



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 12:39 PM UTC

PDB ID : 8STD / pdb_00008std
Title : S127A variant of LarB, a carboxylase/hydrolase involved in synthesis of the cofactor for lactate racemase, in complex with authentic substrate NaAD and soaked with CS2
Authors : Chatterjee, S.; Rankin, J.A.; Hu, J.; Hausinger, R.P.
Deposited on : 2023-05-10
Resolution : 2.65 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	:	NOT EXECUTED
Xtriage (Phenix)	:	2.0
EDS	:	NOT EXECUTED
Buster-report	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

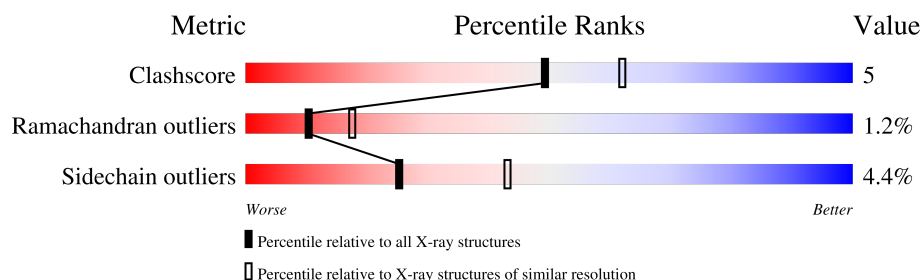
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.65 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))
Clashscore	190562	1141 (2.66-2.66)
Ramachandran outliers	187476	1126 (2.66-2.66)
Sidechain outliers	187428	1126 (2.66-2.66)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	256	66% 12% . 21%
1	B	256	69% 10% 21%
1	C	256	68% 10% 21%
1	D	256	67% 12% . 20%
1	E	256	74% 9% . 15%
1	F	256	65% 12% . 23%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 8620 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 Pyridinium-3,5-biscarboxylic acid mononucleotide synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	203	Total	C	N	O	S	0	6	0
			1435	906	246	274	9			
1	B	202	Total	C	N	O	S	0	1	0
			1406	891	242	265	8			
1	C	202	Total	C	N	O	S	0	0	0
			1405	895	238	265	7			
1	D	204	Total	C	N	O	S	0	0	0
			1387	877	241	261	8			
1	E	217	Total	C	N	O	S	0	0	0
			1448	916	250	276	6			
1	F	198	Total	C	N	O	S	0	0	0
			1320	836	225	251	8			

There are 66 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	127	ALA	SER	conflict	UNP F9UST0
A	247	ALA	-	expression tag	UNP F9UST0
A	248	SER	-	expression tag	UNP F9UST0
A	249	TRP	-	expression tag	UNP F9UST0
A	250	SER	-	expression tag	UNP F9UST0
A	251	HIS	-	expression tag	UNP F9UST0
A	252	PRO	-	expression tag	UNP F9UST0
A	253	GLN	-	expression tag	UNP F9UST0
A	254	PHE	-	expression tag	UNP F9UST0
A	255	GLU	-	expression tag	UNP F9UST0
A	256	LYS	-	expression tag	UNP F9UST0
B	127	ALA	SER	conflict	UNP F9UST0
B	247	ALA	-	expression tag	UNP F9UST0
B	248	SER	-	expression tag	UNP F9UST0
B	249	TRP	-	expression tag	UNP F9UST0
B	250	SER	-	expression tag	UNP F9UST0
B	251	HIS	-	expression tag	UNP F9UST0

