Full wwPDB X-ray Structure Validation Report ⓘ

Feb 18, 2024 – 12:19 PM EST

PDB ID	:	4EO4
Title	:	Crystal structure of the yeast mitochondrial threonyl-tRNA synthetase (MST1) in complex with seryl sulfamoyl adenylate
Authors	:	Peterson, K.M.; Ling, J.; Simonovic, I.; Soll, D.; Simonovic, M.
Deposited on	:	2012-04-13
Resolution	:	2.87 Å(reported)

The following versions of software and data (see references ⓘ) were used in the production of this report:

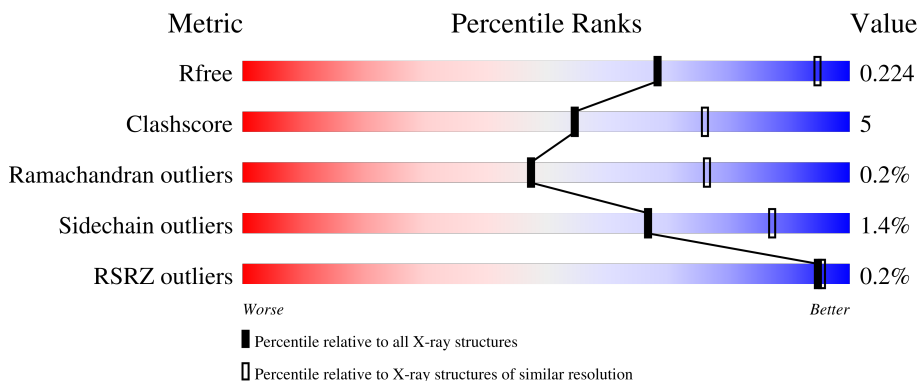|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
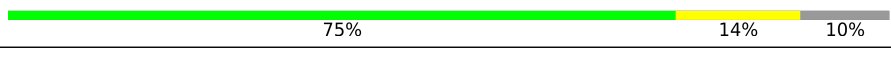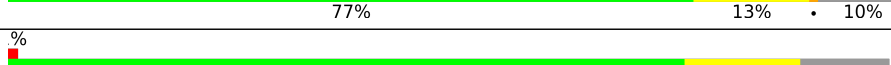*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.87 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	Percentile Ranks	Value
Rfree		0.224
Clashscore		5
Ramachandran outliers		0.2%
Sidechain outliers		1.4%
RSRZ outliers		0.2%

Worse .... *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2691 (2.90-2.86)
Clashscore	141614	2947 (2.90-2.86)
Ramachandran outliers	138981	2868 (2.90-2.86)
Sidechain outliers	138945	2871 (2.90-2.86)
RSRZ outliers	127900	2629 (2.90-2.86)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	460	78% / 12% / 9%
1	B	460	75% / 14% / 10%
1	C	460	77% / 13% / · / 10%
1	D	460	% / 76% / 13% / 10%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 14113 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 Threonine–tRNA ligase, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	417	Total	C	N	O	S	0	1	0
			3423	2214	577	615	17			
1	B	413	Total	C	N	O	S	0	2	0
			3377	2191	565	604	17			
1	C	416	Total	C	N	O	S	0	3	0
			3401	2200	568	616	17			
1	D	414	Total	C	N	O	S	3	1	0
			3335	2159	555	604	17			

There are 92 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	3	MET	-	initiating methionine	UNP P07236
A	4	GLY	-	expression tag	UNP P07236
A	5	SER	-	expression tag	UNP P07236
A	6	SER	-	expression tag	UNP P07236
A	7	HIS	-	expression tag	UNP P07236
A	8	HIS	-	expression tag	UNP P07236
A	9	HIS	-	expression tag	UNP P07236
A	10	HIS	-	expression tag	UNP P07236
A	11	HIS	-	expression tag	UNP P07236
A	12	HIS	-	expression tag	UNP P07236
A	13	SER	-	expression tag	UNP P07236
A	14	SER	-	expression tag	UNP P07236
A	15	GLY	-	expression tag	UNP P07236
A	16	LEU	-	expression tag	UNP P07236
A	17	VAL	-	expression tag	UNP P07236
A	18	PRO	-	expression tag	UNP P07236
A	19	ARG	-	expression tag	UNP P07236
A	20	GLY	-	expression tag	UNP P07236
A	21	SER	-	expression tag	UNP P07236
A	22	HIS	-	expression tag	UNP P07236
A	23	MET	-	initiating methionine	UNP P07236

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Chain	Residue	Modelled	Actual	Comment	Reference
A	24	ALA	-	expression tag	UNP P07236
A	25	SER	-	expression tag	UNP P07236
B	3	MET	-	expression tag	UNP P07236
B	4	GLY	-	expression tag	UNP P07236
B	5	SER	-	expression tag	UNP P07236
B	6	SER	-	expression tag	UNP P07236
B	7	HIS	-	expression tag	UNP P07236
B	8	HIS	-	expression tag	UNP P07236
B	9	HIS	-	expression tag	UNP P07236
B	10	HIS	-	expression tag	UNP P07236
B	11	HIS	-	expression tag	UNP P07236
B	12	HIS	-	expression tag	UNP P07236
B	13	SER	-	expression tag	UNP P07236
B	14	SER	-	expression tag	UNP P07236
B	15	GLY	-	expression tag	UNP P07236
B	16	LEU	-	expression tag	UNP P07236
B	17	VAL	-	expression tag	UNP P07236
B	18	PRO	-	expression tag	UNP P07236
B	19	ARG	-	expression tag	UNP P07236
B	20	GLY	-	expression tag	UNP P07236
B	21	SER	-	expression tag	UNP P07236
B	22	HIS	-	expression tag	UNP P07236
B	23	MET	-	expression tag	UNP P07236
B	24	ALA	-	expression tag	UNP P07236
B	25	SER	-	expression tag	UNP P07236
C	3	MET	-	initiating methionine	UNP P07236
C	4	GLY	-	expression tag	UNP P07236
C	5	SER	-	expression tag	UNP P07236
C	6	SER	-	expression tag	UNP P07236
C	7	HIS	-	expression tag	UNP P07236
C	8	HIS	-	expression tag	UNP P07236
C	9	HIS	-	expression tag	UNP P07236
C	10	HIS	-	expression tag	UNP P07236
C	11	HIS	-	expression tag	UNP P07236
C	12	HIS	-	expression tag	UNP P07236
C	13	SER	-	expression tag	UNP P07236
C	14	SER	-	expression tag	UNP P07236
C	15	GLY	-	expression tag	UNP P07236
C	16	LEU	-	expression tag	UNP P07236
C	17	VAL	-	expression tag	UNP P07236
C	18	PRO	-	expression tag	UNP P07236
C	19	ARG	-	expression tag	UNP P07236

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Chain	Residue	Modelled	Actual	Comment	Reference
C	20	GLY	-	expression tag	UNP P07236
C	21	SER	-	expression tag	UNP P07236
C	22	HIS	-	expression tag	UNP P07236
C	23	MET	-	expression tag	UNP P07236
C	24	ALA	-	expression tag	UNP P07236
C	25	SER	-	expression tag	UNP P07236
D	3	MET	-	initiating methionine	UNP P07236
D	4	GLY	-	expression tag	UNP P07236
D	5	SER	-	expression tag	UNP P07236
D	6	SER	-	expression tag	UNP P07236
D	7	HIS	-	expression tag	UNP P07236
D	8	HIS	-	expression tag	UNP P07236
D	9	HIS	-	expression tag	UNP P07236
D	10	HIS	-	expression tag	UNP P07236
D	11	HIS	-	expression tag	UNP P07236
D	12	HIS	-	expression tag	UNP P07236
D	13	SER	-	expression tag	UNP P07236
D	14	SER	-	expression tag	UNP P07236
D	15	GLY	-	expression tag	UNP P07236
D	16	LEU	-	expression tag	UNP P07236
D	17	VAL	-	expression tag	UNP P07236
D	18	PRO	-	expression tag	UNP P07236
D	19	ARG	-	expression tag	UNP P07236
D	20	GLY	-	expression tag	UNP P07236
D	21	SER	-	expression tag	UNP P07236
D	22	HIS	-	expression tag	UNP P07236
D	23	MET	-	expression tag	UNP P07236
D	24	ALA	-	expression tag	UNP P07236
D	25	SER	-	expression tag	UNP P07236

