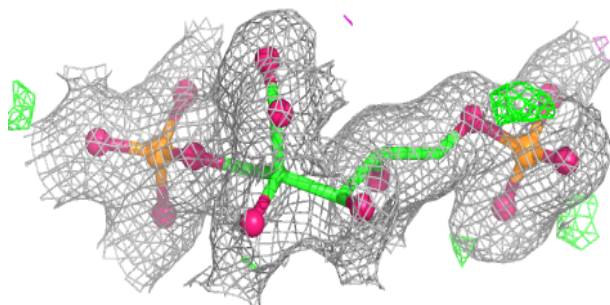
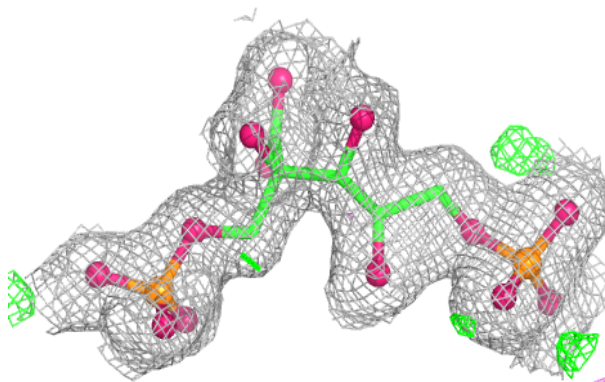
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	EDO	N	203	4/4	0.99	0.03	26,26,27,27	0
6	EDO	O	202	4/4	0.99	0.04	24,25,27,28	0
6	EDO	O	203	4/4	0.99	0.02	18,20,21,22	0
6	EDO	P	201	4/4	0.99	0.03	17,17,18,18	0
6	EDO	P	203	4/4	0.99	0.03	20,20,20,20	0
4	MG	A	501	1/1	1.00	0.01	21,21,21,21	0
4	MG	B	501	1/1	1.00	0.01	16,16,16,16	0
5	CAP	F	502	21/21	1.00	0.02	19,22,24,25	0
5	CAP	G	502	21/21	1.00	0.02	19,21,22,22	0
5	CAP	H	502	21/21	1.00	0.03	21,24,25,25	0
6	EDO	I	201	4/4	1.00	0.03	18,18,18,19	0
6	EDO	I	202	4/4	1.00	0.02	24,25,27,27	0
4	MG	C	501	1/1	1.00	0.02	17,17,17,17	0
6	EDO	J	202	4/4	1.00	0.02	17,17,18,18	0
4	MG	D	501	1/1	1.00	0.03	27,27,27,27	0
6	EDO	J	204	4/4	1.00	0.02	19,20,21,21	0
6	EDO	K	201	4/4	1.00	0.02	16,17,17,18	0
4	MG	E	501	1/1	1.00	0.03	28,28,28,28	0
6	EDO	K	203	4/4	1.00	0.02	19,19,19,19	0
6	EDO	L	201	4/4	1.00	0.02	21,21,22,22	0
4	MG	F	501	1/1	1.00	0.01	21,21,21,21	0
4	MG	G	501	1/1	1.00	0.01	21,21,21,21	0
6	EDO	M	201	4/4	1.00	0.02	17,17,18,19	0
6	EDO	M	202	4/4	1.00	0.03	25,25,26,26	0
4	MG	H	501	1/1	1.00	0.02	22,22,22,22	0
6	EDO	N	202	4/4	1.00	0.02	17,19,19,19	0
4	MG	J	201	1/1	1.00	0.03	21,21,21,21	0
6	EDO	N	204	4/4	1.00	0.02	18,18,19,19	0
6	EDO	O	201	4/4	1.00	0.02	20,20,21,21	0
4	MG	N	201	1/1	1.00	0.04	23,23,23,23	0
5	CAP	A	502	21/21	1.00	0.02	19,23,24,25	0
5	CAP	B	502	21/21	1.00	0.02	17,18,19,20	0
6	EDO	P	202	4/4	1.00	0.02	24,25,25,27	0
5	CAP	C	502	21/21	1.00	0.02	16,18,19,21	0