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Chain	Residue	Modelled	Actual	Comment	Reference
B	252	PRO	-	expression tag	UNP F9UST0
B	253	GLN	-	expression tag	UNP F9UST0
B	254	PHE	-	expression tag	UNP F9UST0
B	255	GLU	-	expression tag	UNP F9UST0
B	256	LYS	-	expression tag	UNP F9UST0
C	127	ALA	SER	conflict	UNP F9UST0
C	247	ALA	-	expression tag	UNP F9UST0
C	248	SER	-	expression tag	UNP F9UST0
C	249	TRP	-	expression tag	UNP F9UST0
C	250	SER	-	expression tag	UNP F9UST0
C	251	HIS	-	expression tag	UNP F9UST0
C	252	PRO	-	expression tag	UNP F9UST0
C	253	GLN	-	expression tag	UNP F9UST0
C	254	PHE	-	expression tag	UNP F9UST0
C	255	GLU	-	expression tag	UNP F9UST0
C	256	LYS	-	expression tag	UNP F9UST0
D	127	ALA	SER	conflict	UNP F9UST0
D	247	ALA	-	expression tag	UNP F9UST0
D	248	SER	-	expression tag	UNP F9UST0
D	249	TRP	-	expression tag	UNP F9UST0
D	250	SER	-	expression tag	UNP F9UST0
D	251	HIS	-	expression tag	UNP F9UST0
D	252	PRO	-	expression tag	UNP F9UST0
D	253	GLN	-	expression tag	UNP F9UST0
D	254	PHE	-	expression tag	UNP F9UST0
D	255	GLU	-	expression tag	UNP F9UST0
D	256	LYS	-	expression tag	UNP F9UST0
E	127	ALA	SER	conflict	UNP F9UST0
E	247	ALA	-	expression tag	UNP F9UST0
E	248	SER	-	expression tag	UNP F9UST0
E	249	TRP	-	expression tag	UNP F9UST0
E	250	SER	-	expression tag	UNP F9UST0
E	251	HIS	-	expression tag	UNP F9UST0
E	252	PRO	-	expression tag	UNP F9UST0
E	253	GLN	-	expression tag	UNP F9UST0
E	254	PHE	-	expression tag	UNP F9UST0
E	255	GLU	-	expression tag	UNP F9UST0
E	256	LYS	-	expression tag	UNP F9UST0
F	127	ALA	SER	conflict	UNP F9UST0
F	247	ALA	-	expression tag	UNP F9UST0
F	248	SER	-	expression tag	UNP F9UST0
F	249	TRP	-	expression tag	UNP F9UST0

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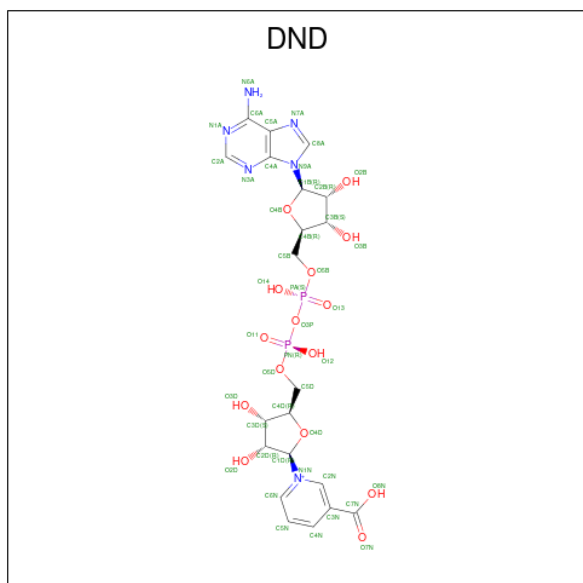
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Chain	Residue	Modelled	Actual	Comment	Reference
F	250	SER	-	expression tag	UNP F9UST0
F	251	HIS	-	expression tag	UNP F9UST0
F	252	PRO	-	expression tag	UNP F9UST0
F	253	GLN	-	expression tag	UNP F9UST0
F	254	PHE	-	expression tag	UNP F9UST0
F	255	GLU	-	expression tag	UNP F9UST0
F	256	LYS	-	expression tag	UNP F9UST0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Mg 2 2	0	0
2	B	2	Total Mg 2 2	0	0
2	C	2	Total Mg 2 2	0	0
2	D	1	Total Mg 1 1	0	0
2	E	1	Total Mg 1 1	0	0
2	F	1	Total Mg 1 1	0	0

- Molecule 3 is NICOTINIC ACID ADENINE DINUCLEOTIDE (CCD ID: DND) (formula: $C_{21}H_{27}N_6O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			44	21	6	15	2		
3	B	1	Total	C	N	O	P	0	0
			26	11	1	12	2		
3	C	1	Total	C	N	O	P	0	0
			44	21	6	15	2		
3	D	1	Total	C	N	O	P	0	0
			26	11	1	12	2		
3	E	1	Total	C	N	O	P	0	0
			44	21	6	15	2		
3	F	1	Total	C	N	O	P	0	0
			26	11	1	12	2		

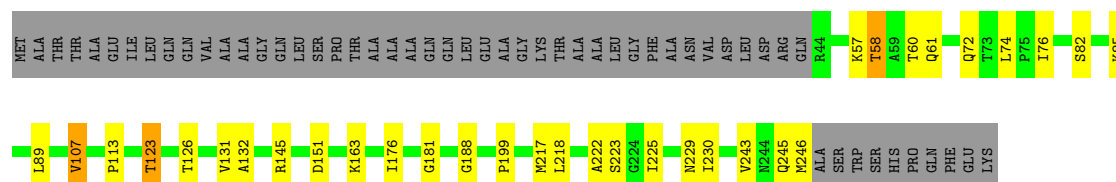
3 Residue-property plots [i](#)

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. 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. 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.