- Molecule 2 is 5'-O-(N-(L-SERYL)-SULFAMOYL)ADENOSINE (three-letter code: SSA) (formula: $C_{13}H_{19}N_7O_8S$).
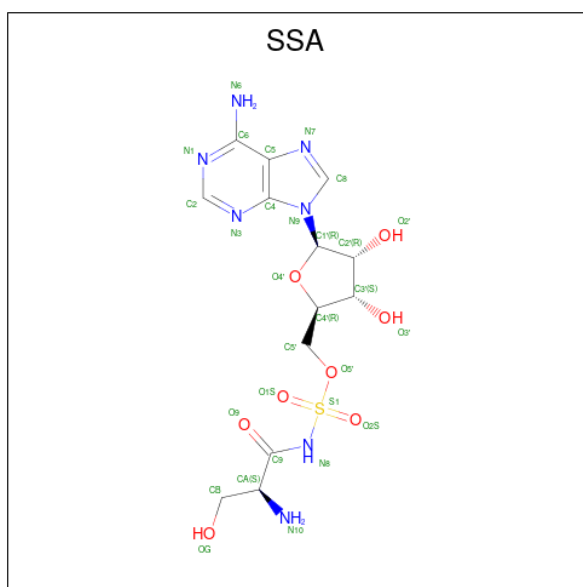
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	A	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	B	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	B	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	C	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	C	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	D	1	Total	C	N	O	S	0	0
			29	13	7	8	1		
2	D	1	Total	C	N	O	S	0	0
			29	13	7	8	1		

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

• Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	121	Total O 121 121		0	0
4	B	96	Total O 96 96		0	0
4	C	66	Total O 66 66		0	0
4	D	58	Total O 58 58		0	0

3 Residue-property plots ⓘ

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.
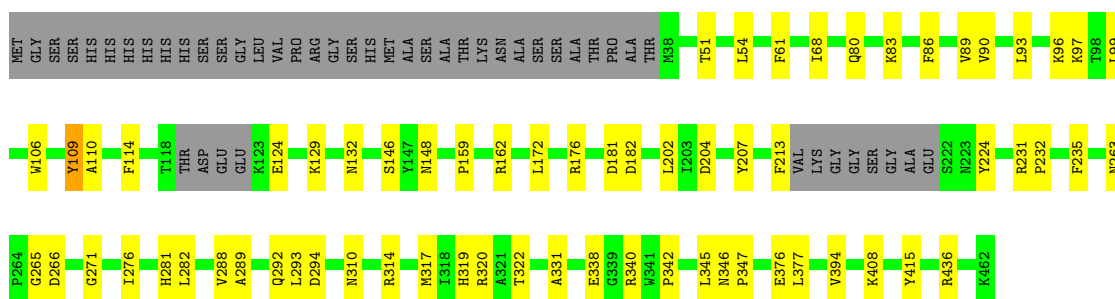
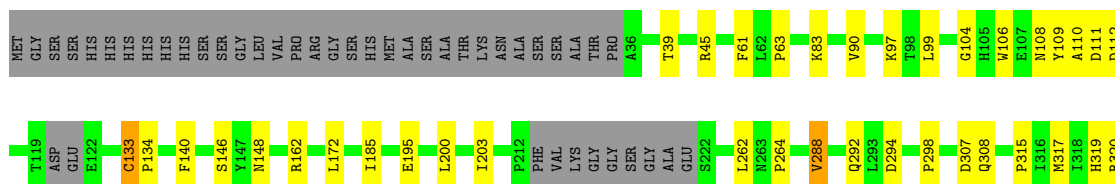• Molecule 1: Threonine–tRNA ligase, mitochondrial

Chain A:

• Molecule 1: Threonine–tRNA ligase, mitochondrial

Chain B:

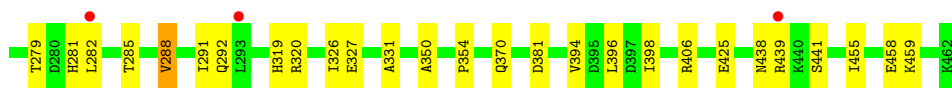• Molecule 1: Threonine–tRNA ligase, mitochondrial

Chain C:

A331 I334 A350 P354 V355 N356 N359 L369 L373 E376 L377 E383 P384 D389 W390 V394 D395 L396 D397 I398 R406 I407 I411 I419 E458 K459 N460 Y461 K462

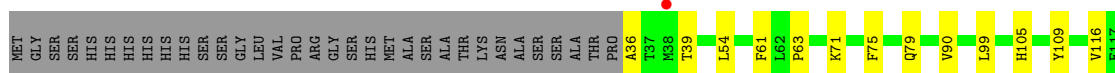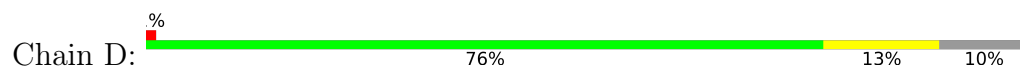• Molecule 1: Threonine–tRNA ligase, mitochondrial

Chain D:

%

76% 13% 10%

MET GLY SER SER HIS HIS HIS HIS HIS HIS SER SER GLY LEU VAL PRO ARG GLY SER HIS MET ALA SER ALA THR LYS ASN ALA SER SER ALA THR PRO A36 T37 M38 T39 L54 F61 L62 P63 K71 F75 Q79 V90 L99 H105 Y109 V116 E117

T118 THR ASP GLU GLU K123 Y126 M131 N132 C133 K142 L172 H179 D182 G183 H184 I185 F186 C187 Q191 E195 I196 F197 D204 N208 P212 PHE VAL LYS GLY GLY SER GLY ALA GLU S222 N223 Y224 P232 I252 G265 D266 G267 K273 L274

T279 D280 H281 L282 T285 V288 I291 Q292 L293 H319 R320 I326 E327 A331 A350 P354 Q370 D381 V394 D395 L396 D397 I398 R406 E425 N438 R439 K440 S441 I455 E458 K459 K462

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	213.23Å 107.50Å 153.39Å 90.00° 130.05° 90.00°	Depositor
Resolution (Å)	49.72 – 2.87 49.72 – 2.87	Depositor EDS
% Data completeness (in resolution range)	99.0 (49.72-2.87) 98.9 (49.72-2.87)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$< I/\sigma(I) >$ [1]	2.09 (at 2.86Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, R_{free}	0.175 , 0.229 0.172 , 0.224	Depositor DCC
R_{free} test set	3053 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	49.8	Xtriage
Anisotropy	0.167	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 58.8	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	14113	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.98% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality (i)

5.1   Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: SSA, ZN

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	0.27	0/3516	0.43	1/4748 (0.0%)
1	B	0.26	0/3472	0.44	2/4692 (0.0%)
1	C	0.26	0/3496	0.42	0/4727
1	D	0.26	0/3427	0.43	0/4643
All	All	0.26	0/13911	0.43	3/18810 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	376	GLU	CB-CA-C	-10.41	89.58	110.40
1	A	376	GLU	CB-CA-C	-7.84	94.72	110.40
1	B	377	LEU	N-CA-C	5.52	125.91	111.00

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	3423	0	3338	34	0
1	B	3377	0	3293	40	0
1	C	3401	0	3287	37	0
1	D	3335	0	3180	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	58	0	38	4	0
2	B	58	0	38	1	0
2	C	58	0	37	1	0
2	D	58	0	38	3	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	121	0	0	4	0
4	B	96	0	0	2	0
4	C	66	0	0	0	0
4	D	58	0	0	0	0
All	All	14113	0	13249	141	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 5.

