



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 05:15 AM UTC

PDB ID : 3CH6 / pdb_00003ch6
Title : Crystal Structure of 11beta-HSD1 Double Mutant (L262R, F278E) Complexed with (3,3-dimethylpiperidin-1-yl)(6-(3-fluoro-4-methylphenyl)pyridin-2-yl)methanone
Authors : Sheriff, S.
Deposited on : 2008-03-07
Resolution : 2.35 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

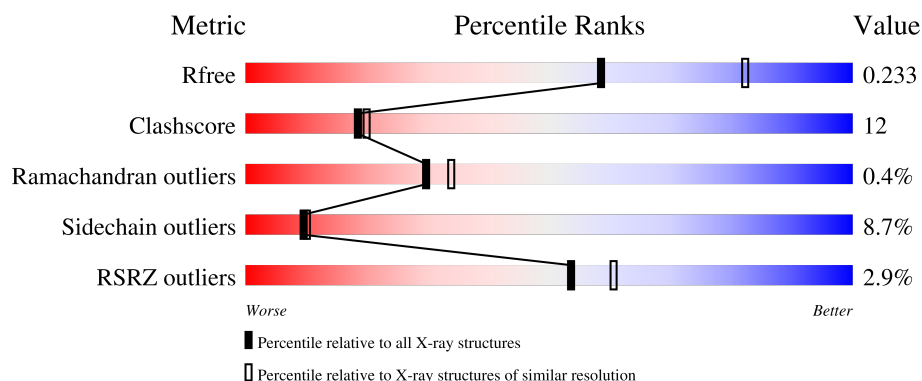
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1596 (2.36-2.36)
Clashscore	190562	1663 (2.36-2.36)
Ramachandran outliers	187476	1646 (2.36-2.36)
Sidechain outliers	187428	1646 (2.36-2.36)
RSRZ outliers	180081	1598 (2.36-2.36)

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

Mol	Chain	Length	Quality of chain
1	A	286	2% 70% 16% 6% 8%
1	B	286	2% 73% 20% 5%
1	D	286	3% 74% 16% 5% 5%
1	E	286	3% 71% 17% 8%

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
3	311	E	604	-	X	-	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 8775 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 Corticosteroid 11-beta-dehydrogenase isozyme 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	264	Total	C	N	O	S	0	2	0
			2036	1292	351	376	17			
1	B	279	Total	C	N	O	S	0	1	0
			2125	1341	364	400	20			
1	D	273	Total	C	N	O	S	0	1	0
			2072	1312	354	388	18			
1	E	263	Total	C	N	O	S	0	1	0
			2019	1282	343	377	17			

There are 76 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	7	GLY	-	expression tag	UNP P28845
A	8	SER	-	expression tag	UNP P28845
A	9	HIS	-	expression tag	UNP P28845
A	10	MET	-	expression tag	UNP P28845
A	11	ALA	-	expression tag	UNP P28845
A	12	SER	-	expression tag	UNP P28845
A	13	MET	-	expression tag	UNP P28845
A	14	THR	-	expression tag	UNP P28845
A	15	GLY	-	expression tag	UNP P28845
A	16	GLY	-	expression tag	UNP P28845
A	17	GLN	-	expression tag	UNP P28845
A	18	GLN	-	expression tag	UNP P28845
A	19	MET	-	expression tag	UNP P28845
A	20	GLY	-	expression tag	UNP P28845
A	21	ARG	-	expression tag	UNP P28845
A	22	GLY	-	expression tag	UNP P28845
A	23	SER	-	expression tag	UNP P28845
A	262	ARG	LEU	engineered mutation	UNP P28845
A	278	GLU	PHE	engineered mutation	UNP P28845
B	7	GLY	-	expression tag	UNP P28845
B	8	SER	-	expression tag	UNP P28845

