WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Aug 30, 2023 – 02:56 AM EDT

PDB ID : 3N8N
Title : Crystal structure of 3-dehydroquinate dehydratase from Mycobacterium tuberculosis in complex with inhibitor 6
Authors : Dias, M.V.B.; Snee, W.C.; Bromfield, K.M.; Payne, R.; Palaninathan, S.K.; Ciulli, A.; Howard, N.I.; Abell, C.; Sacchettini, J.C.; Blundell, T.L.
Deposited on : 2010-05-28
Resolution : 2.50 Å(reported)

The following versions of software and data (see references (i)) 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 : 2.35
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
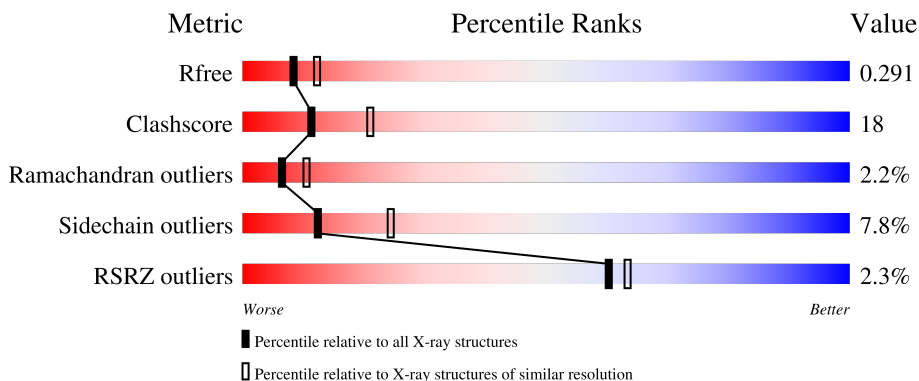Validation Pipeline (wwPDB-VP) : 2.35

1 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 2.50 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.
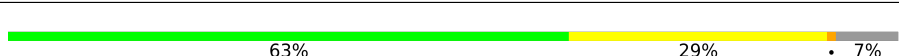
Metric	Percentile Ranks	Value
Rfree		0.291
Clashscore		18
Ramachandran outliers		2.2%
Sidechain outliers		7.8%
RSRZ outliers		2.3%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
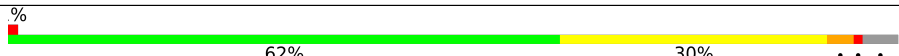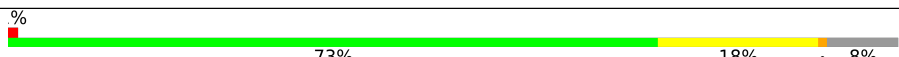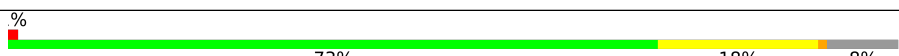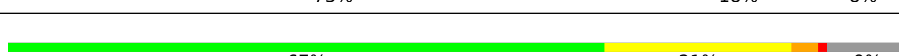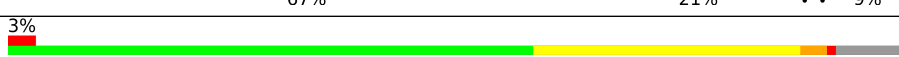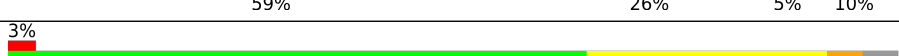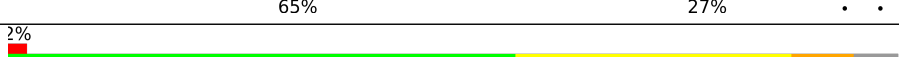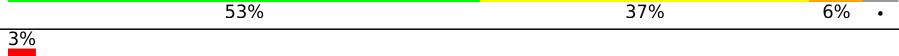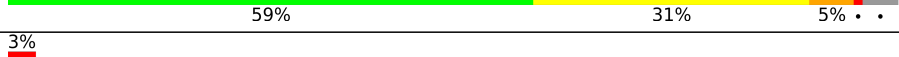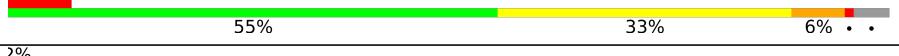
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	147	71% 19% • • 7%
1	B	147	69% 20% • • 7%
1	C	147	% 71% 18% • 7%
1	D	147	% 65% 27% • • •

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Mol	Chain	Length	Quality of chain
1	E	147	74% · · · · · 16% · · 5% · ·
1	F	147	2% · · · 63% · · · · · 27% · · 5% · 5%
1	G	147	.% · · · 67% · · · · · 22% · · · 9%
1	H	147	63% · · · · · 29% · · · 7%
1	I	147	.% · · · 62% · · · · · 30% · · · · ·
1	J	147	.% · · · 73% · · · · · 18% · · 8%
1	K	147	.% · · · 73% · · · · · 18% · · 8%
1	L	147	67% · · · · · 21% · · · · 9%
1	M	147	3% · · · 59% · · · · · 30% · · · 8%
1	N	147	5% · · · 59% · · · · · 26% · · 5% · 10%
1	O	147	3% · · · 65% · · · · · 27% · · ·
1	P	147	2% · · · 57% · · · · · 31% · · 7% · 5%
1	Q	147	7% · · · 53% · · · · · 37% · · 6% ·
1	R	147	3% · · · 59% · · · · · 31% · · 5% · ·
1	S	147	3% · · · 61% · · · · · 29% · · 5% · ·
1	T	147	.% · · · 72% · · · · · 19% · · · · ·
1	U	147	3% · · · 58% · · · · · 31% · · 7% · ·
1	V	147	4% · · · 61% · · · · · 29% · · 5% · ·
1	W	147	7% · · · 55% · · · · · 33% · · 6% · ·
1	X	147	2% · · · 61% · · · · · 27% · · 7% · ·

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	N88	C	147	-	-	X	-
2	N88	D	147	-	-	X	-

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 26820 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 3-dehydroquinate dehydratase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	137	Total	C	N	O	S	0	0	0
			1031	649	186	195	1			
1	B	137	Total	C	N	O	S	0	0	0
			1033	650	189	193	1			
1	C	136	Total	C	N	O	S	0	0	0
			1025	644	188	192	1			
1	D	141	Total	C	N	O	S	0	0	0
			1063	667	196	199	1			
1	E	141	Total	C	N	O	S	0	0	0
			1039	651	190	197	1			
1	F	139	Total	C	N	O	S	0	0	0
			1043	657	188	197	1			
1	G	134	Total	C	N	O	S	0	0	0
			1009	635	183	190	1			
1	H	136	Total	C	N	O	S	0	0	0
			1025	644	188	192	1			
1	I	141	Total	C	N	O	S	0	0	0
			1046	658	190	197	1			
1	J	135	Total	C	N	O	S	0	0	0
			1014	638	184	191	1			
1	K	135	Total	C	N	O	S	0	0	0
			1015	639	184	191	1			
1	L	134	Total	C	N	O	S	0	0	0
			1010	636	183	190	1			
1	M	135	Total	C	N	O	S	0	0	0
			1026	645	187	193	1			
1	N	132	Total	C	N	O	S	0	0	0
			999	630	181	187	1			
1	O	141	Total	C	N	O	S	0	0	0
			1048	660	190	197	1			
1	P	140	Total	C	N	O	S	0	0	0
			1047	659	189	198	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	141	Total 1046	C 658	N 190	O 197	S 1	0	0	0
1	R	141	Total 1058	C 665	N 193	O 199	S 1	0	0	0
1	S	141	Total 1065	C 671	N 193	O 200	S 1	0	0	0
1	T	141	Total 1065	C 671	N 193	O 200	S 1	0	0	0
1	U	141	Total 1064	C 668	N 196	O 199	S 1	0	0	0
1	V	141	Total 1069	C 672	N 196	O 200	S 1	0	0	0
1	W	141	Total 1065	C 671	N 193	O 200	S 1	0	0	0
1	X	144	Total 1094	C 687	N 199	O 206	S 2	0	0	0