Note EDS was not executed.

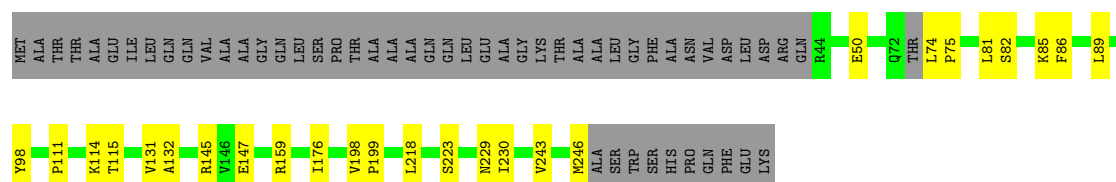
- Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase

Chain A: 



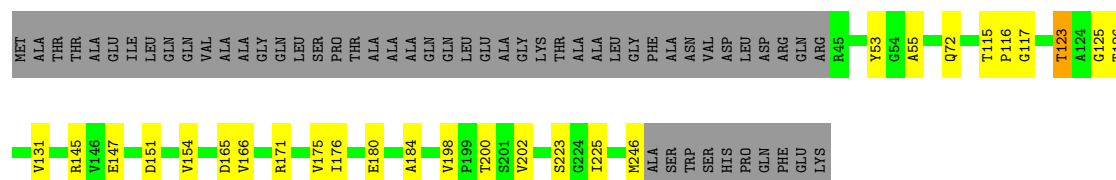
- Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase

Chain B: 



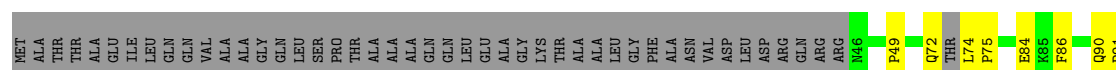
- Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase

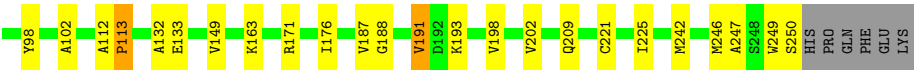
Chain C: 



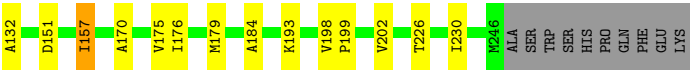
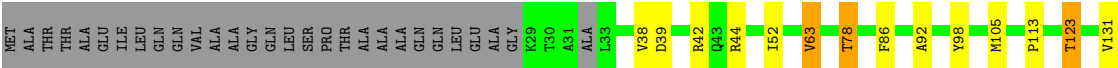
- Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase

Chain D: 

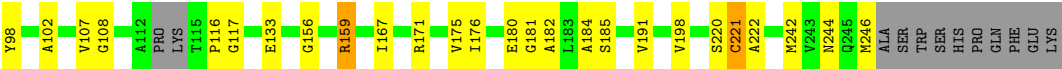
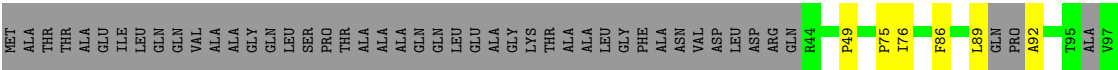




● Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase



● Molecule 1: Pyridinium-3,5-biscarboxylic acid mononucleotide synthase



4 Data and refinement statistics

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α , β , γ	118.84Å 118.84Å 211.29Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	78.96 – 2.65	Depositor
% Data completeness (in resolution range)	99.4 (78.96-2.65)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.40 (at 2.65Å)	Xtriage
Refinement program	PHENIX (1.19_4092: ???)	Depositor
R, R_{free}	0.242 , 0.273	Depositor
Wilson B-factor (Å ²)	57.8	Xtriage
Anisotropy	0.085	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	8620	wwPDB-VP
Average B, all atoms (Å ²)	80.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.49% 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: MG, DND

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	0.16	0/1460	0.38	0/1999
1	B	0.19	0/1425	0.42	0/1946
1	C	0.23	0/1427	0.45	0/1955
1	D	0.19	0/1409	0.42	0/1931
1	E	0.15	0/1470	0.34	0/2019
1	F	0.19	0/1335	0.38	0/1826
All	All	0.19	0/8526	0.40	0/11676