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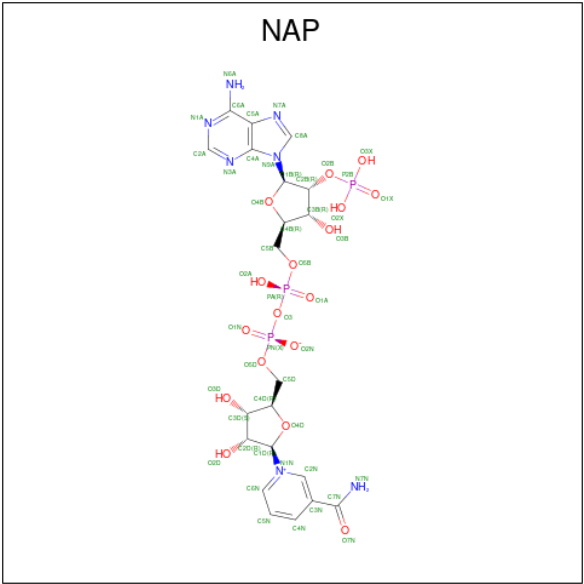
Chain	Residue	Modelled	Actual	Comment	Reference
B	9	HIS	-	expression tag	UNP P28845
B	10	MET	-	expression tag	UNP P28845
B	11	ALA	-	expression tag	UNP P28845
B	12	SER	-	expression tag	UNP P28845
B	13	MET	-	expression tag	UNP P28845
B	14	THR	-	expression tag	UNP P28845
B	15	GLY	-	expression tag	UNP P28845
B	16	GLY	-	expression tag	UNP P28845
B	17	GLN	-	expression tag	UNP P28845
B	18	GLN	-	expression tag	UNP P28845
B	19	MET	-	expression tag	UNP P28845
B	20	GLY	-	expression tag	UNP P28845
B	21	ARG	-	expression tag	UNP P28845
B	22	GLY	-	expression tag	UNP P28845
B	23	SER	-	expression tag	UNP P28845
B	262	ARG	LEU	engineered mutation	UNP P28845
B	278	GLU	PHE	engineered mutation	UNP P28845
D	7	GLY	-	expression tag	UNP P28845
D	8	SER	-	expression tag	UNP P28845
D	9	HIS	-	expression tag	UNP P28845
D	10	MET	-	expression tag	UNP P28845
D	11	ALA	-	expression tag	UNP P28845
D	12	SER	-	expression tag	UNP P28845
D	13	MET	-	expression tag	UNP P28845
D	14	THR	-	expression tag	UNP P28845
D	15	GLY	-	expression tag	UNP P28845
D	16	GLY	-	expression tag	UNP P28845
D	17	GLN	-	expression tag	UNP P28845
D	18	GLN	-	expression tag	UNP P28845
D	19	MET	-	expression tag	UNP P28845
D	20	GLY	-	expression tag	UNP P28845
D	21	ARG	-	expression tag	UNP P28845
D	22	GLY	-	expression tag	UNP P28845
D	23	SER	-	expression tag	UNP P28845
D	262	ARG	LEU	engineered mutation	UNP P28845
D	278	GLU	PHE	engineered mutation	UNP P28845
E	7	GLY	-	expression tag	UNP P28845
E	8	SER	-	expression tag	UNP P28845
E	9	HIS	-	expression tag	UNP P28845
E	10	MET	-	expression tag	UNP P28845
E	11	ALA	-	expression tag	UNP P28845
E	12	SER	-	expression tag	UNP P28845

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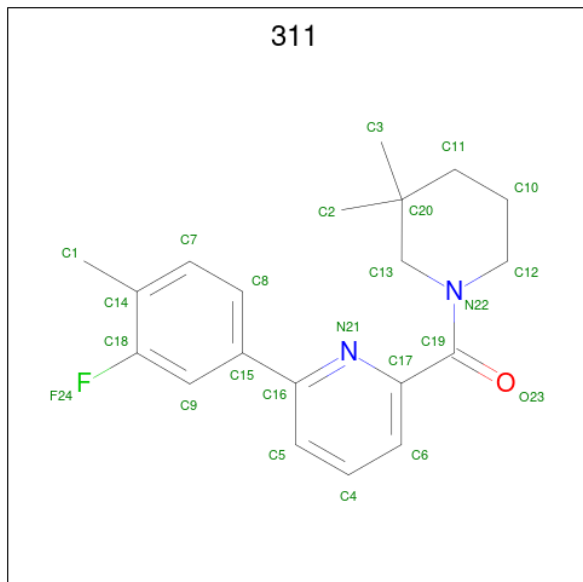
Chain	Residue	Modelled	Actual	Comment	Reference
E	13	MET	-	expression tag	UNP P28845
E	14	THR	-	expression tag	UNP P28845
E	15	GLY	-	expression tag	UNP P28845
E	16	GLY	-	expression tag	UNP P28845
E	17	GLN	-	expression tag	UNP P28845
E	18	GLN	-	expression tag	UNP P28845
E	19	MET	-	expression tag	UNP P28845
E	20	GLY	-	expression tag	UNP P28845
E	21	ARG	-	expression tag	UNP P28845
E	22	GLY	-	expression tag	UNP P28845
E	23	SER	-	expression tag	UNP P28845
E	262	ARG	LEU	engineered mutation	UNP P28845
E	278	GLU	PHE	engineered mutation	UNP P28845

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NAP) (formula: C₂₁H₂₈N₇O₁₇P₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	B	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	D	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	E	1	Total 48	C 21	N 7	O 17	P 3	0	0

- Molecule 3 is (3,3-dimethylpiperidin-1-yl)(6-(3-fluoro-4-methylphenyl)pyridin-2-yl)methanone (CCD ID: 311) (formula: C₂₀H₂₃FN₂O).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	F	N	O	0	0
			24	20	1	2	1		
3	B	1	Total	C	F	N	O	0	0
			24	20	1	2	1		
3	D	1	Total	C	F	N	O	0	0
			24	20	1	2	1		
3	E	1	Total	C	F	N	O	0	0
			24	20	1	2	1		