All (141) 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:D:36:ALA:N	1:D:39:THR:HG1	1.75	0.84
1:D:292:GLN:HB2	1:D:319:HIS:HB2	1.66	0.77
1:D:172:LEU:HB2	1:D:331:ALA:HB2	1.69	0.73
1:B:292:GLN:HE22	2:B:1001:SSA:HN8	1.39	0.71
1:B:83:LYS:NZ	1:D:381:ASP:OD1	2.26	0.68
1:D:116:VAL:HB	1:D:126:TYR:HB2	1.76	0.66
1:B:109:TYR:OH	1:B:162:ARG:HD3	1.97	0.65
1:D:279:THR:HG22	1:D:285:THR:HG22	1.80	0.64
1:B:232:PRO:HA	1:B:265:GLY:HA2	1.80	0.64
1:C:162:ARG:NH2	2:C:1001:SSA:O9	2.30	0.64
1:D:455:ILE:HG22	1:D:459:LYS:HE2	1.82	0.62
1:A:162:ARG:NH2	2:A:1001:SSA:O9	2.31	0.62
1:A:292:GLN:HB2	1:A:319:HIS:HB2	1.81	0.61
1:B:93:LEU:HD13	1:B:129:LYS:HE2	1.83	0.61
1:A:37:THR:OG1	1:A:38:MET:N	2.28	0.61
1:C:185:ILE:HG21	1:C:195:GLU:HG2	1.81	0.61
1:C:354:PRO:HD2	1:C:406:ARG:HH12	1.66	0.61
1:C:109:TYR:O	1:C:112:ASP:N	2.35	0.60
1:B:231:ARG:HD2	1:B:235:PHE:CZ	2.37	0.60
1:B:106:TRP:HA	1:B:110:ALA:HB2	1.84	0.59
1:B:51:THR:O	1:D:142:LYS:NZ	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:45:ARG:NH2	1:C:414:ASN:OD1	2.31	0.59
1:B:90:VAL:HB	1:D:61:PHE:HB2	1.85	0.59
1:C:376:GLU:O	1:C:377:LEU:HD23	2.02	0.58
1:B:61:PHE:HB2	1:D:90:VAL:HB	1.84	0.58
1:B:281:HIS:CE1	1:B:282:LEU:HG	2.40	0.57
1:A:57:GLY:HA3	1:A:176:ARG:HG3	1.86	0.57
1:A:90:VAL:HB	1:C:61:PHE:HB2	1.87	0.57
1:B:172:LEU:HB2	1:B:331:ALA:HB2	1.87	0.57
1:C:104:GLY:O	1:C:108:ASN:ND2	2.31	0.56
1:B:294:ASP:HB3	1:B:317:MET:HB3	1.88	0.56
1:B:340:ARG:NH1	4:B:1187:HOH:O	2.30	0.55
1:A:307:ASP:OD1	1:A:308:GLN:N	2.34	0.55
1:D:274:LEU:HB2	1:D:291:ILE:HB	1.87	0.55
1:B:232:PRO:HG2	1:B:235:PHE:HB3	1.89	0.55
1:D:182:ASP:OD1	2:D:1001:SSA:OG	2.25	0.55
1:A:81:LYS:NZ	4:A:1119:HOH:O	2.40	0.55
1:B:54:LEU:HD13	1:D:99:LEU:HD12	1.89	0.55
1:B:114:PHE:HZ	1:B:176:ARG:HD3	1.72	0.54
1:D:71:LYS:NZ	1:D:458:GLU:OE1	2.37	0.54
1:C:172:LEU:HB2	1:C:331:ALA:HB2	1.88	0.54
1:A:294:ASP:HB3	1:A:317:MET:HB3	1.90	0.53
1:B:338:GLU:OE2	1:B:340:ARG:NH2	2.41	0.53
1:C:460:ASN:HB3	1:C:462:LYS:HG2	1.90	0.53
1:A:367:THR:HG22	1:A:371:LYS:HE2	1.90	0.53
1:D:354:PRO:O	1:D:406:ARG:NH2	2.42	0.52
1:C:185:ILE:HD13	1:C:195:GLU:HG3	1.92	0.52
1:A:408:LYS:NZ	4:A:1220:HOH:O	2.43	0.51
1:C:356:ASN:HB3	1:C:359:ASN:HB2	1.92	0.51
1:D:204:ASP:OD1	1:D:224:TYR:OH	2.26	0.51
1:D:396:LEU:HG	1:D:398:ILE:HG23	1.93	0.51
1:C:292:GLN:HB2	1:C:319:HIS:HB2	1.93	0.51
1:A:61:PHE:HB2	1:C:90:VAL:HB	1.93	0.51
1:C:294:ASP:HB3	1:C:317:MET:HB2	1.91	0.51
1:B:96:LYS:HE2	1:D:54:LEU:HA	1.92	0.50
1:C:298:PRO:HG3	1:C:317:MET:HG3	1.94	0.50
1:B:93:LEU:HD11	1:B:159:PRO:HG2	1.94	0.49
1:A:273:LYS:HG2	1:A:292:GLN:HG2	1.94	0.49
1:A:292:GLN:HE22	2:A:1001:SSA:HN8	1.59	0.49
1:D:292:GLN:HE22	2:D:1001:SSA:HN8	1.58	0.49
1:C:146:SER:OG	1:C:148:ASN:OD1	2.29	0.48
1:C:373:LEU:HD23	1:C:394:VAL:HG21	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:LEU:HD21	1:A:159:PRO:HG2	1.95	0.48
1:A:172:LEU:HB2	1:A:331:ALA:HB2	1.95	0.48
1:D:208:ASN:ND2	1:D:223:ASN:OD1	2.47	0.48
1:B:292:GLN:HB2	1:B:319:HIS:HB2	1.95	0.48
1:B:263:ASN:ND2	1:B:266:ASP:OD2	2.47	0.48
1:A:426:VAL:O	1:A:429:GLN:NE2	2.39	0.48
1:B:68:ILE:HG23	1:B:345:LEU:HD22	1.96	0.48
1:A:455:ILE:HG22	1:A:459:LYS:HE2	1.96	0.47
1:D:204:ASP:O	1:D:208:ASN:HB2	2.13	0.47
1:D:438:ASN:HB3	1:D:441:SER:HB3	1.95	0.47
1:A:370:GLN:HG3	1:A:394:VAL:HG23	1.97	0.47
1:B:80:GLN:HB3	1:B:86:PHE:HB2	1.95	0.47
1:C:397:ASP:O	1:C:406:ARG:NH1	2.46	0.47
1:C:99:LEU:HD21	1:C:134:PRO:HB2	1.97	0.47
1:C:200:LEU:HD23	1:C:203:ILE:HD12	1.97	0.46
1:B:408:LYS:NZ	4:B:1195:HOH:O	2.38	0.46
1:A:411:ILE:HD13	2:A:1002:SSA:C5	2.45	0.46
1:C:133:CYS:SG	1:C:134:PRO:HD3	2.56	0.46
1:D:281:HIS:CE1	1:D:282:LEU:HG	2.51	0.46
1:A:99:LEU:HD21	1:A:134:PRO:HB2	1.98	0.45
1:A:378:GLU:O	1:C:83:LYS:NZ	2.42	0.45
1:A:434:ARG:HH22	2:A:1002:SSA:HN61	1.63	0.45
1:C:262:LEU:HG	1:C:264:PRO:HD3	1.99	0.45
1:B:204:ASP:OD1	1:B:224:TYR:OH	2.30	0.45
1:D:425:GLU:OE1	1:D:425:GLU:N	2.48	0.45
1:B:342:PRO:HG2	1:B:345:LEU:HB2	1.99	0.45
1:B:294:ASP:HB2	1:B:319:HIS:HE2	1.82	0.45
1:C:390:TRP:HZ3	1:C:458:GLU:HG2	1.82	0.45
1:D:232:PRO:HA	1:D:265:GLY:HA2	1.98	0.45
1:B:202:LEU:HG	1:B:322:THR:HG21	1.99	0.44
1:C:39:THR:HA	1:C:334:ILE:HG21	1.98	0.44
1:D:197:PHE:HE1	1:D:252:ILE:HG23	1.81	0.44
1:D:350:ALA:HB3	1:D:394:VAL:HG12	1.98	0.44
1:A:209:LYS:NZ	4:A:1135:HOH:O	2.50	0.44
1:B:415:TYR:O	1:B:436:ARG:HB2	2.18	0.44
1:C:97:LYS:HG3	1:C:106:TRP:CE2	2.53	0.44
1:B:97:LYS:HG3	1:B:106:TRP:CE2	2.53	0.44
1:B:276:ILE:HB	1:B:289:ALA:HB3	1.99	0.44
1:D:185:ILE:HG21	1:D:195:GLU:HG2	1.99	0.44
1:A:456:GLU:O	1:A:460:ASN:ND2	2.50	0.44
1:C:407:ILE:O	1:C:411:ILE:HG12	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:89:VAL:HG12	1:C:63:PRO:HD3	1.99	0.43
1:B:132:ASN:HB2	1:B:182:ASP:OD2	2.18	0.43
1:D:75:PHE:O	1:D:79:GLN:HG2	2.18	0.43
1:A:281:HIS:CE1	1:A:282:LEU:HG	2.53	0.43
1:C:369:LEU:HD21	1:C:419:ILE:HD13	2.00	0.43
1:D:327:GLU:OE1	1:D:327:GLU:N	2.45	0.43
1:C:109:TYR:O	1:C:111:ASP:N	2.51	0.43
1:D:179:HIS:O	1:D:326:ILE:HG12	2.18	0.43
1:C:39:THR:HG21	1:C:172:LEU:HD13	2.00	0.43
1:C:350:ALA:HB3	1:C:394:VAL:HG22	2.01	0.43
1:D:439:ARG:HH12	2:D:1002:SSA:H2'	1.84	0.43
1:A:267:GLY:HA2	1:A:273:LYS:HE2	2.01	0.42
1:B:181:ASP:OD1	1:B:181:ASP:N	2.52	0.42
1:A:75:PHE:O	1:A:79:GLN:HG2	2.19	0.42
1:C:307:ASP:OD1	1:C:308:GLN:N	2.41	0.42
1:A:422:GLY:O	1:A:426:VAL:HG23	2.20	0.42
1:C:396:LEU:HG	1:C:398:ILE:HG23	1.99	0.42
1:D:187:CYS:HB2	1:D:191:GLN:HB2	2.01	0.42
1:C:140:PHE:CE2	1:C:315:PRO:HG3	2.54	0.42
1:D:197:PHE:CE1	1:D:252:ILE:HG23	2.55	0.42
1:B:271:GLY:HA3	1:B:293:LEU:O	2.20	0.41
1:B:346:ASN:HA	1:B:347:PRO:HD2	1.93	0.41
1:B:146:SER:OG	1:B:148:ASN:OD1	2.32	0.41
1:D:274:LEU:HD23	1:D:274:LEU:HA	1.92	0.41
1:B:207:TYR:HD1	1:B:213:PHE:HE2	1.67	0.41
1:D:105:HIS:NE2	1:D:131:MET:SD	2.82	0.41
1:D:133:CYS:HA	1:D:184:HIS:NE2	2.36	0.41
1:A:256:SER:HB2	1:A:258:LYS:HG2	2.02	0.41
1:B:89:VAL:HG12	1:D:63:PRO:HD3	2.03	0.41
1:D:267:GLY:HA2	1:D:273:LYS:HG3	2.03	0.41
1:D:370:GLN:HG3	1:D:394:VAL:HG23	2.03	0.41
1:A:276:ILE:HB	1:A:289:ALA:HB3	2.01	0.41
1:B:294:ASP:HB2	1:B:319:HIS:NE2	2.36	0.41
1:D:185:ILE:HD13	1:D:195:GLU:HG3	2.03	0.41
1:C:383:GLU:HA	1:C:384:PRO:HD3	1.80	0.40
1:A:59:MET:SD	1:A:172:LEU:HG	2.61	0.40
1:A:174:ARG:NH2	4:A:1103:HOH:O	2.47	0.40
1:A:415:TYR:O	1:A:436:ARG:HB2	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	412/460 (90%)	400 (97%)	11 (3%)	1 (0%)	47	76
1	B	409/460 (89%)	401 (98%)	8 (2%)	0	100	100
1	C	413/460 (90%)	396 (96%)	15 (4%)	2 (0%)	29	59
1	D	409/460 (89%)	396 (97%)	12 (3%)	1 (0%)	47	76
All	All	1643/1840 (89%)	1593 (97%)	46 (3%)	4 (0%)	47	76