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	1435	0	1401	19	0
1	B	1406	0	1408	15	0
1	C	1405	0	1400	18	0
1	D	1387	0	1325	18	0
1	E	1448	0	1353	14	0
1	F	1320	0	1259	16	0
2	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	A	44	0	24	1	0
3	B	26	0	12	0	0
3	C	44	0	25	2	0
3	D	26	0	12	0	0
3	E	44	0	24	1	0
3	F	26	0	12	0	0
All	All	8620	0	8255	91	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 (91) 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:123:THR:HG22	1:E:151:ASP:H	1.39	0.88
1:C:123:THR:HG22	1:C:151:ASP:H	1.36	0.86
1:A:123:THR:HG22	1:A:151:ASP:H	1.39	0.84
1:F:156:GLY:O	1:F:159:ARG:HG3	1.83	0.78
1:A:76:ILE:HB	1:A:107:VAL:HG13	1.65	0.77
1:F:221:CYS:SG	1:F:222:ALA:N	2.60	0.75
1:C:171:ARG:NH1	1:D:247:ALA:O	2.22	0.73
1:A:58:THR:HG22	1:A:61:GLN:HG3	1.72	0.71
1:A:199:PRO:HD3	1:A:217:MET:HE1	1.76	0.68
1:C:116:PRO:HA	1:C:145:ARG:HH21	1.58	0.67
1:C:125:GLY:HA3	3:C:303:DND:H3	1.80	0.63
1:C:126:THR:HG23	1:C:151:ASP:OD2	2.00	0.62
1:F:76:ILE:H	1:F:107:VAL:HG22	1.66	0.61
1:A:199:PRO:HG2	1:A:230:ILE:HA	1.83	0.60
1:C:126:THR:CG2	1:C:151:ASP:OD2	2.49	0.60
1:A:58:THR:HG23	1:A:60:THR:H	1.67	0.58
1:A:57:LYS:O	1:A:85:LYS:NZ	2.33	0.57
1:E:170:ALA:O	1:E:193:LYS:HD3	2.05	0.56
1:F:49:PRO:HB3	1:F:75:PRO:HD2	1.87	0.56
1:E:63:VAL:HG21	1:E:92:ALA:HB3	1.89	0.54
1:D:187:VAL:O	1:D:191:VAL:HG13	2.09	0.53
1:E:78:THR:HG21	1:E:105:MET:HE2	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:199:PRO:CD	1:A:217:MET:HE1	2.37	0.53
1:B:111:PRO:HG2	1:D:250:SER:HA	1.89	0.53
1:B:86:PHE:CZ	1:B:98:TYR:HB2	2.43	0.53
1:A:229[A]:ASN:OD1	1:A:230:ILE:N	2.42	0.52
1:B:81:LEU:HA	1:B:85[B]:LYS:HE2	1.91	0.52
1:B:82:SER:OG	1:B:85[B]:LYS:HG2	2.09	0.52
1:D:132:ALA:HA	1:D:176:ILE:HD13	1.92	0.52
1:A:132:ALA:HA	1:A:176:ILE:HD13	1.92	0.51
1:E:52:ILE:HB	1:E:78:THR:HB	1.92	0.51
1:F:176:ILE:HG12	1:F:198:VAL:HB	1.93	0.50
1:F:86:PHE:CE1	1:F:98:TYR:HB2	2.47	0.49
1:B:145:ARG:HH12	1:C:165:ASP:HB3	1.77	0.49
1:D:191:VAL:HG23	1:D:193:LYS:H	1.76	0.49
1:F:89:LEU:HA	1:F:92:ALA:HB3	1.96	0.48
1:A:113:PRO:HB3	1:A:145:ARG:HG3	1.96	0.48
1:F:180:GLU:O	1:F:182:ALA:N	2.47	0.48
1:B:132:ALA:HA	1:B:176:ILE:HD13	1.94	0.48
1:A:229[A]:ASN:HB2	1:B:218:LEU:O	2.14	0.47
1:D:188:GLY:HA3	1:D:225:ILE:HD11	1.96	0.47
1:A:222[B]:ALA:O	1:A:223[B]:SER:OG	2.26	0.47
1:C:176:ILE:HG12	1:C:198:VAL:HB	1.96	0.47
1:F:175:VAL:HG11	1:F:184:ALA:HA	1.96	0.47