- Molecule 2 is (1R,4R,5R)-3-(tert-butylcarbamoyl)-1,4,5-trihydroxycyclohex-2-ene-1-carboxylic acid (three-letter code: N88) (formula: $C_{12}H_{19}NO_6$).
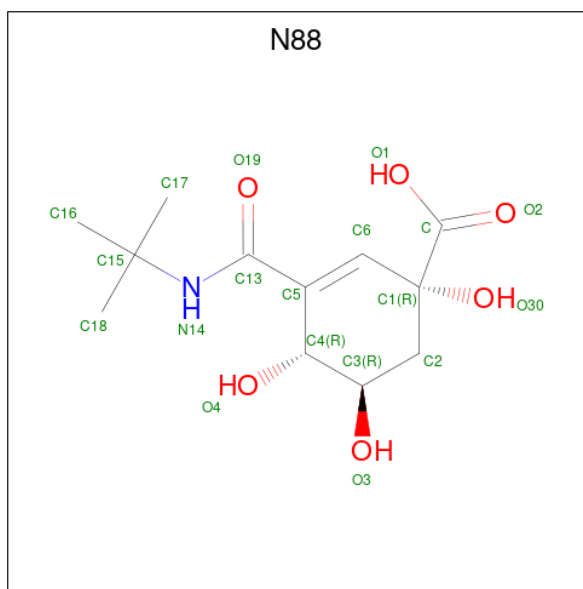
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 19	C 12	N 1	O 6	0	0
2	B	1	Total 19	C 12	N 1	O 6	0	0
2	C	1	Total 19	C 12	N 1	O 6	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	D	1	Total 19	C 12	N 1	O 6	0	0
2	E	1	Total 19	C 12	N 1	O 6	0	0
2	F	1	Total 19	C 12	N 1	O 6	0	0
2	G	1	Total 19	C 12	N 1	O 6	0	0
2	I	1	Total 19	C 12	N 1	O 6	0	0
2	J	1	Total 19	C 12	N 1	O 6	0	0
2	K	1	Total 19	C 12	N 1	O 6	0	0
2	L	1	Total 19	C 12	N 1	O 6	0	0
2	T	1	Total 19	C 12	N 1	O 6	0	0
2	U	1	Total 19	C 12	N 1	O 6	0	0
2	V	1	Total 19	C 12	N 1	O 6	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	63	Total 63	O 63	0	0
3	B	69	Total 69	O 69	0	0
3	C	77	Total 77	O 77	0	0
3	D	87	Total 87	O 87	0	0
3	E	65	Total 65	O 65	0	0
3	F	61	Total 61	O 61	0	0
3	G	69	Total 69	O 69	0	0
3	H	87	Total 87	O 87	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	I	83	Total 83	O 83	0	0
3	J	85	Total 85	O 85	0	0
3	K	82	Total 82	O 82	0	0
3	L	65	Total 65	O 65	0	0
3	M	42	Total 42	O 42	0	0
3	N	61	Total 61	O 61	0	0
3	O	51	Total 51	O 51	0	0
3	P	47	Total 47	O 47	0	0
3	Q	58	Total 58	O 58	0	0
3	R	49	Total 49	O 49	0	0
3	S	48	Total 48	O 48	0	0
3	T	79	Total 79	O 79	0	0
3	U	44	Total 44	O 44	0	0
3	V	66	Total 66	O 66	0	0
3	W	60	Total 60	O 60	0	0
3	X	57	Total 57	O 57	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.
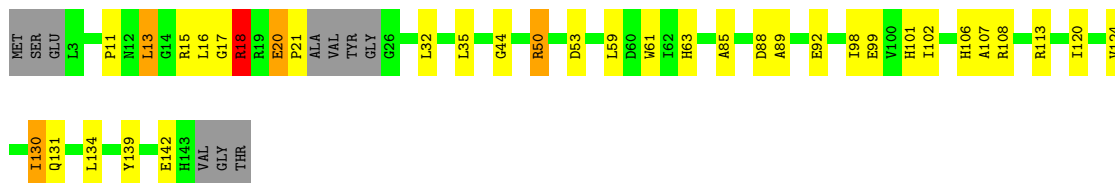
- Molecule 1: 3-dehydroquinate dehydratase

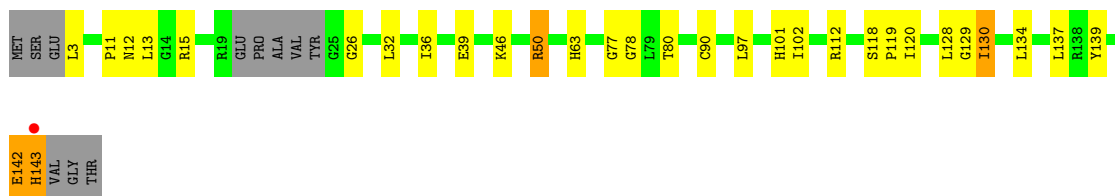- Molecule 1: 3-dehydroquinate dehydratase

- Molecule 1: 3-dehydroquinate dehydratase

- Molecule 1: 3-dehydroquinate dehydratase

V126 G129 I130 Q131 L134 R138 Y139 H143 V144 G145 THR

- Molecule 1: 3-dehydroquinate dehydratase

Chain E:

74%   16%   5%

MET SER GLU L3 I4 V5 N6 P11 N12 L13 G17 P21 A22 V23 Y24 G25 G26 T27 T28 E31 L32 I36 E42 K46 R50 W61 D67 P71 T80 I102 H106 L117 T122 G129 I130 L137 E142 H143 VAL GLY THR

- Molecule 1: 3-dehydroquinate dehydratase

Chain F:

2%

63%   27%   5%   5%

MET SER GLU L3 I4 G10 P11 N12 L13 G14 R15 L16 G17 R18 R19 E20 P21 A22 V23 TYR GLY G26 T27 T28 H29 D30 E31 L32 V33 V48 V49 R50 Q51 L59 D60 H63 Q64 A68 A69 E70 L79 T82 L86 R87 D88 A89 C90 L97 I98 E99

E110 F111 R112 R113 Y116 L117 S118 P119 I120 A121 I130 Q131 E142 H143 VAL GLY THR

- Molecule 1: 3-dehydroquinate dehydratase

Chain G:

%

67%   22%   9%

MET SER GLU L3 V7 P11 N12 L13 G14 R15 L16 G17 ARG ARG GLU PRO ALA VAL TYR G25 T28 V33 E37 R38 K46 A47 V48 V49 R50 D53 L59 D60 W61 I62 H63 Q64 D67 T80 H81 T82 R87 D88 E92 L97 H101
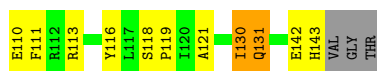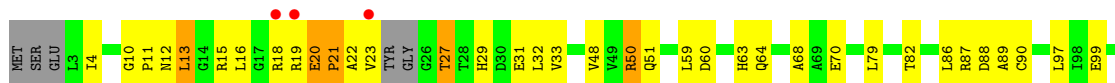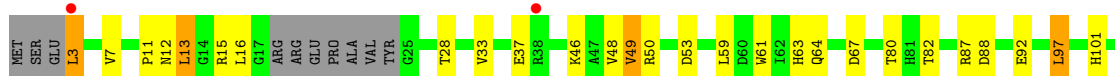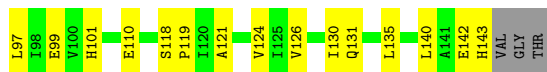
H106 E110 R113 Y116 A121 I130 Q131 A141 E142 H143 VAL GLY THR

- Molecule 1: 3-dehydroquinate dehydratase

Chain H:

63%   29%   7%

MET SER GLU L3 I4 V7 L13 G14 R15 R19 GLU PRO ALA VAL TYR G25 G26 T27 T28 H29 V33 A34 L35 R38 E39 A40 A41 E42 L45 K46 A47 V48 V49 R50 D53 S54 Q57 L58 W61 P71 V72 I73 L74 N75 T80 D88 P96

L97 I98 E99 V100 H101 E110 S118 P119 I120 A121 V124 I125 V126 I130 Q131 L135 L140 A141 E142 H143 VAL GLY THR

- Molecule 1: 3-dehydroquinate dehydratase

Chain I:

%

62%   30%

MET SER GLU L3 I4 V5 N6 V7 I8 N9 G10 P11 N12 L13 L16 G17 R18 R19 E20 P21 Y24 T27 D30 E31 L32 R38 L45 K46 R50 Q51 S52 D53 D60 W61 I62 P71 V72 I73 N74 L79 T80 R87 D88 L93 P96

E99 V100 H101 I102 V105 Y116 A121 V124 G129 I130 Q131 L134 L137 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain J:

73%   18%   •   8%

MET SER GLU L3 N9 G10 P11 N12 L13 R18 ARG GLU PRO ALA VAL TYR G25 T28 H29 L32 L35 I36 L43 Q51 E55 A56 Q57 L58 L59 H63 L79 R87 I98 Y116 I130 L134 L137 R138 Y139 E142 H143 VAL GLY

THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain K:

73%   18%   •   8%

MET SER GLU L3 R15 L16 G17 R18 R19 GLU PRO ALA VAL TYR GLY G26 T27 L32 E39 A40 A41 E42 L43 K46 R50 L59 I62 H63 R87 D88 A89 E92 I98 I102 R112 Y116 L117 S118 P119 G129 I130 Q131 Y139 H143

VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain L:

67%   21%   • •   9%

MET SER GLU L3 I4 I8 P11 N12 R15 R18 ARG GLU PRO ALA VAL TYR GLY G26 H29 D30 E31 L32 V33 A34 L35 I36 E37 R38 E39 E42 V48 V49 R50 D53 L58 L59 D60 W61 I62 H63 D67 L86 L97 H101 I102 A121

L128 G129 I130 L134 L135 A136 L137 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain M:

3%
59%   30%   • •   8%

MET SER GLU L3 I4 P11 R15 L16 G17 R18 R19 E20 PRO ALA VAL TYR GLY GLY T27 T28 H29 V33 I36 E37 R38 E39 A40 K46 A47 R50 D53 S54 E55 L58 L59 D60 W61 I62 A65 L74 N75 L79 T80 V84 A85 D88 A89

C90 P96 E99 V100 H101 I102 S103 N104 V105 H106 E109 R112 R113 H114 S115 Y116 L117 S118 P119 I120 V124 I125 V126 Q131 L137 A141 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain N:

5%
59%   26%   5%   10%

MET SER GLU L3 I8 P11 N12 L13 G14 R15 L16 G17 R18 ARG GLU PRO ALA VAL TYR GLY GLY THR T28 H29 D30 E31 L32 L35 I36 E39 L43 G44 L45 K46 A47 V48 V49 R50 D53 Q57 L58 L59 H63 Q64 D67 A68 A69 T80 H81 T82