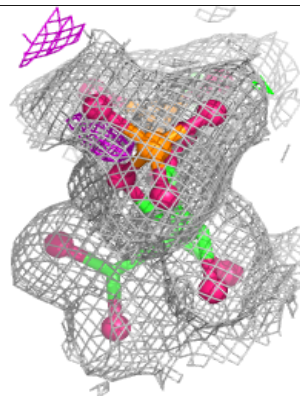
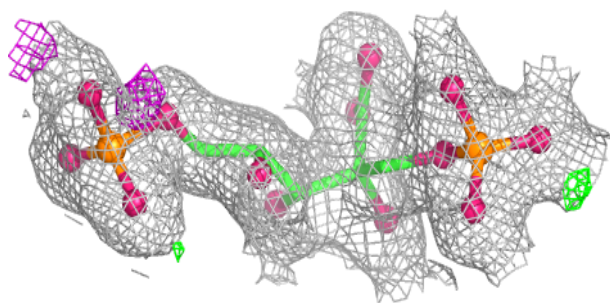
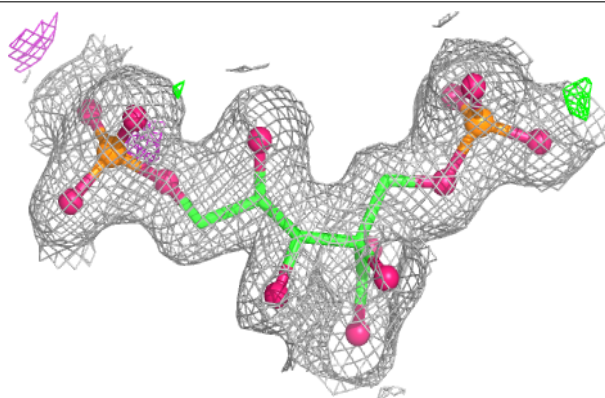
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around CAP D 502:

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

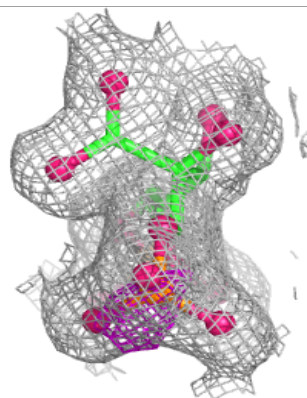
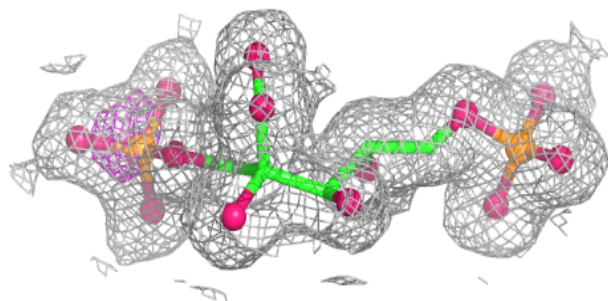
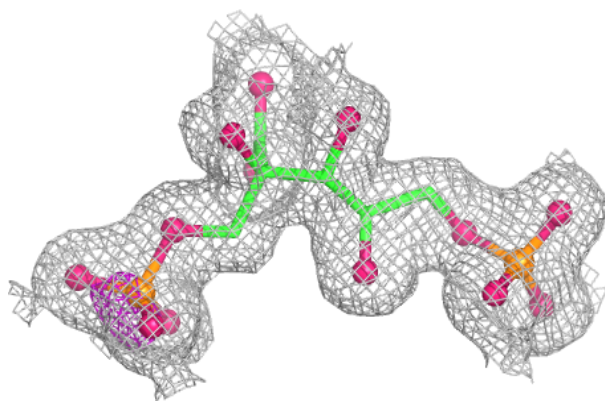
**Electron density around CAP E 502:**

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

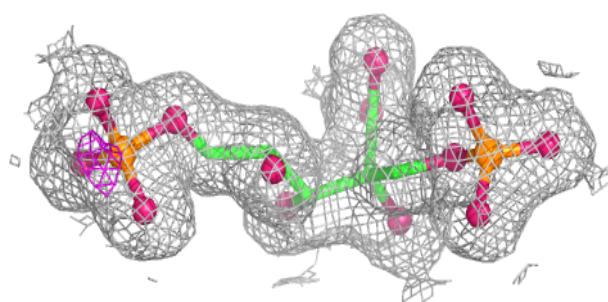
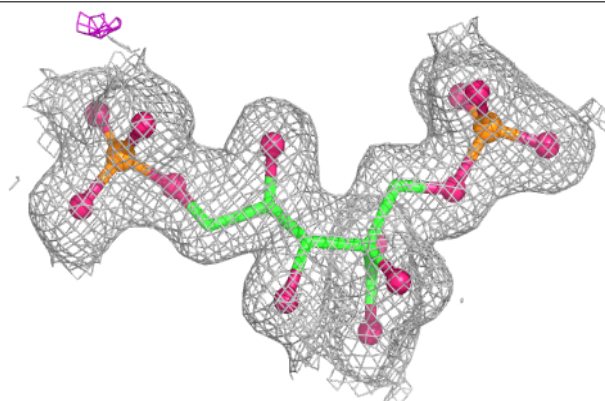