1:B:176:ILE:HG12	1:B:198:VAL:HB	1.96	0.47
1:E:175:VAL:HG11	1:E:184:ALA:HA	1.97	0.47
1:F:167:ILE:HG22	1:F:191:VAL:HG11	1.96	0.46
1:D:149:VAL:HG13	1:D:163:LYS:HD2	1.97	0.46
1:D:72:GLN:O	1:D:74:LEU:N	2.49	0.46
1:B:199:PRO:HG2	1:B:230:ILE:HA	1.99	0.45
1:D:102:ALA:HB2	1:D:133:GLU:HB3	1.98	0.45
1:C:223:SER:C	1:C:225:ILE:H	2.25	0.44
1:E:42:ARG:C	1:E:44:ARG:H	2.24	0.44
1:C:147:GLU:HG2	1:C:166:VAL:HG11	1.99	0.44
1:B:114:LYS:HE2	1:D:250:SER:C	2.43	0.44
1:B:145:ARG:NH2	1:C:166:VAL:HG22	2.32	0.44
1:C:246:MET:HE1	1:D:171:ARG:HB3	1.99	0.44
1:A:126:THR:N	3:A:303:DND:O11	2.50	0.44
1:E:176:ILE:HG12	1:E:198:VAL:HB	1.98	0.44
1:C:147:GLU:HG2	1:C:166:VAL:CG1	2.48	0.44
1:F:102:ALA:HB2	1:F:133:GLU:HB3	2.00	0.44
1:F:171:ARG:NH1	1:F:244:ASN:O	2.51	0.44
1:E:86:PHE:CZ	1:E:98:TYR:HB2	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:242:MET:O	1:F:246:MET:HG3	2.18	0.44
1:E:199:PRO:HG2	1:E:230:ILE:HA	2.00	0.43
1:F:185:SER:HB3	1:F:221:CYS:SG	2.58	0.43
1:E:179:MET:HE2	3:E:302:DND:O4D	2.18	0.43
1:C:126:THR:HG22	1:C:151:ASP:OD2	2.18	0.43
1:A:243:VAL:HG13	1:B:243:VAL:HG13	2.01	0.43
1:E:157:ILE:H	1:E:157:ILE:HG13	1.58	0.43
1:D:49:PRO:HB3	1:D:75:PRO:O	2.18	0.43
1:D:176:ILE:HG12	1:D:198:VAL:HB	2.01	0.43
1:D:90:GLN:N	1:D:91:PRO:HD2	2.34	0.42
1:C:175:VAL:HG11	1:C:184:ALA:HA	2.00	0.42
1:D:221:CYS:HA	1:D:225:ILE:HB	2.00	0.42
1:B:145:ARG:NH1	1:C:165:ASP:HB3	2.34	0.42
1:A:218:LEU:O	1:B:229:ASN:HB2	2.19	0.42
1:C:200:THR:OG1	1:C:202:VAL:HG22	2.20	0.42
1:F:117:GLY:HA3	1:F:171:ARG:CD	2.50	0.41
1:D:112:ALA:O	1:D:113:PRO:C	2.63	0.41
1:C:53:TYR:CZ	1:C:55:ALA:HB3	2.55	0.41
1:E:78:THR:HG23	1:E:105:MET:HB3	2.03	0.41
1:A:217:MET:HE2	1:A:217:MET:HB2	1.91	0.41
1:B:74:LEU:HB3	1:B:75:PRO:CD	2.51	0.41
1:D:86:PHE:CZ	1:D:98:TYR:HB2	2.56	0.40
1:A:188:GLY:HA3	1:A:225:ILE:HD11	2.03	0.40
1:D:242:MET:O	1:D:246:MET:HG3	2.22	0.40
1:F:159:ARG:HG3	1:F:159:ARG:H	1.58	0.40
3:C:303:DND:H25	3:C:303:DND:H21	1.90	0.40
1:E:132:ALA:HA	1:E:176:ILE:HD13	2.02	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	207/256 (81%)	196 (95%)	8 (4%)	3 (1%)	9	14
1	B	199/256 (78%)	188 (94%)	10 (5%)	1 (0%)	24	39
1	C	200/256 (78%)	186 (93%)	12 (6%)	2 (1%)	12	20
1	D	200/256 (78%)	190 (95%)	8 (4%)	2 (1%)	12	20
1	E	213/256 (83%)	193 (91%)	17 (8%)	3 (1%)	9	14
1	F	190/256 (74%)	174 (92%)	12 (6%)	4 (2%)	5	9
All	All	1209/1536 (79%)	1127 (93%)	67 (6%)	15 (1%)	10	17