S83 A89 E92 E99 I102 V105 H106 A107 R108 E109 E110 F111 R112 L117 S118 V126 G129 I130 Q131 L135 A136 L137 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain O:

3%

65%   27%   • •

MET SER GLU L3 G10 P11 N12 L16 G17 R18 R19 E20 P21 A22 V23 Y24 G25 G26 T27 T28 H29 D30 E31 L32 V33 A34 L35 I36 E37 R38 L43 V49 R50 Q51 S52 D53 S54 W61 I62 H63 H81 R87 S94 L97 I98 E110 F111 R112 Y116

A121 V126 I130 Q131 Y139 L140 A141 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain P:

2%

57%   31%   7%   5%

MET SER GLU L3 V7 I8 R15 L16 G17 R18 R19 E20 P21 A22 V23 TYR G25 G26 T27 T28 H29 D30 E31 L32 V33 A34 L35 I36 E37 R38 E39 A40 L45 V49 R50 Q51 L58 A68 A69 E70 L74 N75 A76 G77 L86 R87 C90 A91 E92 P96

L97 I98 E99 V100 H101 F111 R112 L117 S118 P119 I120 G123 V124 I125 V126 G129 I130 Q131 L134 L135 A136 L137 R138 Y139 L140 A141 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain Q:

7%

53%   37%   6%   •

MET SER GLU L3 I4 V5 N6 V7 L13 G14 R15 R18 P21 Y24 G25 G26 H29 D30 E31 L32 V33 A34 R38 E39 A40 A41 E42 L43 G44 L45 K46 A47 V48 V49 R50 Q51 S54 E55 A56 Q57 L58 L59 D60 W61 A66 D67 E70 I73 G77

G78 L79 T80 L86 C90 A91 E92 L93 S94 A95 P96 L97 I98 E99 I102 R108 E109 E110 F111 S118 P119 V124 I125 V126 G127 L128 G129 I130 Q131 L134 L135 Y139 L140 A141 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain R:

3%

59%   31%   5% • •

MET SER GLU L3 I4 N9 G10 P11 L16 G17 R18 R19 E20 P21 A22 V23 Y24 G25 G26 T27 T28 H29 D30 E31 L32 V33 A34 L35 E39 A40 A41 E42 L45 K46 Q51 L58 H63 A66 A69 A76 L79 T80 H81 I82 R87 L93 S94

A95 H101 V105 H106 F111 L117 S118 P119 I120 A121 T122 I125 L128 G129 I130 Q131 L134 L135 Y139 L140 A141 E142 H143 VAL GLY THR

• Molecule 1: 3-dehydroquinate dehydratase

Chain S:

3%

61%   29%   5% • •

• Molecule 1: 3-dehydroquinate dehydratase

Chain T:

72%   19%

• Molecule 1: 3-dehydroquinate dehydratase

Chain U:

3%

58%   31%   7%

• Molecule 1: 3-dehydroquinate dehydratase

Chain V:

4%

61%   29%   5%

• Molecule 1: 3-dehydroquinate dehydratase

Chain W:

7%

55%   33%   6%

• Molecule 1: 3-dehydroquinate dehydratase

Chain X:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	96.84Å 137.52Å 148.33Å 90.00° 95.88° 90.00°	Depositor
Resolution (Å)	62.30 – 2.50 62.32 – 2.50	Depositor EDS
% Data completeness (in resolution range)	86.7 (62.30-2.50) 86.6 (62.32-2.50)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.86 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.201 , 0.295 0.200 , 0.291	Depositor DCC
R_{free} test set	5817 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	32.8	Xtriage
Anisotropy	0.320	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 45.3	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	26820	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.14% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[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 ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: N88

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	0.67	0/1047	0.83	1/1426 (0.1%)
1	B	0.68	0/1049	0.80	1/1428 (0.1%)
1	C	0.70	0/1040	0.81	1/1414 (0.1%)
1	D	0.74	0/1079	0.87	0/1467
1	E	0.66	0/1055	0.83	1/1435 (0.1%)
1	F	0.61	0/1059	0.79	0/1443
1	G	0.70	0/1024	0.77	1/1393 (0.1%)
1	H	0.75	0/1040	0.85	1/1414 (0.1%)
1	I	0.68	0/1062	0.83	1/1448 (0.1%)
1	J	0.74	0/1029	0.80	0/1400
1	K	0.65	0/1030	0.81	2/1402 (0.1%)
1	L	0.71	0/1025	0.82	1/1395 (0.1%)
1	M	0.54	0/1041	0.70	0/1416
1	N	0.52	0/1014	0.71	0/1380
1	O	0.64	0/1065	0.74	0/1453
1	P	0.60	0/1063	0.79	0/1448
1	Q	0.50	0/1063	0.69	1/1450 (0.1%)
1	R	0.54	0/1075	0.74	1/1465 (0.1%)
1	S	0.54	0/1083	0.71	0/1476
1	T	0.71	0/1083	0.82	1/1476 (0.1%)
1	U	0.60	0/1081	0.79	0/1472
1	V	0.64	0/1087	0.78	1/1480 (0.1%)
1	W	0.53	0/1083	0.76	1/1476 (0.1%)
1	X	0.63	0/1112	0.81	1/1513 (0.1%)
All	All	0.64	0/25389	0.79	16/34570 (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	R	0	1
1	X	0	2
All	All	0	3

There are no bond length outliers.

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	X	20	GLU	C-N-CD	-6.86	105.51	120.60
1	L	35	LEU	CA-CB-CG	6.54	130.35	115.30
1	K	112	ARG	NE-CZ-NH1	6.22	123.41	120.30
1	I	21	PRO	N-CA-CB	5.69	110.13	103.30
1	E	67	ASP	CB-CG-OD1	5.67	123.40	118.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	R	82	THR	Peptide
1	X	19	ARG	Peptide
1	X	20	GLU	Peptide

5.2 Too-close contacts ⓘ

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	1031	0	1030	30	0
1	B	1033	0	1037	37	0
1	C	1025	0	1031	45	0
1	D	1063	0	1072	72	0
1	E	1039	0	1025	23	0
1	F	1043	0	1044	34	0
1	G	1009	0	1016	26	0
1	H	1025	0	1031	35	0
1	I	1046	0	1040	30	0
1	J	1014	0	1018	23	0
1	K	1015	0	1017	21	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1010	0	1015	31	0
1	M	1026	0	1031	37	0
1	N	999	0	1005	41	0
1	O	1048	0	1046	40	0
1	P	1047	0	1047	62	0
1	Q	1046	0	1039	47	0
1	R	1058	0	1061	39	0
1	S	1065	0	1068	52	0
1	T	1065	0	1068	33	0
1	U	1064	0	1072	51	0
1	V	1069	0	1072	47	0
1	W	1065	0	1068	54	0
1	X	1094	0	1102	63	0
2	A	19	0	18	0	0
2	B	19	0	18	2	0
2	C	19	0	18	31	0
2	D	19	0	18	16	0
2	E	19	0	18	0	0
2	F	19	0	18	1	0
2	G	19	0	18	3	0
2	I	19	0	18	3	0
2	J	19	0	18	3	0
2	K	19	0	18	0	0
2	L	19	0	18	1	0
2	T	19	0	18	0	0
2	U	19	0	18	0	0
2	V	19	0	18	4	0
3	A	63	0	0	3	0
3	B	69	0	0	3	0
3	C	77	0	0	5	0
3	D	87	0	0	5	0
3	E	65	0	0	4	0
3	F	61	0	0	2	0
3	G	69	0	0	4	0
3	H	87	0	0	6	0
3	I	83	0	0	5	0
3	J	85	0	0	4	0
3	K	82	0	0	3	0
3	L	65	0	0	3	0
3	M	42	0	0	7	0
3	N	61	0	0	11	0
3	O	51	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	P	47	0	0	11	0
3	Q	58	0	0	9	0
3	R	49	0	0	2	0
3	S	48	0	0	9	0
3	T	79	0	0	6	0
3	U	44	0	0	5	0
3	V	66	0	0	5	0
3	W	60	0	0	8	0
3	X	57	0	0	8	0
All	All	26820	0	25307	899	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 18.

The worst 5 of 899 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:C:12:ASN:ND2	2:C:147:N88:H17	1.41	1.35
1:D:11:PRO:O	2:D:147:N88:H17	1.31	1.25
1:D:17:GLY:CA	1:D:18:ARG:HB2	1.72	1.18
1:D:12:ASN:HB2	2:D:147:N88:H18	1.23	1.18
1:B:17:GLY:HA3	1:B:18:ARG:CB	1.70	1.17

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	133/147 (90%)	122 (92%)	9 (7%)	2 (2%)	10	18
1	B	133/147 (90%)	125 (94%)	6 (4%)	2 (2%)	10	18