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	110	ALA
1	D	288	VAL
1	A	288	VAL
1	C	288	VAL

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	369/416 (89%)	365 (99%)	4 (1%)	73	90
1	B	363/416 (87%)	355 (98%)	8 (2%)	52	80
1	C	364/416 (88%)	359 (99%)	5 (1%)	67	87
1	D	351/416 (84%)	348 (99%)	3 (1%)	78	92
All	All	1447/1664 (87%)	1427 (99%)	20 (1%)	67	87

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	133	CYS
1	A	288	VAL
1	A	320	ARG
1	A	416	SER
1	B	99	LEU
1	B	109	TYR
1	B	124	GLU
1	B	288	VAL
1	B	310	ASN
1	B	314	ARG
1	B	320	ARG
1	B	394	VAL
1	C	133	CYS
1	C	288	VAL
1	C	320	ARG
1	C	389	ASP
1	C	458	GLU
1	D	109	TYR
1	D	288	VAL
1	D	320	ARG

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

Mol	Chain	Res	Type
1	A	281	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 12 ligands modelled in this entry, 4 are monoatomic - leaving 8 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	SSA	A	1002	-	28,31,31	2.00	9 (32%)	29,46,46	2.70	4 (13%)
2	SSA	C	1002	-	28,31,31	1.97	9 (32%)	29,46,46	2.69	5 (17%)
2	SSA	B	1001	3	28,31,31	1.96	7 (25%)	29,46,46	2.74	7 (24%)
2	SSA	C	1001	3	28,31,31	1.95	7 (25%)	29,46,46	2.83	7 (24%)
2	SSA	D	1002	-	28,31,31	1.97	9 (32%)	29,46,46	2.65	4 (13%)
2	SSA	D	1001	3	28,31,31	1.97	7 (25%)	29,46,46	2.84	5 (17%)
2	SSA	B	1002	-	28,31,31	1.97	7 (25%)	29,46,46	2.67	6 (20%)
2	SSA	A	1001	3	28,31,31	1.92	9 (32%)	29,46,46	2.76	6 (20%)