Electron density around CAP F 502:

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

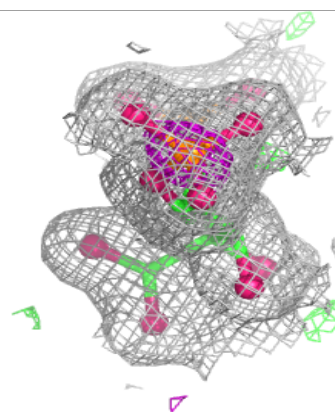
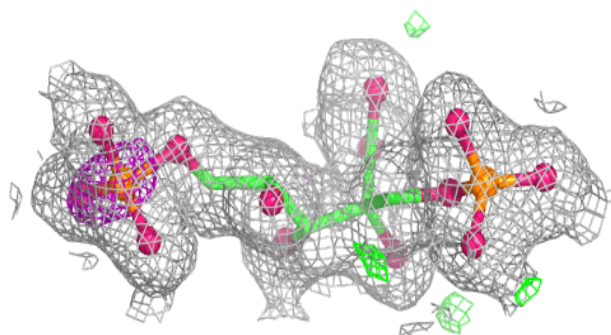
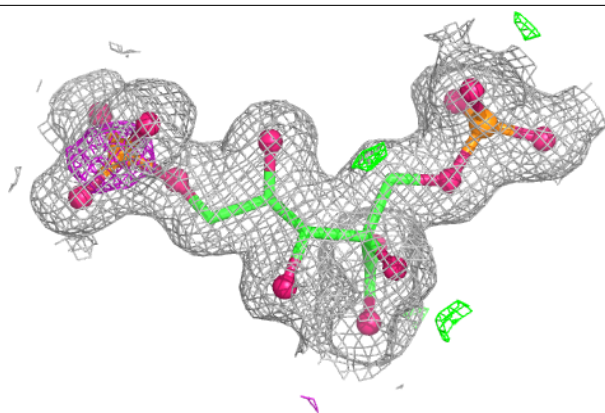
**Electron density around CAP G 502:**

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

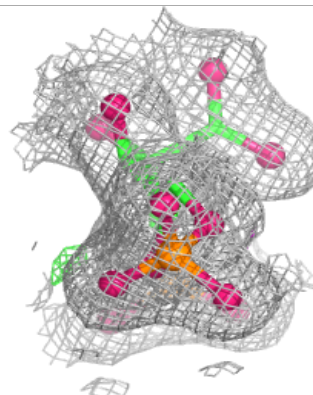
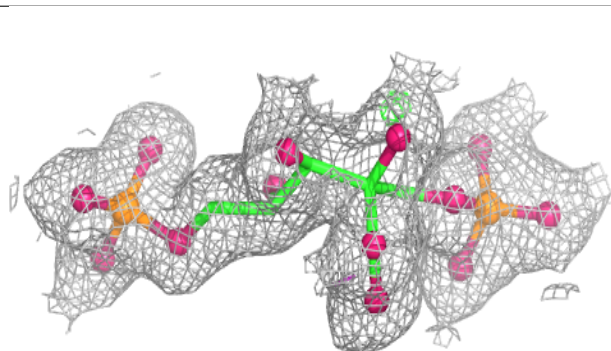
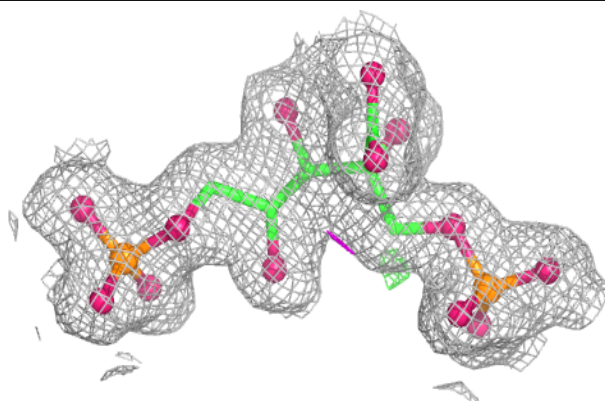