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	132/147 (90%)	123 (93%)	7 (5%)	2 (2%)	10	18
1	D	137/147 (93%)	126 (92%)	8 (6%)	3 (2%)	6	10
1	E	139/147 (95%)	126 (91%)	9 (6%)	4 (3%)	4	6
1	F	135/147 (92%)	125 (93%)	8 (6%)	2 (2%)	10	18
1	G	130/147 (88%)	126 (97%)	4 (3%)	0	100	100
1	H	132/147 (90%)	126 (96%)	6 (4%)	0	100	100
1	I	139/147 (95%)	124 (89%)	10 (7%)	5 (4%)	3	4
1	J	131/147 (89%)	124 (95%)	7 (5%)	0	100	100
1	K	131/147 (89%)	125 (95%)	5 (4%)	1 (1%)	19	35
1	L	130/147 (88%)	124 (95%)	6 (5%)	0	100	100
1	M	131/147 (89%)	117 (89%)	8 (6%)	6 (5%)	2	2
1	N	128/147 (87%)	113 (88%)	12 (9%)	3 (2%)	6	10
1	O	139/147 (95%)	126 (91%)	11 (8%)	2 (1%)	11	20
1	P	136/147 (92%)	117 (86%)	15 (11%)	4 (3%)	4	6
1	Q	139/147 (95%)	117 (84%)	16 (12%)	6 (4%)	2	3
1	R	139/147 (95%)	121 (87%)	14 (10%)	4 (3%)	4	6
1	S	139/147 (95%)	122 (88%)	12 (9%)	5 (4%)	3	4
1	T	139/147 (95%)	124 (89%)	12 (9%)	3 (2%)	6	10
1	U	139/147 (95%)	124 (89%)	11 (8%)	4 (3%)	4	6
1	V	139/147 (95%)	125 (90%)	10 (7%)	4 (3%)	4	6
1	W	139/147 (95%)	119 (86%)	16 (12%)	4 (3%)	4	6
1	X	142/147 (97%)	124 (87%)	12 (8%)	6 (4%)	3	3
All	All	3251/3528 (92%)	2945 (91%)	234 (7%)	72 (2%)	6	10

5 of 72 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	18	ARG
1	C	26	GLY
1	D	21	PRO
1	E	21	PRO
1	E	23	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	106/115 (92%)	102 (96%)	4 (4%)	33	58
1	B	106/115 (92%)	98 (92%)	8 (8%)	13	26
1	C	105/115 (91%)	102 (97%)	3 (3%)	42	69
1	D	109/115 (95%)	103 (94%)	6 (6%)	21	41
1	E	104/115 (90%)	96 (92%)	8 (8%)	13	25
1	F	107/115 (93%)	102 (95%)	5 (5%)	26	49
1	G	104/115 (90%)	97 (93%)	7 (7%)	16	31
1	H	105/115 (91%)	101 (96%)	4 (4%)	33	58
1	I	105/115 (91%)	95 (90%)	10 (10%)	8	17
1	J	104/115 (90%)	98 (94%)	6 (6%)	20	38
1	K	104/115 (90%)	98 (94%)	6 (6%)	20	38
1	L	104/115 (90%)	97 (93%)	7 (7%)	16	31
1	M	106/115 (92%)	99 (93%)	7 (7%)	16	32
1	N	103/115 (90%)	92 (89%)	11 (11%)	6	13
1	O	106/115 (92%)	95 (90%)	11 (10%)	7	13
1	P	107/115 (93%)	100 (94%)	7 (6%)	17	33
1	Q	105/115 (91%)	91 (87%)	14 (13%)	4	7
1	R	108/115 (94%)	99 (92%)	9 (8%)	11	22
1	S	109/115 (95%)	101 (93%)	8 (7%)	14	27
1	T	109/115 (95%)	100 (92%)	9 (8%)	11	22
1	U	109/115 (95%)	97 (89%)	12 (11%)	6	12
1	V	109/115 (95%)	102 (94%)	7 (6%)	17	33
1	W	109/115 (95%)	95 (87%)	14 (13%)	4	8
1	X	113/115 (98%)	97 (86%)	16 (14%)	3	6
All	All	2556/2760 (93%)	2357 (92%)	199 (8%)	12	24

5 of 199 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	Q	79	LEU
1	T	23	VAL
1	Q	97	LEU
1	R	105	VAL
1	U	18	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 34 such sidechains are listed below:

Mol	Chain	Res	Type
1	U	114	HIS
1	U	131	GLN
1	X	29	HIS
1	M	101	HIS
1	K	63	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 ⓘ

14 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	N88	U	147	-	16,19,19	1.06	1 (6%)	17,30,30	1.07	1 (5%)
2	N88	B	147	-	16,19,19	1.11	2 (12%)	17,30,30	1.59	3 (17%)
2	N88	K	147	-	16,19,19	0.97	1 (6%)	17,30,30	1.33	2 (11%)
2	N88	D	147	-	16,19,19	1.02	1 (6%)	17,30,30	2.10	5 (29%)
2	N88	A	147	-	16,19,19	1.05	1 (6%)	17,30,30	1.04	1 (5%)
2	N88	T	147	-	16,19,19	0.89	1 (6%)	17,30,30	1.31	2 (11%)
2	N88	C	147	-	16,19,19	0.81	1 (6%)	17,30,30	1.28	1 (5%)
2	N88	L	147	-	16,19,19	0.93	1 (6%)	17,30,30	1.12	2 (11%)
2	N88	E	147	-	16,19,19	1.18	1 (6%)	17,30,30	0.72	1 (5%)
2	N88	I	147	-	16,19,19	0.77	0	17,30,30	1.97	2 (11%)
2	N88	J	147	-	16,19,19	0.93	1 (6%)	17,30,30	1.34	2 (11%)
2	N88	G	147	-	16,19,19	1.38	2 (12%)	17,30,30	2.55	3 (17%)
2	N88	V	147	-	16,19,19	1.03	1 (6%)	17,30,30	1.09	3 (17%)
2	N88	F	147	-	16,19,19	0.91	0	17,30,30	1.10	2 (11%)

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	N88	U	147	-	-	9/15/33/33	0/1/1/1
2	N88	B	147	-	-	8/15/33/33	0/1/1/1
2	N88	K	147	-	-	9/15/33/33	0/1/1/1
2	N88	D	147	-	-	4/15/33/33	0/1/1/1
2	N88	A	147	-	-	9/15/33/33	0/1/1/1
2	N88	T	147	-	-	6/15/33/33	0/1/1/1
2	N88	C	147	-	-	7/15/33/33	0/1/1/1
2	N88	L	147	-	-	10/15/33/33	0/1/1/1
2	N88	E	147	-	-	8/15/33/33	0/1/1/1
2	N88	I	147	-	-	7/15/33/33	0/1/1/1
2	N88	J	147	-	-	8/15/33/33	0/1/1/1
2	N88	G	147	-	-	3/15/33/33	0/1/1/1
2	N88	V	147	-	-	7/15/33/33	0/1/1/1
2	N88	F	147	-	-	8/15/33/33	0/1/1/1

The worst 5 of 14 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	147	N88	C6-C5	3.98	1.36	1.33
2	E	147	N88	C6-C5	2.97	1.35	1.33
2	B	147	N88	C6-C5	2.94	1.35	1.33
2	A	147	N88	C6-C5	2.60	1.35	1.33
2	V	147	N88	C6-C5	2.56	1.35	1.33

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	147	N88	C15-N14-C13	-7.87	118.39	125.86
2	I	147	N88	C15-N14-C13	-6.63	119.56	125.86
2	D	147	N88	C15-N14-C13	-5.35	120.79	125.86
2	G	147	N88	O19-C13-N14	-5.12	115.31	124.29
2	B	147	N88	C15-N14-C13	4.25	129.89	125.86

There are no chirality outliers.

5 of 103 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	147	N88	C5-C13-N14-C15
2	C	147	N88	O2-C-C1-C6
2	C	147	N88	C5-C13-N14-C15
2	C	147	N88	O19-C13-N14-C15
2	D	147	N88	C5-C13-N14-C15

There are no ring outliers.

9 monomers are involved in 64 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	147	N88	2	0
2	D	147	N88	16	0
2	C	147	N88	31	0
2	L	147	N88	1	0
2	I	147	N88	3	0
2	J	147	N88	3	0
2	G	147	N88	3	0
2	V	147	N88	4	0
2	F	147	N88	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 N88 U 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 B 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 K 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 D 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 A 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 T 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 C 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 L 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 E 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 I 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 J 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 G 147

Bond lengths

Bond angles

Torsions

Rings

wwPDB X-ray Structure Validation Summary Report

Ligand N88 V 147

Bond lengths

Bond angles

Torsions

Rings

Ligand N88 F 147

5.7 Other polymers ⓘ

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	137/147 (93%)	-0.41	0	100	100	15, 25, 45, 64	0
1	B	137/147 (93%)	-0.33	0	100	100	9, 22, 40, 65	0
1	C	136/147 (92%)	-0.30	1 (0%)	87	89	11, 21, 37, 57	0
1	D	141/147 (95%)	-0.27	2 (1%)	75	77	9, 19, 39, 60	0
1	E	141/147 (95%)	-0.41	0	100	100	13, 23, 51, 60	0
1	F	139/147 (94%)	-0.26	3 (2%)	62	65	10, 24, 50, 67	0
1	G	134/147 (91%)	-0.29	2 (1%)	73	75	13, 22, 43, 53	0
1	H	136/147 (92%)	-0.30	0	100	100	8, 19, 34, 48	0
1	I	141/147 (95%)	-0.31	2 (1%)	75	77	7, 18, 49, 58	0
1	J	135/147 (91%)	-0.31	1 (0%)	87	89	9, 18, 34, 45	0
1	K	135/147 (91%)	-0.21	1 (0%)	87	89	15, 25, 46, 54	0
1	L	134/147 (91%)	-0.33	0	100	100	9, 22, 40, 47	0
1	M	135/147 (91%)	0.20	4 (2%)	50	53	32, 50, 65, 69	0
1	N	132/147 (89%)	0.38	8 (6%)	21	22	37, 49, 74, 77	0
1	O	141/147 (95%)	-0.15	5 (3%)	44	47	18, 32, 59, 72	0
1	P	140/147 (95%)	-0.00	3 (2%)	63	66	24, 37, 63, 81	0
1	Q	141/147 (95%)	0.57	10 (7%)	16	16	41, 53, 72, 80	0
1	R	141/147 (95%)	0.29	4 (2%)	53	56	32, 46, 74, 83	0
1	S	141/147 (95%)	0.22	5 (3%)	44	47	29, 44, 73, 79	1 (0%)
1	T	141/147 (95%)	-0.32	1 (0%)	87	89	11, 22, 47, 64	0
1	U	141/147 (95%)	-0.03	5 (3%)	44	47	17, 32, 67, 78	0
1	V	141/147 (95%)	-0.11	6 (4%)	35	38	18, 27, 62, 73	0
1	W	141/147 (95%)	0.50	11 (7%)	13	13	41, 51, 84, 90	0
1	X	144/147 (97%)	-0.13	3 (2%)	63	66	23, 34, 71, 79	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
All	All	3325/3528 (94%)	-0.10	77 (2%)	60	63	7, 30, 66, 90	1 (0%)