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	SSA	A	1002	-	-	7/16/37/37	0/3/3/3
2	SSA	C	1002	-	-	9/16/37/37	0/3/3/3
2	SSA	B	1001	3	-	6/16/37/37	0/3/3/3
2	SSA	C	1001	3	-	5/16/37/37	0/3/3/3
2	SSA	D	1002	-	-	12/16/37/37	0/3/3/3
2	SSA	D	1001	3	-	9/16/37/37	0/3/3/3
2	SSA	B	1002	-	-	7/16/37/37	0/3/3/3
2	SSA	A	1001	3	-	7/16/37/37	0/3/3/3

All (64) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1001	SSA	O5'-S1	-5.31	1.48	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1001	SSA	O5'-S1	-5.18	1.48	1.59
2	B	1002	SSA	O5'-S1	-5.14	1.49	1.59
2	A	1002	SSA	O5'-S1	-5.11	1.49	1.59
2	D	1001	SSA	O5'-S1	-5.07	1.49	1.59
2	A	1001	SSA	O5'-S1	-5.07	1.49	1.59
2	D	1002	SSA	O5'-S1	-5.01	1.49	1.59
2	C	1002	SSA	O5'-S1	-4.92	1.49	1.59
2	A	1002	SSA	C9-N8	4.77	1.46	1.37
2	B	1002	SSA	C9-N8	4.56	1.46	1.37
2	D	1001	SSA	C9-N8	4.56	1.46	1.37
2	D	1002	SSA	C9-N8	4.52	1.46	1.37
2	C	1002	SSA	C9-N8	4.39	1.45	1.37
2	C	1001	SSA	C9-N8	4.37	1.45	1.37
2	B	1001	SSA	C9-N8	4.30	1.45	1.37
2	A	1001	SSA	C9-N8	4.19	1.45	1.37
2	D	1001	SSA	O1S-S1	3.76	1.45	1.42
2	B	1001	SSA	O1S-S1	3.75	1.45	1.42
2	C	1002	SSA	O1S-S1	3.73	1.45	1.42
2	C	1001	SSA	O1S-S1	3.67	1.45	1.42
2	A	1001	SSA	O1S-S1	3.66	1.45	1.42
2	D	1002	SSA	O1S-S1	3.60	1.45	1.42
2	A	1002	SSA	S1-N8	3.42	1.65	1.59
2	B	1002	SSA	O1S-S1	3.38	1.45	1.42
2	A	1002	SSA	O1S-S1	3.26	1.45	1.42
2	D	1001	SSA	S1-N8	3.25	1.65	1.59
2	B	1002	SSA	S1-N8	3.16	1.65	1.59
2	C	1001	SSA	S1-N8	3.13	1.65	1.59
2	C	1002	SSA	S1-N8	3.12	1.65	1.59
2	D	1002	SSA	S1-N8	3.11	1.65	1.59
2	D	1001	SSA	C6-N6	2.96	1.44	1.34
2	A	1001	SSA	C6-N6	2.96	1.44	1.34
2	B	1001	SSA	C6-N6	2.94	1.44	1.34
2	A	1002	SSA	C6-N6	2.93	1.44	1.34
2	C	1002	SSA	C6-N6	2.93	1.44	1.34
2	C	1001	SSA	C6-N6	2.93	1.44	1.34
2	D	1002	SSA	C6-N6	2.89	1.44	1.34
2	B	1001	SSA	S1-N8	2.88	1.65	1.59
2	A	1001	SSA	S1-N8	2.88	1.65	1.59
2	B	1002	SSA	C6-N6	2.87	1.44	1.34
2	D	1002	SSA	C2-N3	2.60	1.36	1.32
2	B	1002	SSA	C2-N3	2.57	1.36	1.32
2	A	1002	SSA	C2-N3	2.54	1.36	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1002	SSA	C2-N3	2.49	1.36	1.32
2	A	1001	SSA	C2-N3	2.48	1.36	1.32
2	B	1001	SSA	C2-N3	2.45	1.36	1.32
2	D	1001	SSA	C2-N3	2.44	1.36	1.32
2	C	1002	SSA	C4-N3	2.43	1.39	1.35
2	C	1001	SSA	C2-N3	2.38	1.35	1.32
2	B	1002	SSA	C4-N3	2.31	1.38	1.35
2	D	1002	SSA	C4-N3	2.29	1.38	1.35
2	A	1002	SSA	C4-N3	2.29	1.38	1.35
2	D	1001	SSA	C4-N3	2.17	1.38	1.35
2	C	1002	SSA	O2S-S1	2.17	1.44	1.42
2	A	1002	SSA	O2S-S1	2.14	1.44	1.42
2	D	1002	SSA	O2S-S1	2.13	1.44	1.42
2	B	1001	SSA	C4-N3	2.10	1.38	1.35
2	A	1001	SSA	O2S-S1	2.07	1.44	1.42
2	C	1001	SSA	C4-N3	2.06	1.38	1.35
2	A	1001	SSA	C4-N3	2.06	1.38	1.35
2	A	1002	SSA	C2-N1	2.02	1.37	1.33
2	A	1001	SSA	C2-N1	2.01	1.37	1.33
2	C	1002	SSA	C2-N1	2.01	1.37	1.33
2	D	1002	SSA	C2-N1	2.00	1.37	1.33

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1001	SSA	O2S-S1-O1S	-13.29	100.06	120.76
2	C	1001	SSA	O2S-S1-O1S	-12.83	100.77	120.76
2	A	1002	SSA	O2S-S1-O1S	-12.53	101.24	120.76
2	B	1001	SSA	O2S-S1-O1S	-12.52	101.26	120.76
2	B	1002	SSA	O2S-S1-O1S	-12.51	101.28	120.76
2	C	1002	SSA	O2S-S1-O1S	-12.42	101.41	120.76
2	A	1001	SSA	O2S-S1-O1S	-12.35	101.51	120.76
2	D	1002	SSA	O2S-S1-O1S	-12.33	101.55	120.76
2	C	1001	SSA	N3-C2-N1	-4.41	121.79	128.68
2	A	1002	SSA	N3-C2-N1	-4.38	121.83	128.68
2	C	1002	SSA	N3-C2-N1	-4.31	121.95	128.68
2	D	1001	SSA	N3-C2-N1	-4.24	122.06	128.68
2	B	1002	SSA	N3-C2-N1	-4.23	122.07	128.68
2	B	1001	SSA	N3-C2-N1	-4.20	122.12	128.68
2	D	1002	SSA	N3-C2-N1	-4.19	122.12	128.68
2	A	1001	SSA	N3-C2-N1	-4.18	122.14	128.68
2	A	1001	SSA	C9-N8-S1	-3.93	118.24	124.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	1001	SSA	C9-N8-S1	-3.45	119.03	124.61
2	B	1001	SSA	C9-N8-S1	-2.94	119.86	124.61
2	C	1002	SSA	OG-CB-CA	2.81	118.27	110.85
2	D	1002	SSA	OG-CB-CA	2.71	118.01	110.85
2	C	1001	SSA	C1'-N9-C4	-2.66	121.97	126.64
2	D	1001	SSA	C1'-N9-C4	-2.65	121.99	126.64
2	B	1001	SSA	C1'-N9-C4	-2.57	122.13	126.64
2	D	1001	SSA	OG-CB-CA	2.52	117.50	110.85
2	A	1001	SSA	C1'-N9-C4	-2.47	122.30	126.64
2	B	1001	SSA	OG-CB-CA	2.45	117.34	110.85
2	C	1001	SSA	OG-CB-CA	2.43	117.28	110.85
2	A	1002	SSA	OG-CB-CA	2.41	117.24	110.85
2	C	1002	SSA	O5'-C5'-C4'	2.30	111.91	107.62
2	A	1002	SSA	O5'-C5'-C4'	2.29	111.89	107.62
2	D	1002	SSA	O5'-C5'-C4'	2.25	111.82	107.62
2	B	1002	SSA	OG-CB-CA	2.25	116.79	110.85
2	A	1001	SSA	OG-CB-CA	2.19	116.64	110.85
2	B	1002	SSA	O5'-C5'-C4'	2.19	111.71	107.62
2	B	1002	SSA	O5'-S1-O1S	2.13	112.09	105.59
2	B	1002	SSA	C1'-N9-C4	-2.11	122.93	126.64
2	C	1001	SSA	O5'-S1-O1S	2.08	111.96	105.59
2	C	1002	SSA	O5'-S1-O1S	2.08	111.96	105.59
2	D	1001	SSA	C4-C5-N7	-2.06	107.25	109.40
2	C	1001	SSA	C4-C5-N7	-2.05	107.26	109.40
2	B	1001	SSA	C4-C5-N7	-2.04	107.27	109.40
2	A	1001	SSA	O5'-C5'-C4'	2.04	111.42	107.62
2	B	1001	SSA	O5'-S1-O1S	2.01	111.73	105.59

There are no chirality outliers.