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	113	PRO
1	E	38	VAL
1	F	181	GLY
1	A	181	GLY
1	C	72	GLN
1	F	220	SER
1	A	74	LEU
1	F	116	PRO
1	B	223	SER
1	A	72	GLN
1	D	249	TRP
1	E	39	ASP
1	E	113	PRO
1	C	117	GLY
1	F	108	GLY

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	138/190 (73%)	129 (94%)	9 (6%)	15	27
1	B	137/190 (72%)	130 (95%)	7 (5%)	21	36
1	C	136/190 (72%)	131 (96%)	5 (4%)	30	50

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	126/190 (66%)	122 (97%)	4 (3%)	34	55
1	E	126/190 (66%)	119 (94%)	7 (6%)	19	32
1	F	119/190 (63%)	117 (98%)	2 (2%)	53	73
All	All	782/1140 (69%)	748 (96%)	34 (4%)	25	44

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	58	THR
1	A	82	SER
1	A	89	LEU
1	A	107	VAL
1	A	123	THR
1	A	131	VAL
1	A	163	LYS
1	A	245	GLN
1	A	246	MET
1	B	50	GLU
1	B	89	LEU
1	B	115	THR
1	B	131	VAL
1	B	147	GLU
1	B	159	ARG
1	B	246	MET
1	C	115	THR
1	C	123	THR
1	C	131	VAL
1	C	154	VAL
1	C	180	GLU
1	D	84	GLU
1	D	191	VAL
1	D	202	VAL
1	D	209	GLN
1	E	63	VAL
1	E	78	THR
1	E	123	THR
1	E	131	VAL
1	E	157	ILE
1	E	202	VAL
1	E	226	THR
1	F	159	ARG

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Mol	Chain	Res	Type
1	F	221	CYS

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

Mol	Chain	Res	Type
1	E	158	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

Mogul was not executed - this section is therefore empty.

5.5 Carbohydrates [i](#)

Mogul was not executed - this section is therefore empty.

5.6 Ligand geometry [i](#)

Mogul was not executed - this section is therefore empty.

5.7 Other polymers [i](#)

Mogul was not executed - this section is therefore empty.

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](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

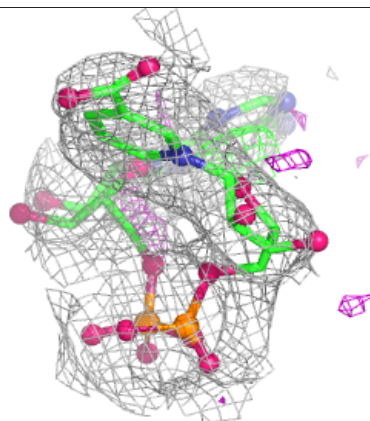
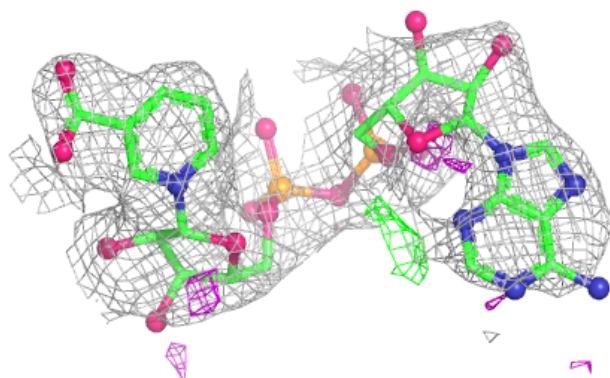
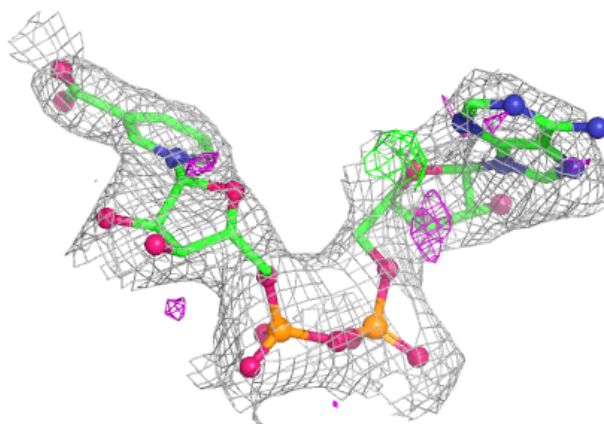
6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