Electron density around CAP H 502:

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

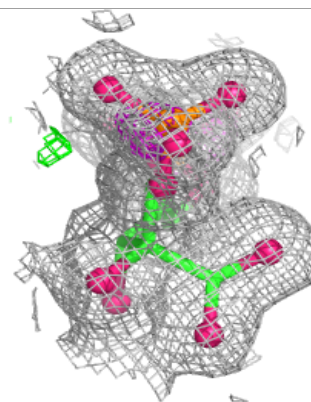
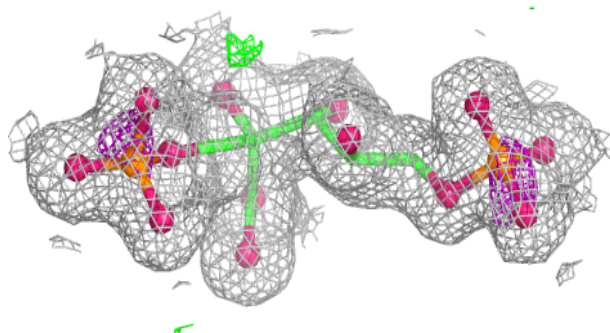
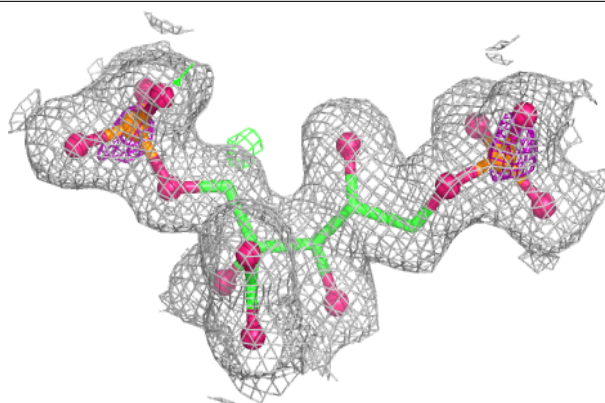
**Electron density around CAP A 502:**

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

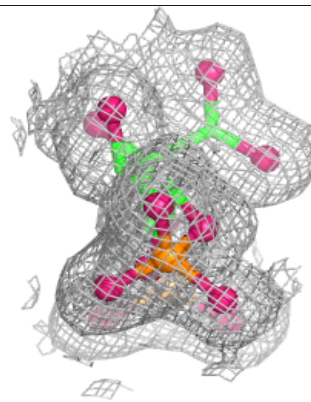
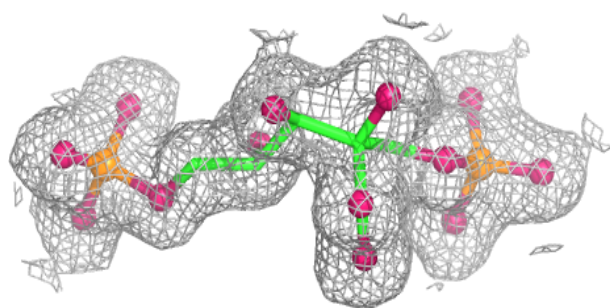
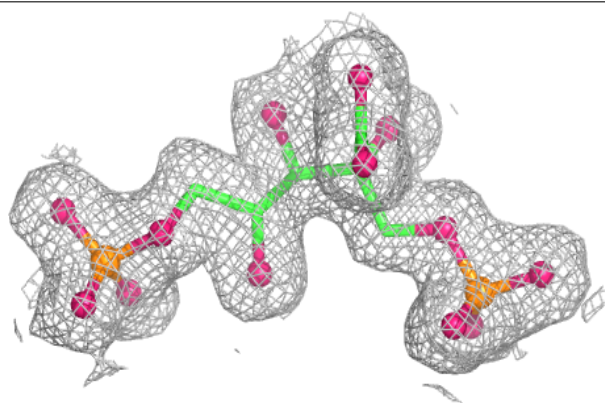


Electron density around CAP B 502:

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

**Electron density around CAP C 502:**

$2mF_o-DF_c$ (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.