All (62) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	SSA	O9-C9-CA-CB
2	A	1001	SSA	N8-C9-CA-CB
2	A	1001	SSA	C9-N8-S1-O1S
2	A	1001	SSA	C5'-O5'-S1-N8
2	A	1002	SSA	C5'-O5'-S1-N8
2	A	1002	SSA	C3'-C4'-C5'-O5'
2	B	1001	SSA	O9-C9-CA-CB
2	B	1001	SSA	N8-C9-CA-CB
2	B	1001	SSA	C9-N8-S1-O1S
2	B	1001	SSA	C5'-O5'-S1-N8

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Mol	Chain	Res	Type	Atoms
2	B	1002	SSA	N10-CA-CB-OG
2	B	1002	SSA	C5'-O5'-S1-N8
2	B	1002	SSA	C5'-O5'-S1-O2S
2	B	1002	SSA	C3'-C4'-C5'-O5'
2	C	1001	SSA	O9-C9-CA-CB
2	C	1001	SSA	N8-C9-CA-CB
2	C	1001	SSA	C9-N8-S1-O1S
2	C	1001	SSA	C5'-O5'-S1-N8
2	C	1002	SSA	N10-CA-CB-OG
2	C	1002	SSA	O9-C9-CA-CB
2	C	1002	SSA	N8-C9-CA-CB
2	C	1002	SSA	C5'-O5'-S1-N8
2	C	1002	SSA	C5'-O5'-S1-O1S
2	D	1001	SSA	N10-CA-CB-OG
2	D	1001	SSA	C9-CA-CB-OG
2	D	1001	SSA	O9-C9-CA-CB
2	D	1001	SSA	N8-C9-CA-CB
2	D	1001	SSA	C9-N8-S1-O1S
2	D	1001	SSA	C9-N8-S1-O2S
2	D	1001	SSA	C5'-O5'-S1-N8
2	D	1001	SSA	C5'-O5'-S1-O1S
2	D	1002	SSA	N10-CA-CB-OG
2	D	1002	SSA	C9-CA-CB-OG
2	D	1002	SSA	O9-C9-CA-CB
2	D	1002	SSA	N8-C9-CA-CB
2	D	1002	SSA	C9-N8-S1-O1S
2	D	1002	SSA	C5'-O5'-S1-N8
2	D	1002	SSA	C5'-O5'-S1-O1S
2	D	1002	SSA	C3'-C4'-C5'-O5'
2	A	1002	SSA	C9-CA-CB-OG
2	B	1001	SSA	C9-CA-CB-OG
2	B	1002	SSA	C9-CA-CB-OG
2	C	1002	SSA	C9-CA-CB-OG
2	A	1002	SSA	C5'-O5'-S1-O1S
2	B	1002	SSA	C5'-O5'-S1-O1S
2	D	1001	SSA	C5'-O5'-S1-O2S
2	D	1002	SSA	C5'-O5'-S1-O2S
2	D	1002	SSA	N8-C9-CA-N10
2	A	1002	SSA	O4'-C4'-C5'-O5'
2	B	1002	SSA	O4'-C4'-C5'-O5'
2	D	1002	SSA	O4'-C4'-C5'-O5'
2	A	1001	SSA	C5'-O5'-S1-O1S

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Mol	Chain	Res	Type	Atoms
2	A	1002	SSA	C5'-O5'-S1-O2S
2	B	1001	SSA	C5'-O5'-S1-O1S
2	C	1001	SSA	C5'-O5'-S1-O1S
2	C	1002	SSA	C5'-O5'-S1-O2S
2	A	1001	SSA	N10-CA-CB-OG
2	A	1002	SSA	N10-CA-CB-OG
2	C	1002	SSA	O9-C9-CA-N10
2	C	1002	SSA	N8-C9-CA-N10
2	D	1002	SSA	O9-C9-CA-N10
2	A	1001	SSA	C9-CA-CB-OG

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1002	SSA	2	0
2	B	1001	SSA	1	0
2	C	1001	SSA	1	0
2	D	1002	SSA	1	0
2	D	1001	SSA	2	0
2	A	1001	SSA	2	0

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

Ligand SSA A 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA C 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA B 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA C 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA D 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA D 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA B 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand SSA A 1001