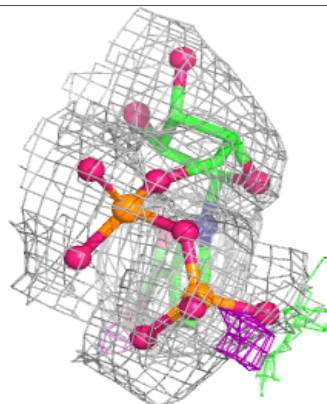
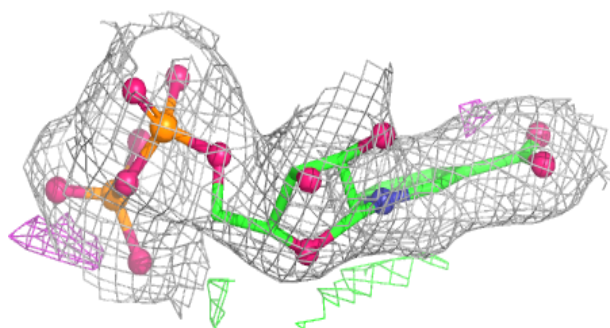
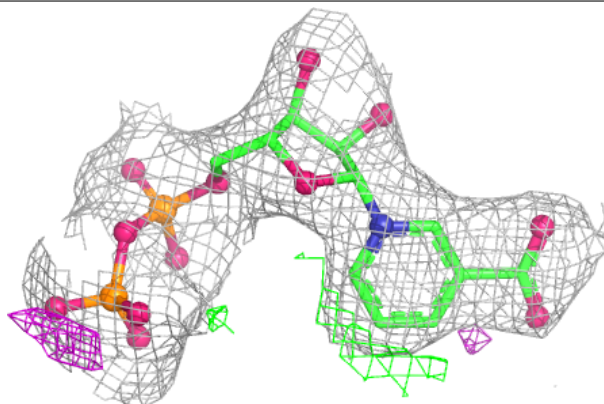
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around DND A 303:

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

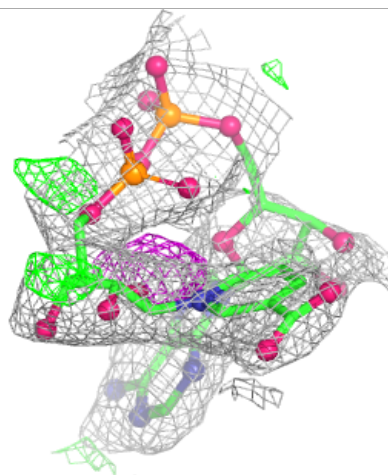
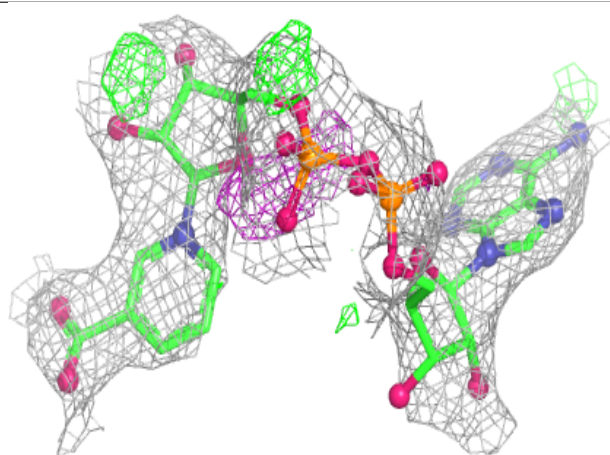
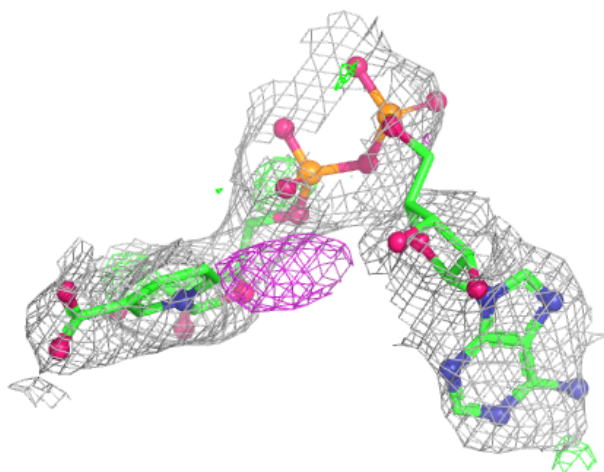
**Electron density around DND B 303:**