The worst 5 of 77 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	I	24	TYR	4.7
1	W	23	VAL	4.3
1	X	25	GLY	4.3
1	W	18	ARG	4.1
1	O	25	GLY	3.6

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(Å²)	Q<0.9
2	N88	A	147	19/19	0.82	0.25	63,65,72,72	0
2	N88	G	147	19/19	0.86	0.22	50,53,56,57	0
2	N88	U	147	19/19	0.88	0.21	55,59,61,61	0
2	N88	V	147	19/19	0.88	0.23	51,54,56,56	0
2	N88	D	147	19/19	0.89	0.24	46,48,51,52	0
2	N88	B	147	19/19	0.89	0.20	45,51,53,55	0
2	N88	K	147	19/19	0.91	0.18	54,57,58,58	0
2	N88	L	147	19/19	0.91	0.25	54,57,63,63	0
2	N88	C	147	19/19	0.92	0.23	55,58,63,63	0
2	N88	T	147	19/19	0.92	0.20	46,50,52,53	0
2	N88	E	147	19/19	0.93	0.18	52,56,62,63	0
2	N88	J	147	19/19	0.94	0.17	38,42,46,46	0
2	N88	F	147	19/19	0.94	0.17	28,37,40,44	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	N88	I	147	19/19	0.95	0.17	37,40,45,45	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 N88 A 147:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