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	417/460 (90%)	-0.49	0	100	100	24, 39, 68, 98	0
1	B	413/460 (89%)	-0.34	0	100	100	28, 45, 79, 112	0
1	C	416/460 (90%)	-0.27	0	100	100	29, 54, 84, 102	0
1	D	414/460 (90%)	-0.19	4 (0%)	82	82	32, 58, 85, 110	0
All	All	1660/1840 (90%)	-0.32	4 (0%)	95	95	24, 50, 80, 112	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	38	MET	2.5
1	D	293	LEU	2.1
1	D	282	LEU	2.1
1	D	439	ARG	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	ZN	D	1003	1/1	0.84	0.12	75,75,75,75	0
2	SSA	C	1002	29/29	0.87	0.20	17,73,98,122	0
3	ZN	C	1003	1/1	0.88	0.12	61,61,61,61	0
2	SSA	D	1002	29/29	0.89	0.21	17,67,99,104	0
2	SSA	B	1002	29/29	0.92	0.14	28,43,58,70	0
2	SSA	A	1002	29/29	0.94	0.14	19,42,53,61	0
2	SSA	D	1001	29/29	0.96	0.16	44,58,65,73	0
2	SSA	C	1001	29/29	0.97	0.16	39,51,70,81	0
3	ZN	B	1003	1/1	0.98	0.16	62,62,62,62	0
2	SSA	B	1001	29/29	0.98	0.15	33,42,60,73	0
2	SSA	A	1001	29/29	0.98	0.16	22,35,51,53	0
3	ZN	A	1003	1/1	0.99	0.16	36,36,36,36	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 SSA C 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
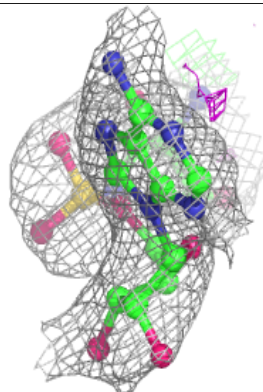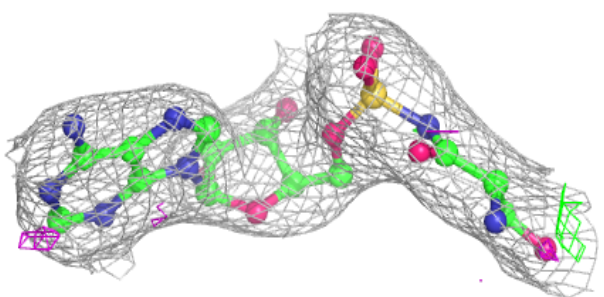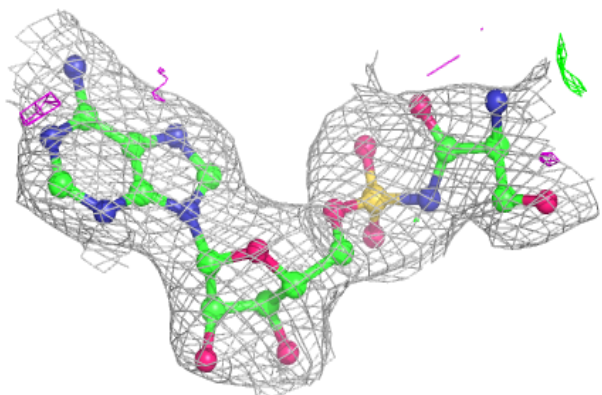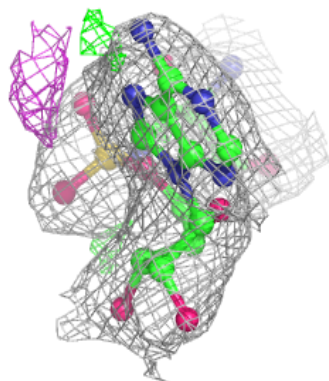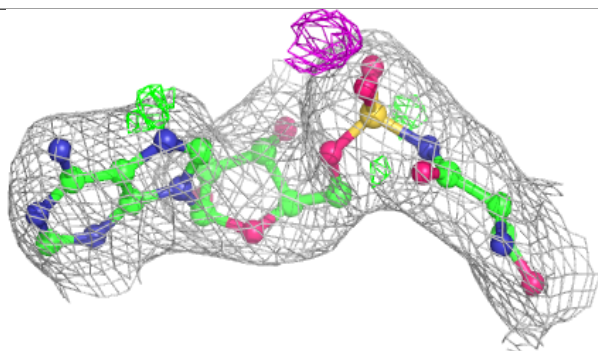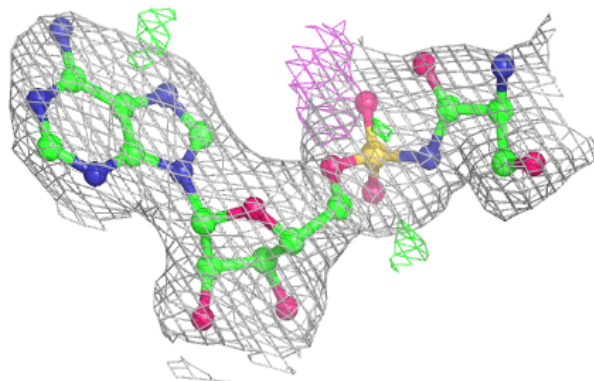mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
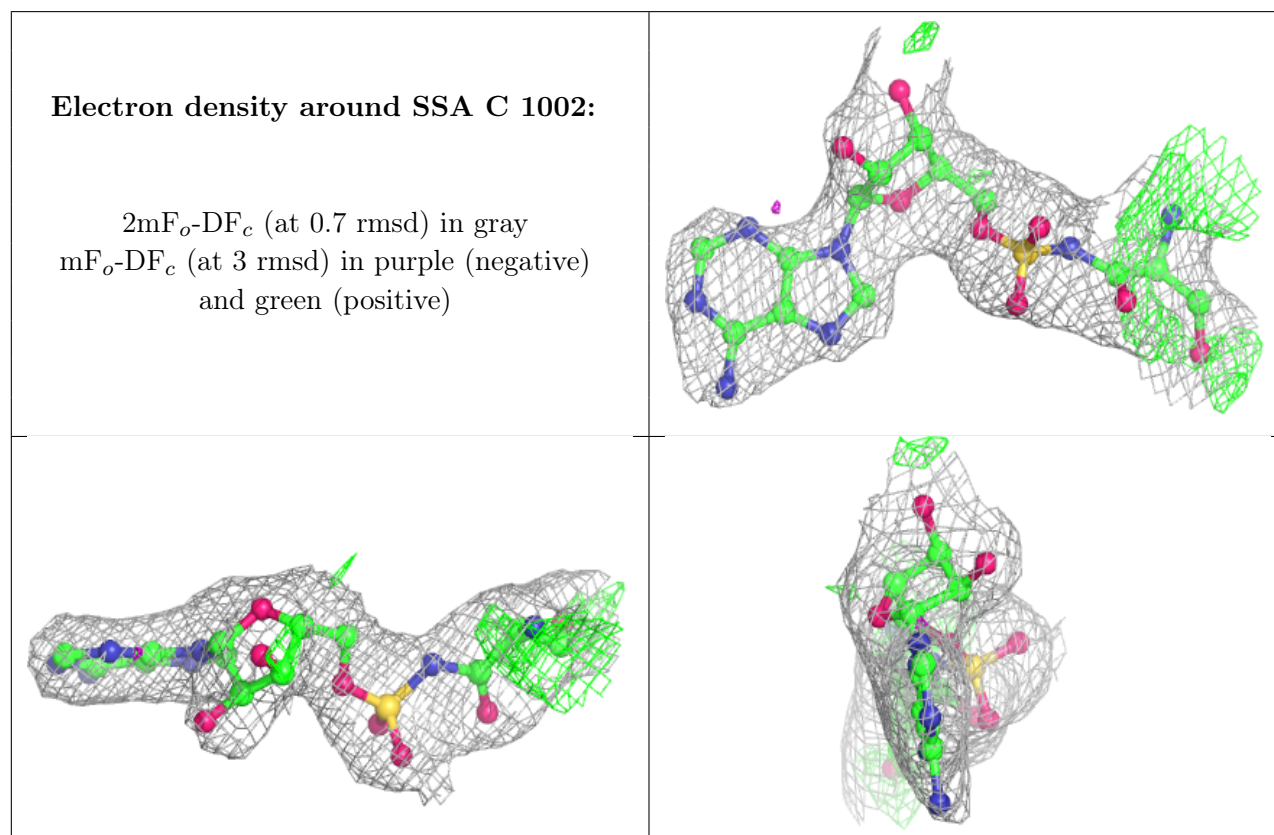
Electron density around SSA D 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
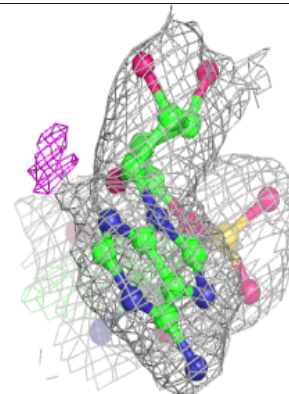and green (positive)
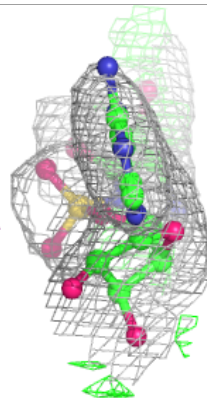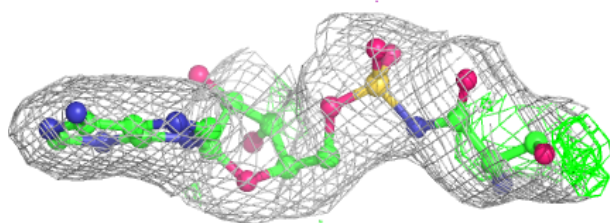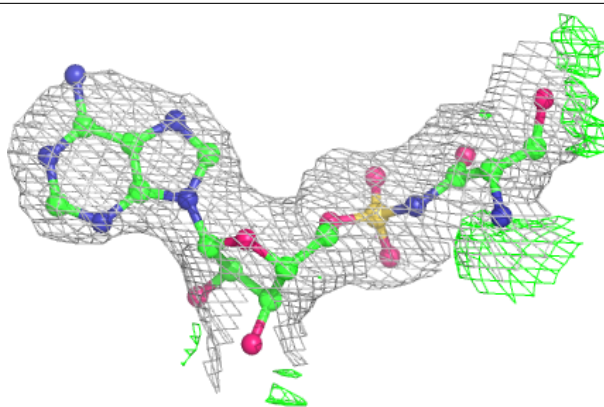
Electron density around SSA B 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
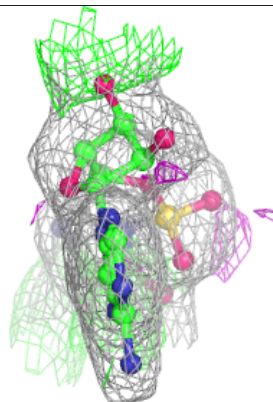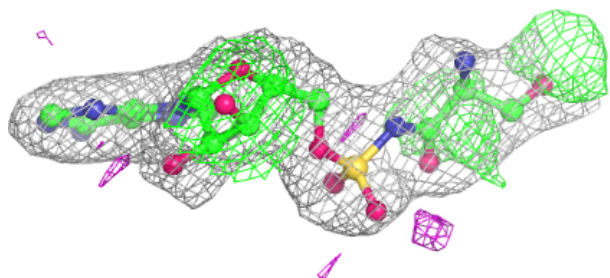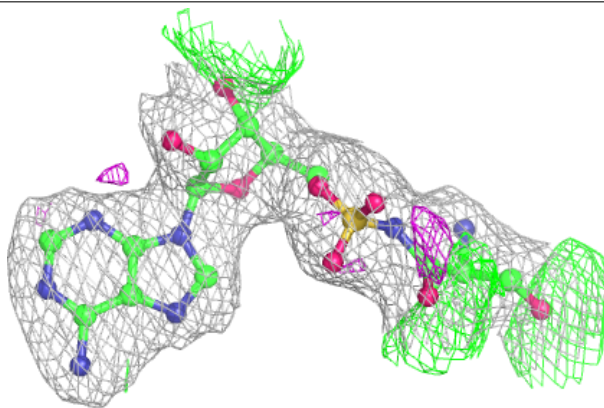
Electron density around SSA A 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
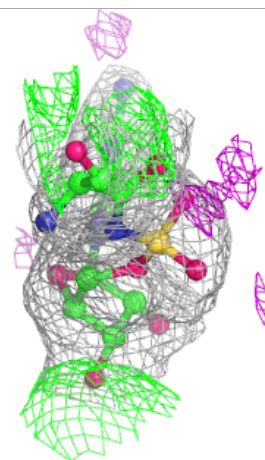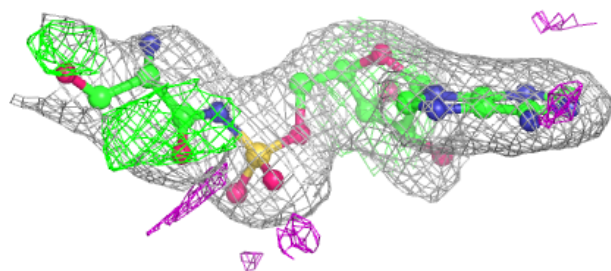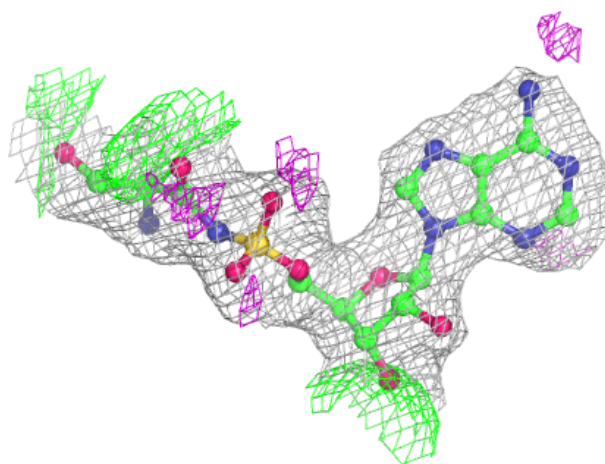
Electron density around SSA D 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
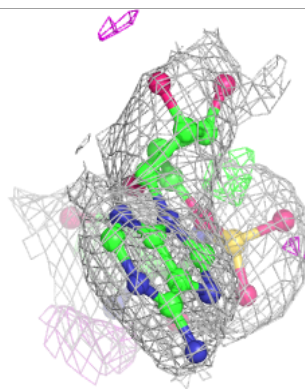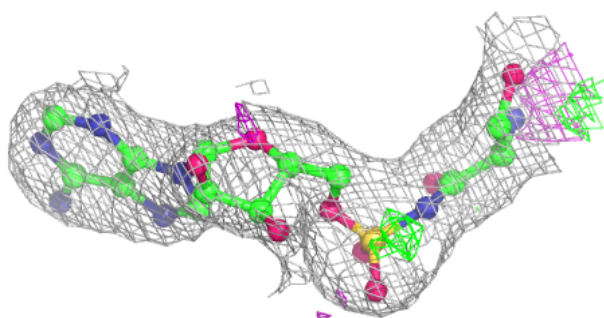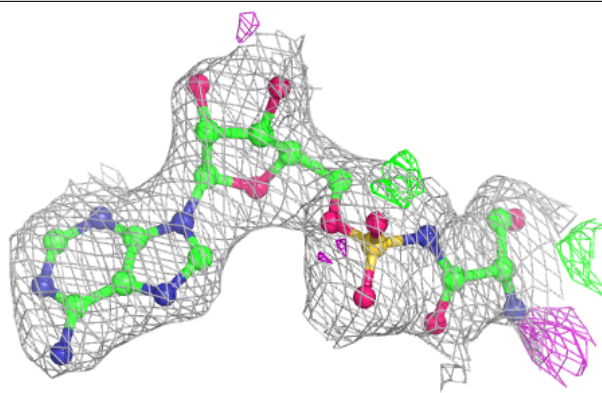
Electron density around SSA C 1001:

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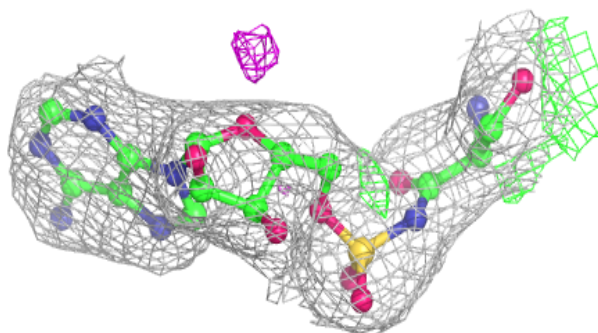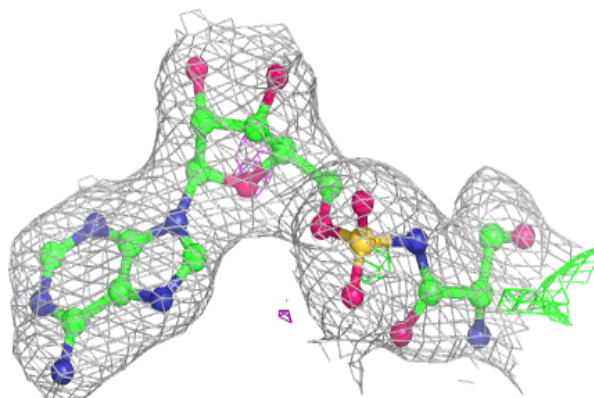mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around SSA B 1001:

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

Electron density around SSA A 1001:

$2mF_o$-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.