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



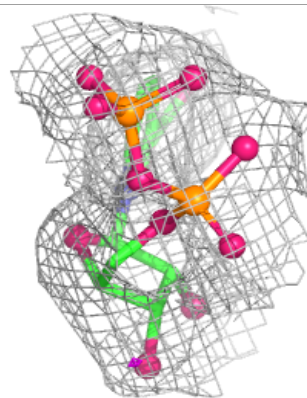
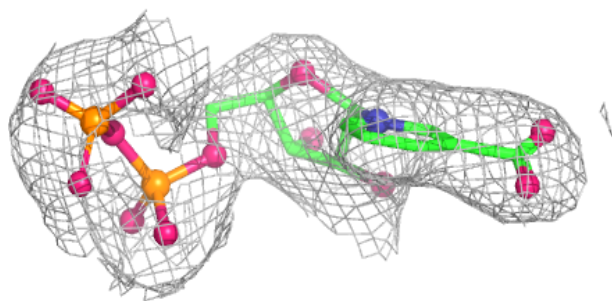
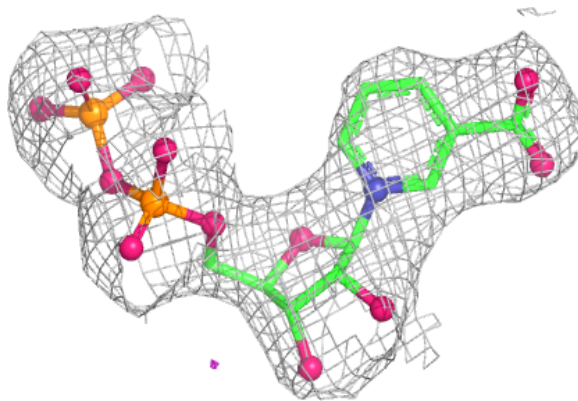
Electron density around DND C 303:

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

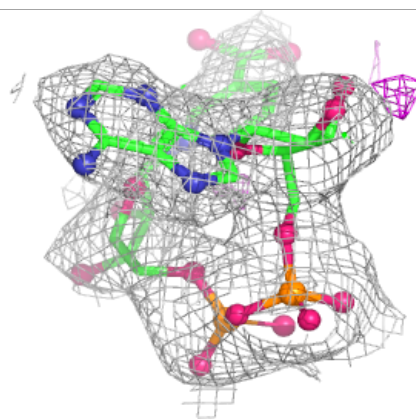
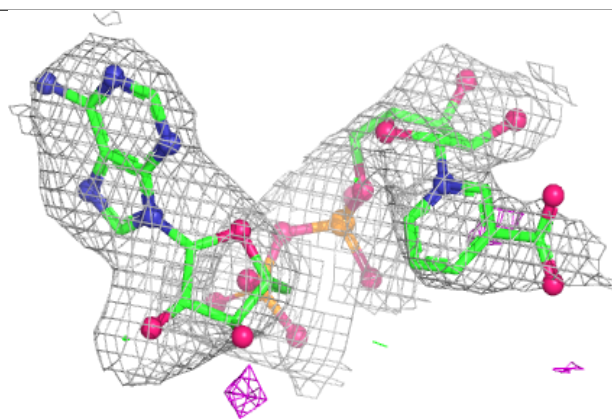
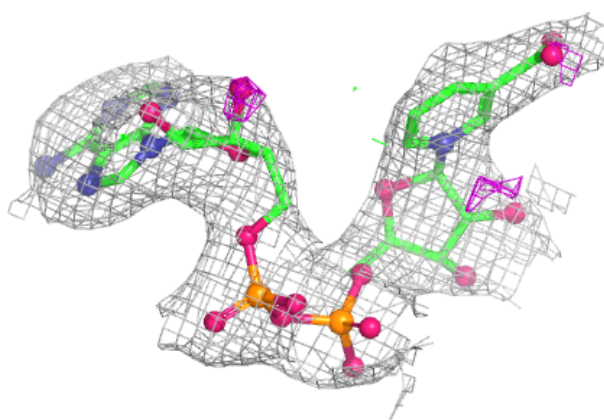


Electron density around DND D 302:

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

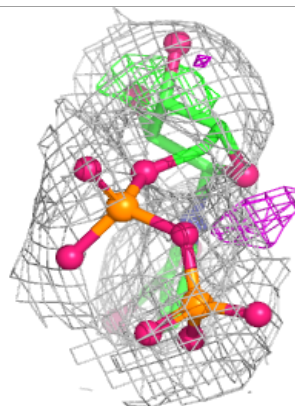
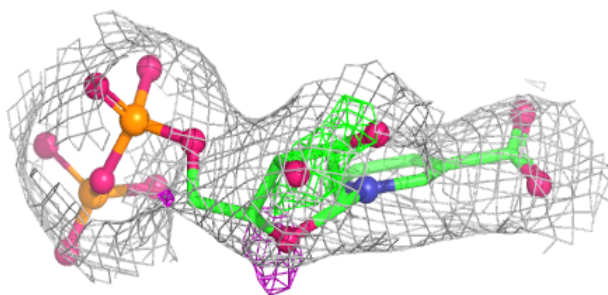
**Electron density around DND E 302:**

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



Electron density around DND F 302:

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



6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.