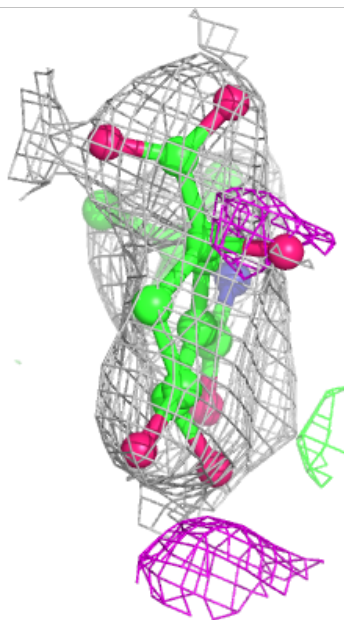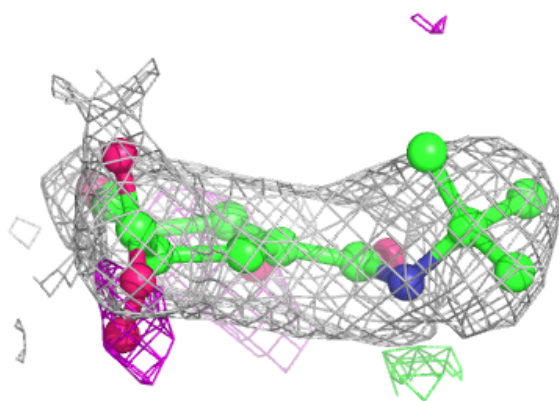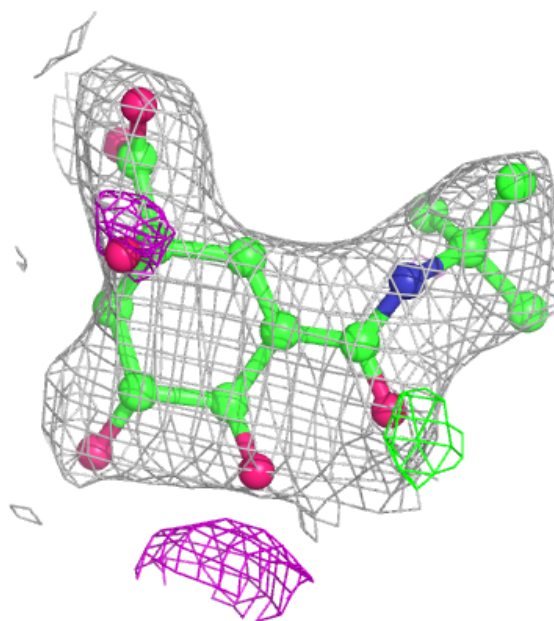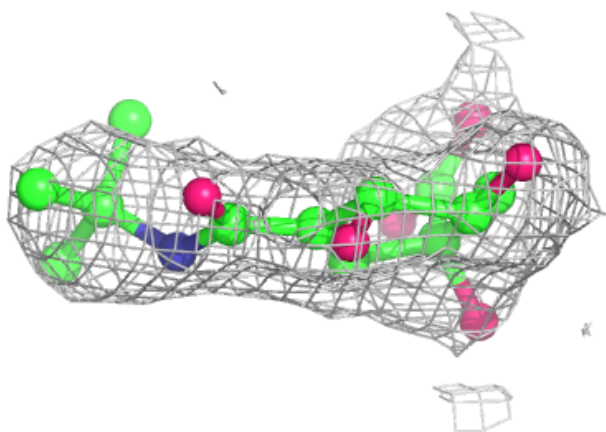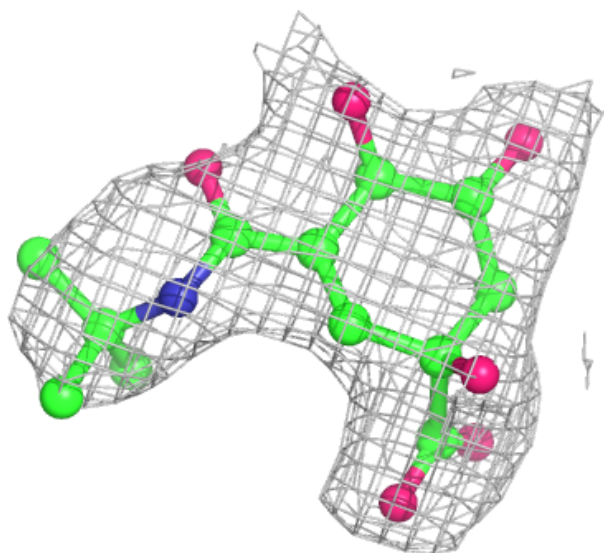and green (positive)
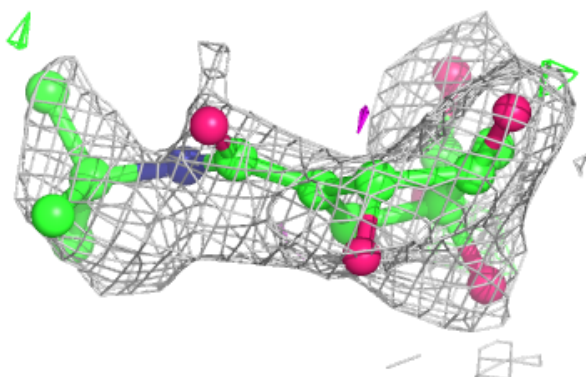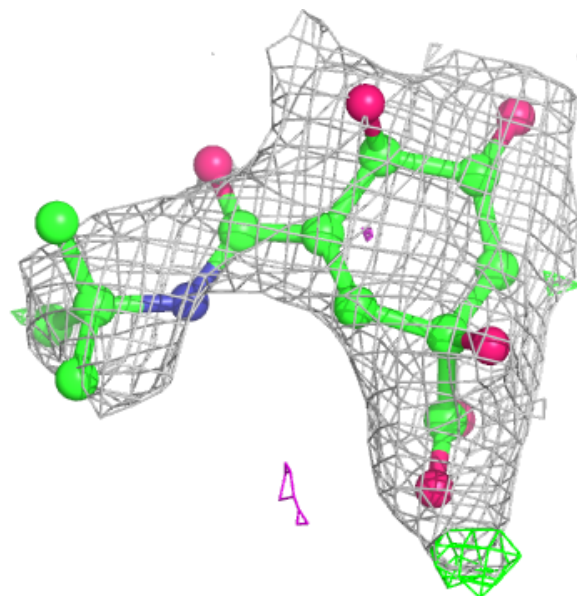
Electron density around N88 G 147:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
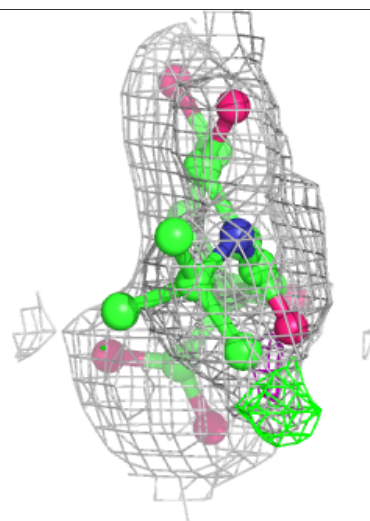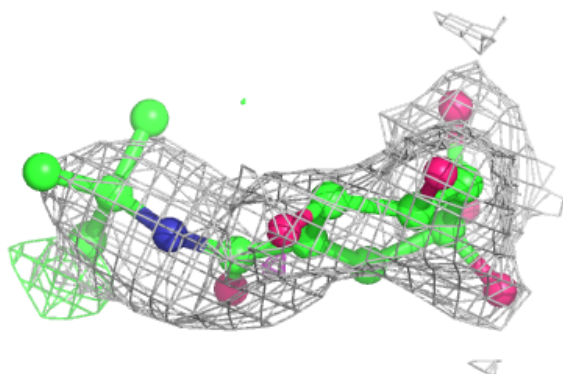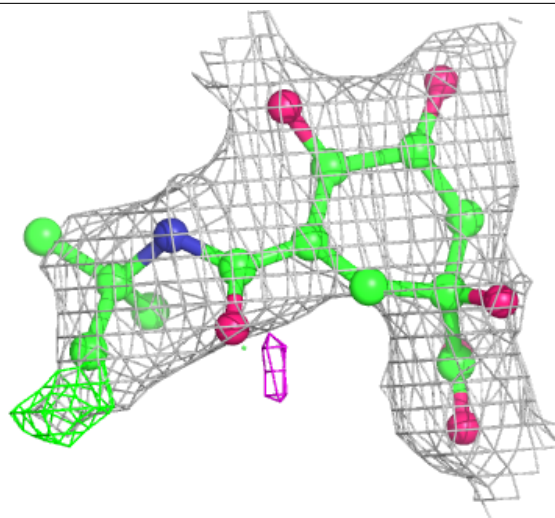
Electron density around N88 U 147:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
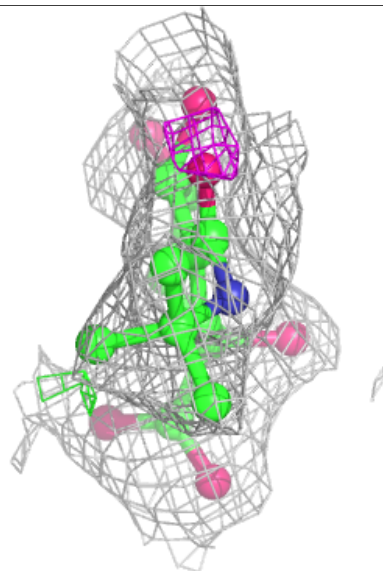and green (positive)
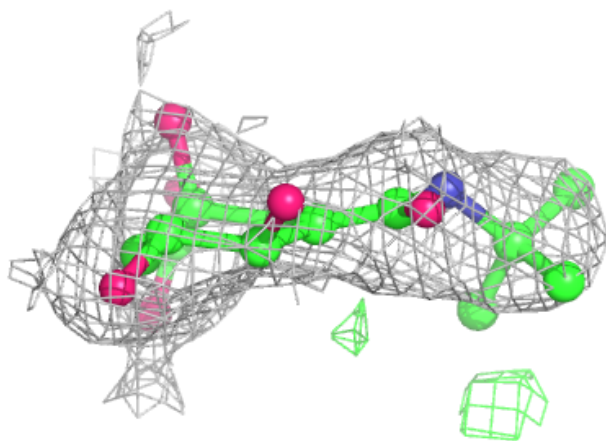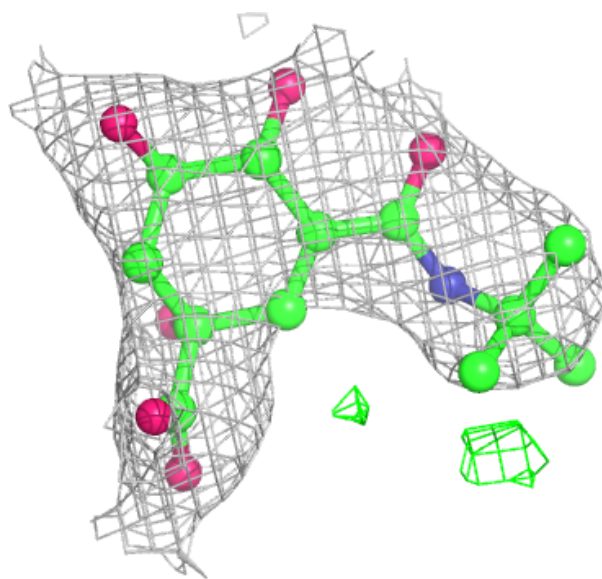
Electron density around N88 V 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
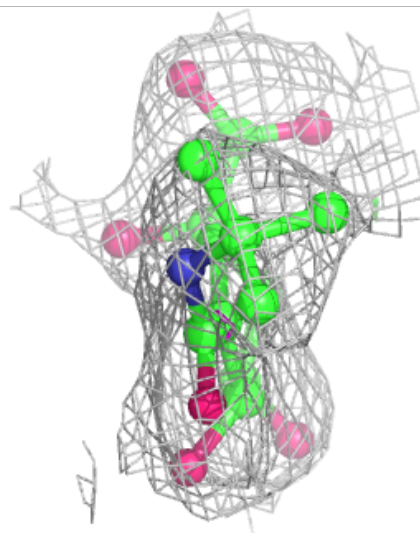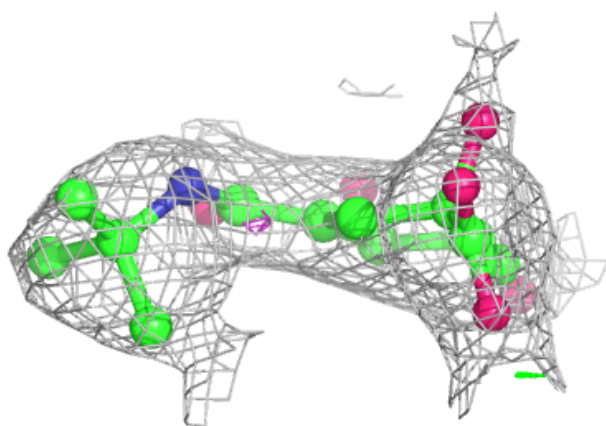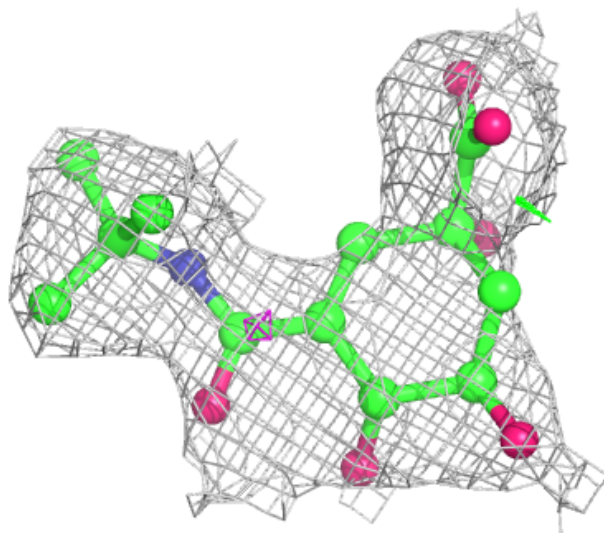
Electron density around N88 D 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
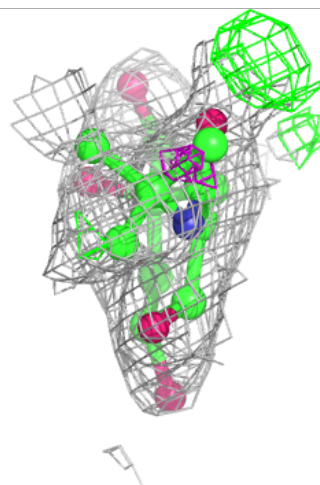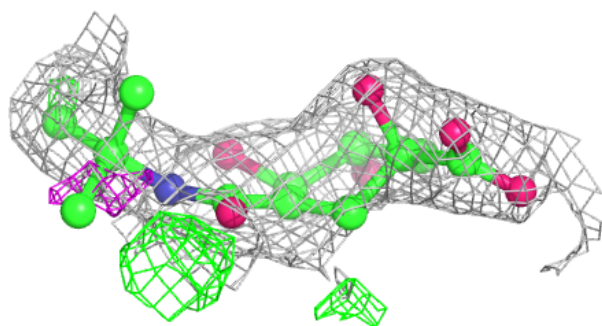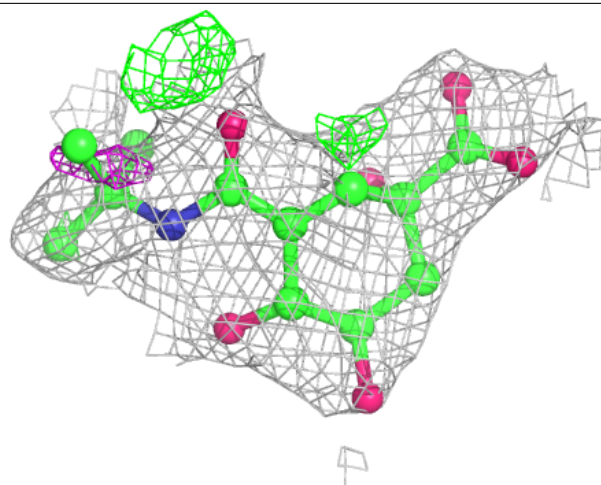
Electron density around N88 B 147:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
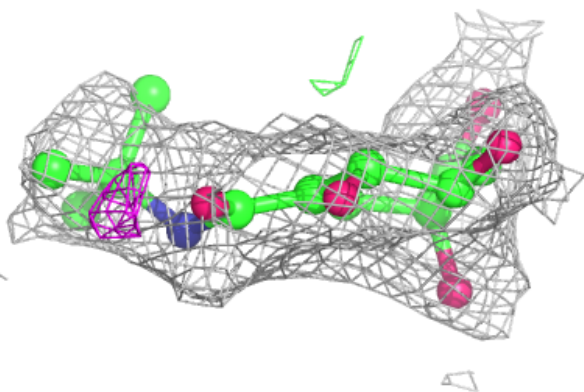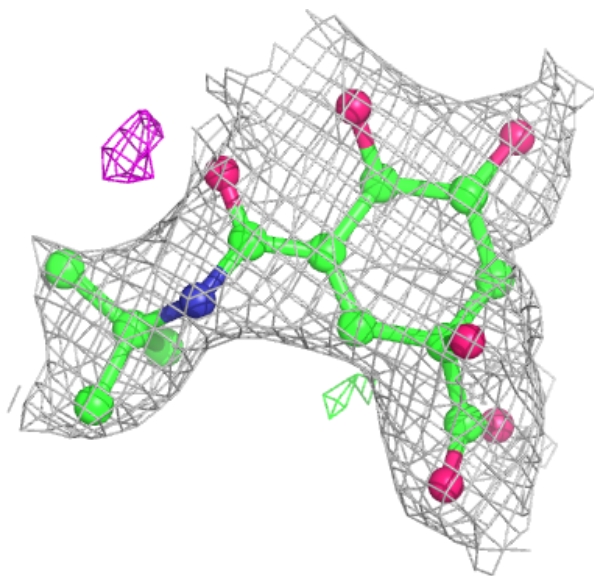and green (positive)
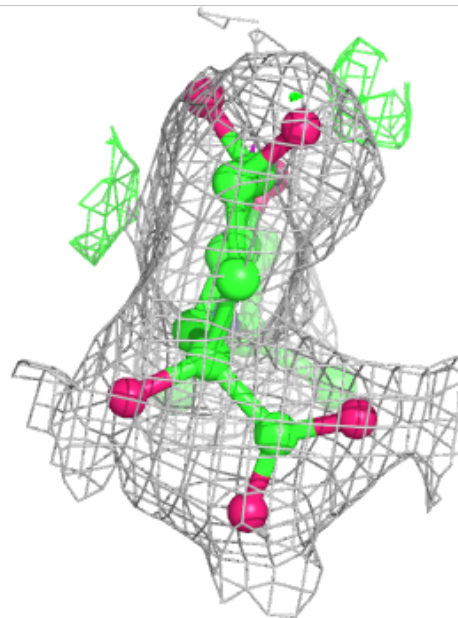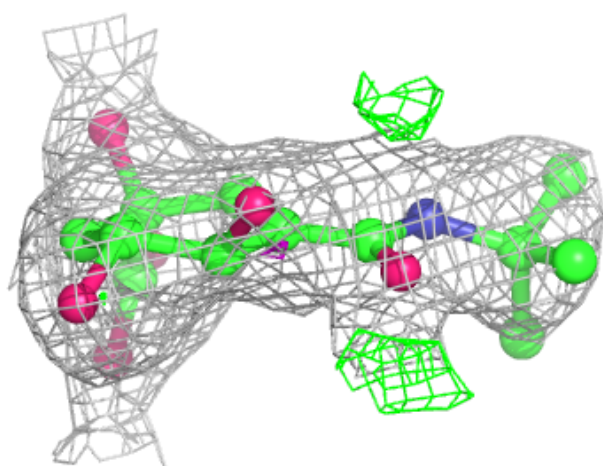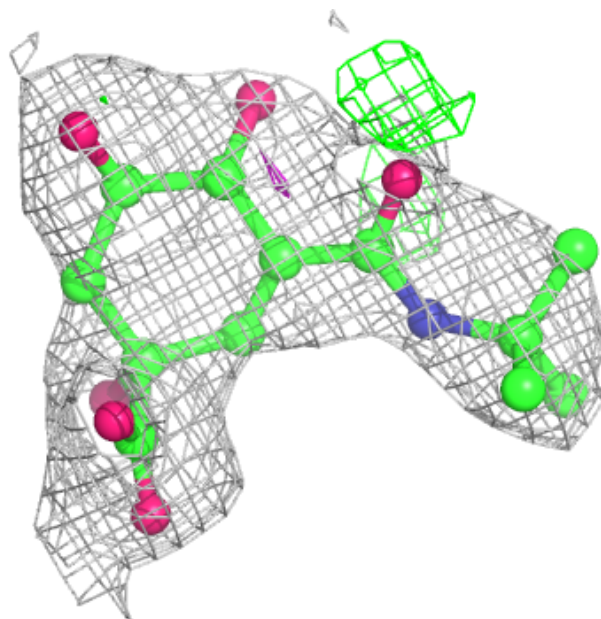
Electron density around N88 K 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
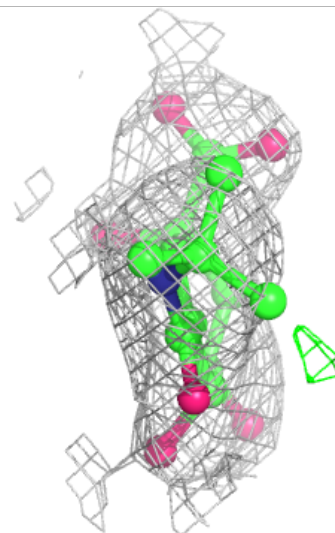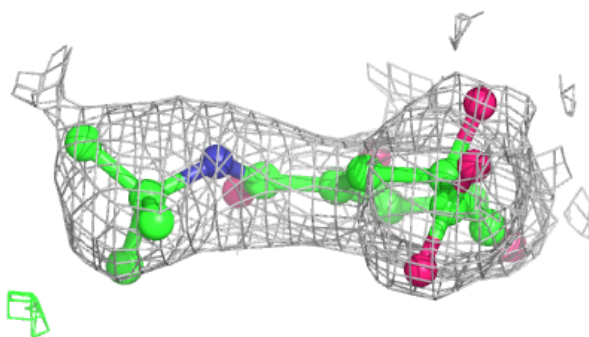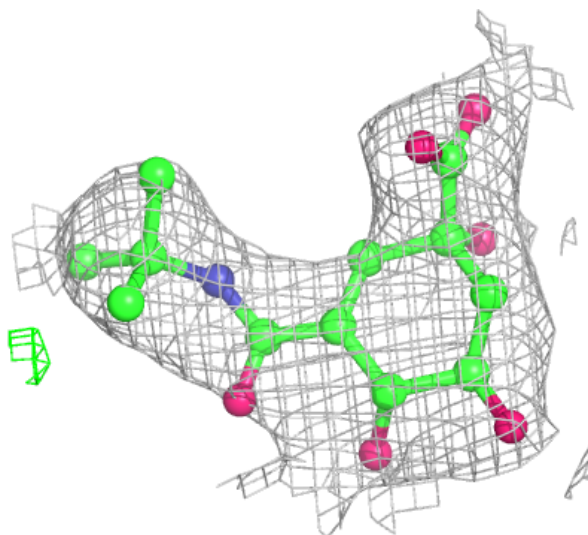
Electron density around N88 L 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
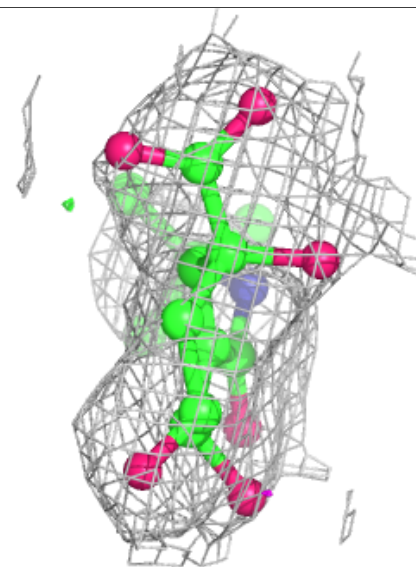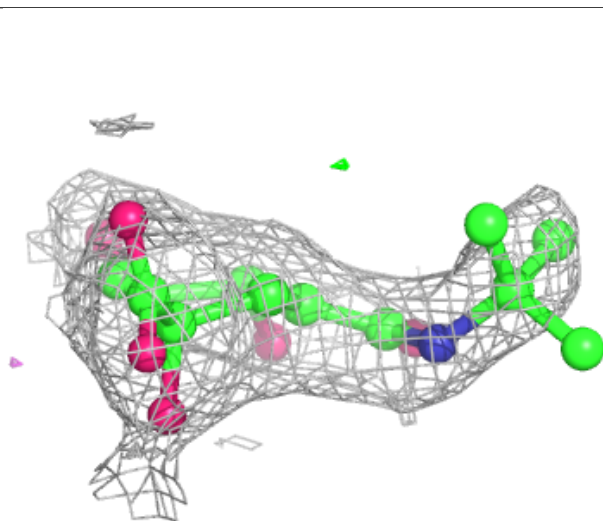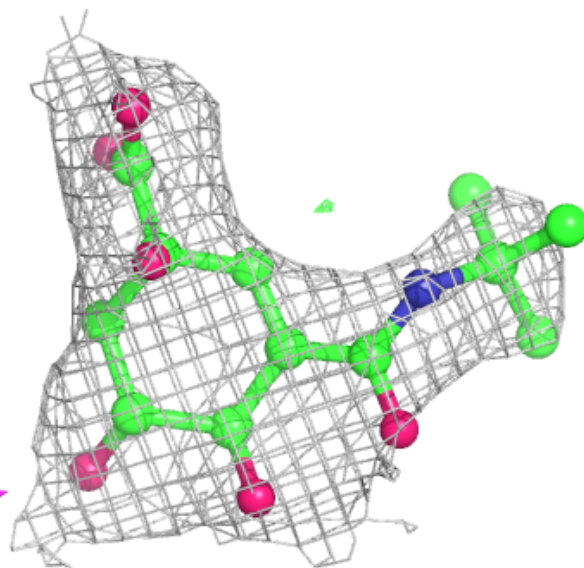
Electron density around N88 C 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
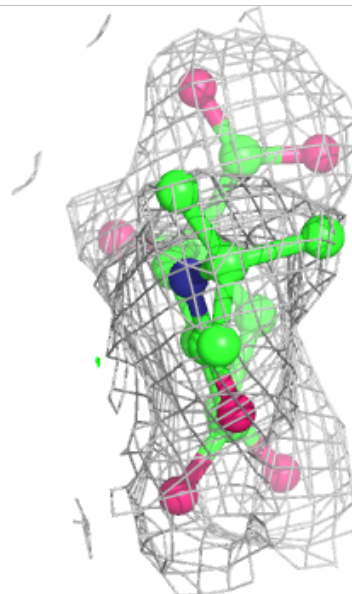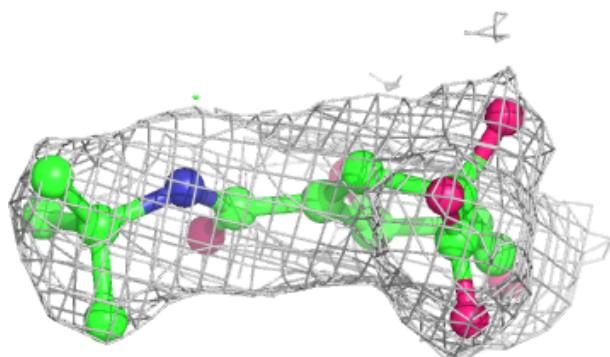mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
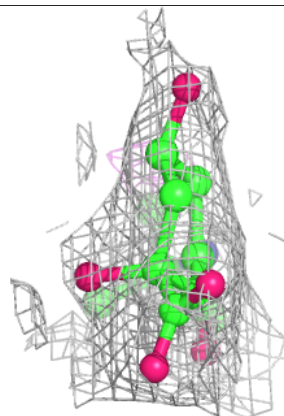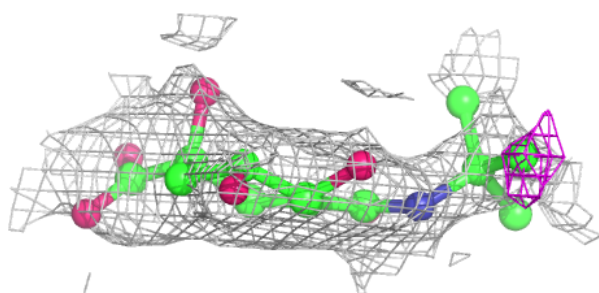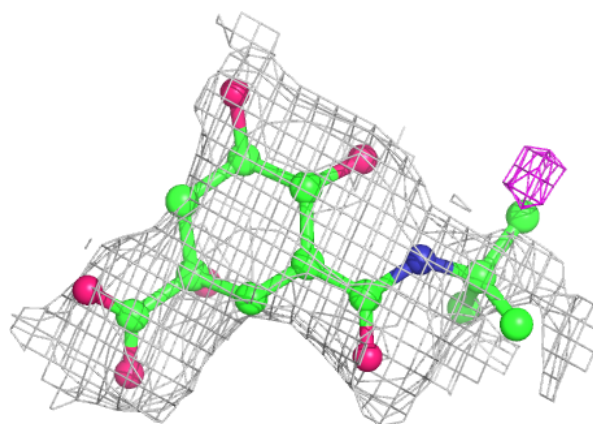
Electron density around N88 T 147:

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

Electron density around N88 E 147:

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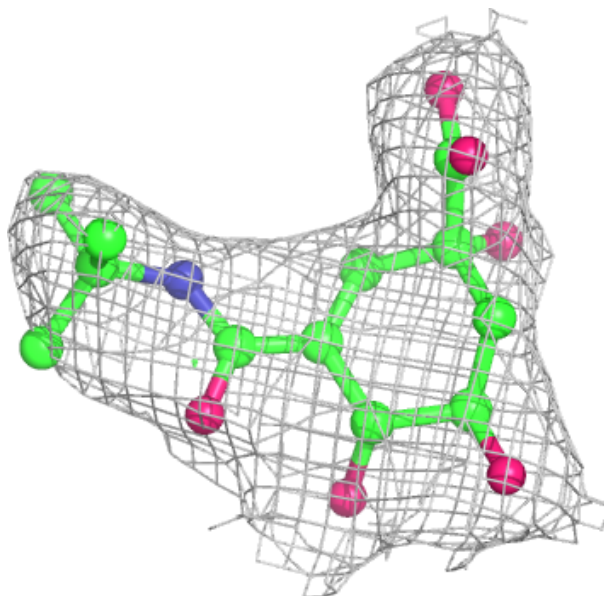and green (positive)

Electron density around N88 J 147:

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

Electron density around N88 F 147:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
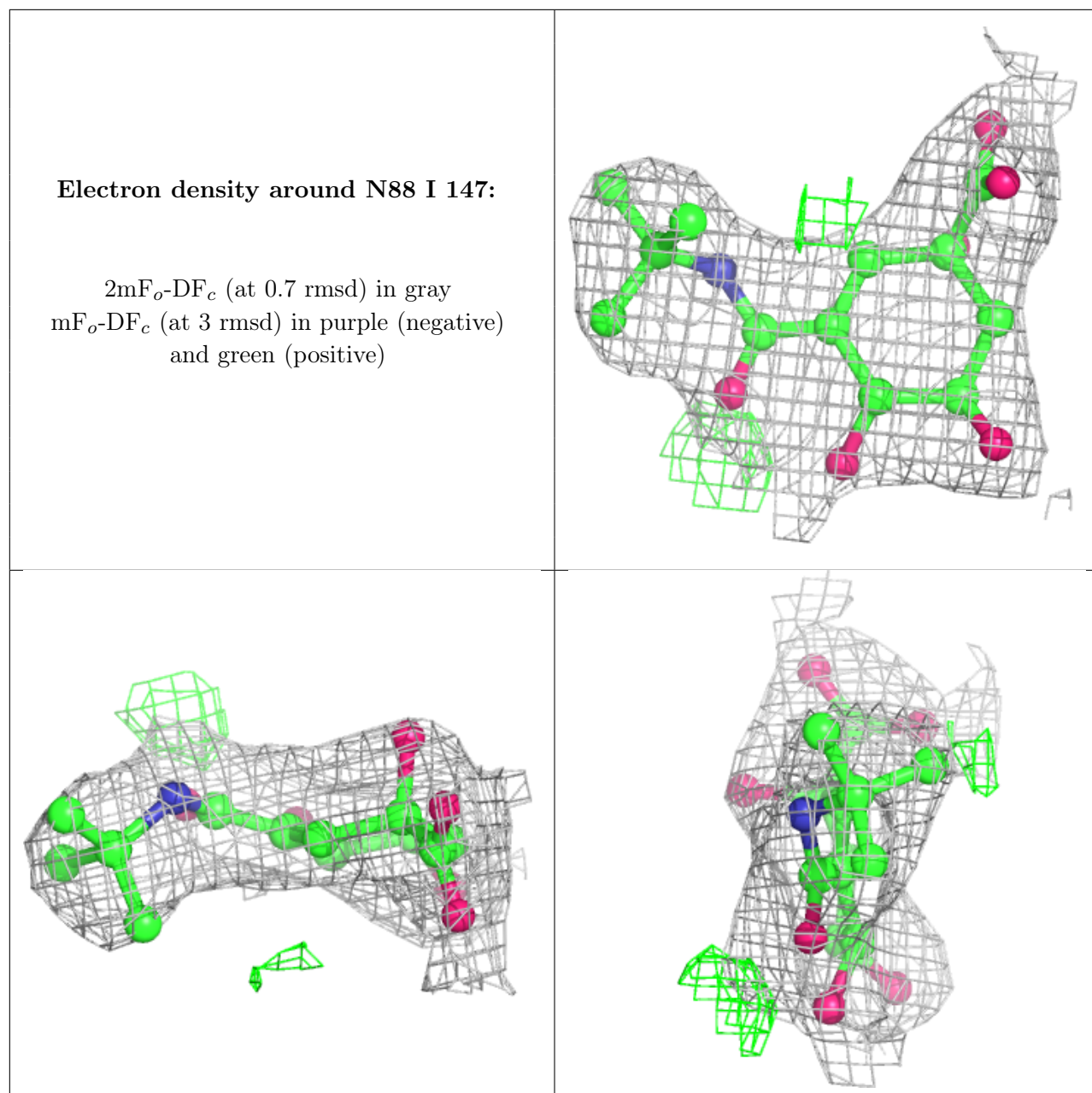
Electron density around N88 I 147:

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

6.5   Other polymers ⓘ

There are no such residues in this entry.