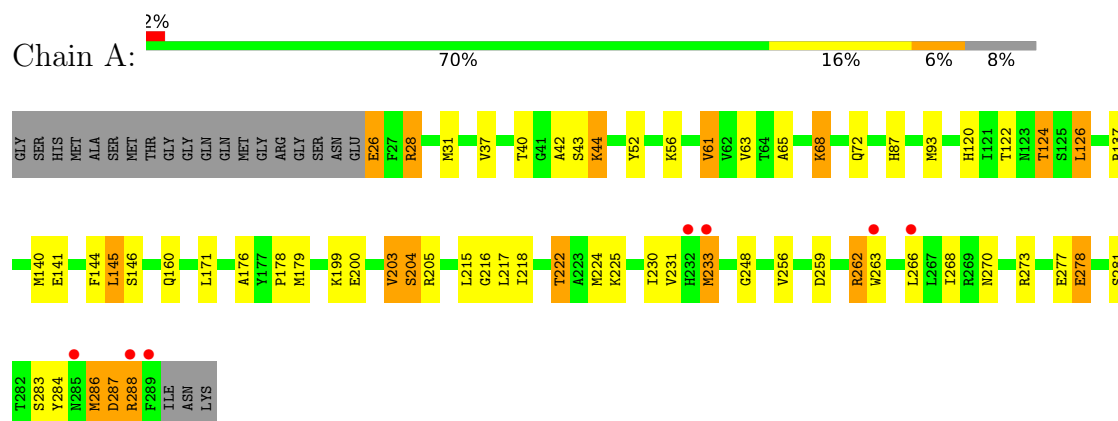
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	55	Total	O	0	0
			55	55		
4	B	65	Total	O	0	0
			65	65		
4	D	60	Total	O	0	0
			60	60		
4	E	55	Total	O	0	0
			55	55		

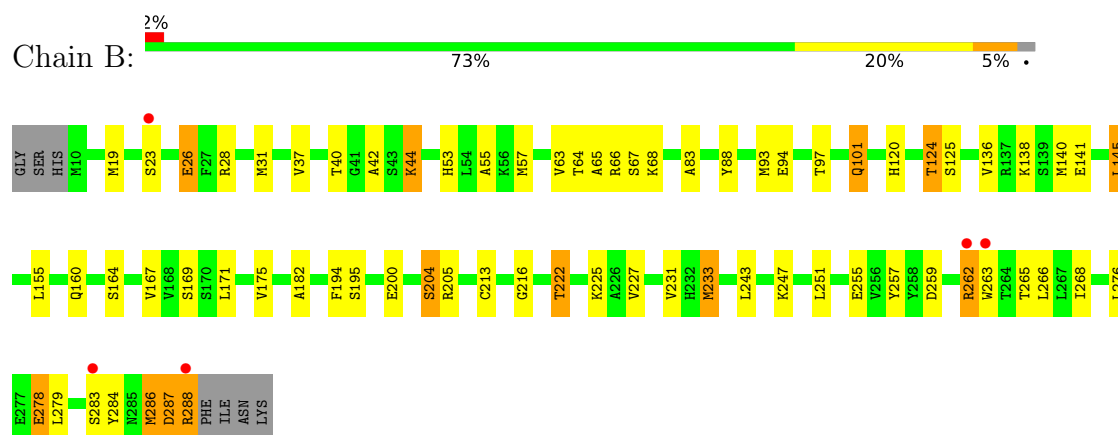
3 Residue-property plots

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.

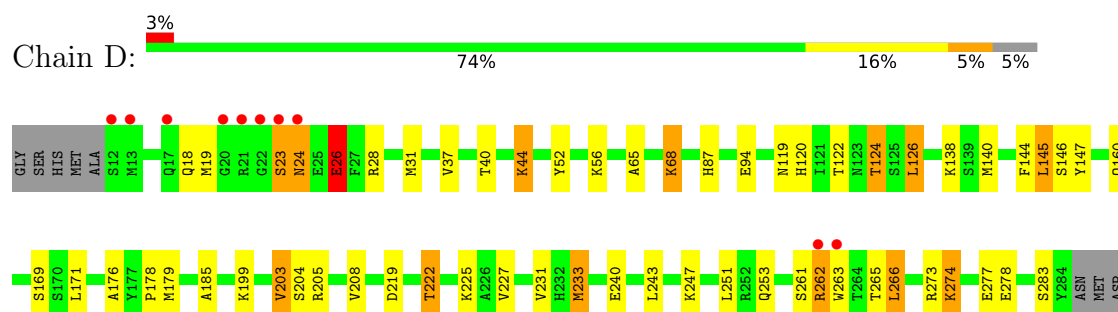
- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1

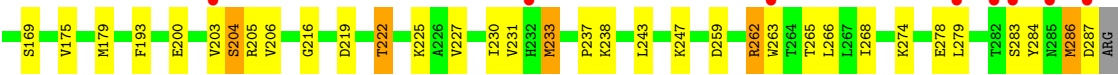


- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



ARG
PHE
ILE
ASN
LYS

● Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



PHE
ILE
ASN
LYS

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	74.50Å 94.30Å 167.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.35 50.00 – 2.35	Depositor EDS
% Data completeness (in resolution range)	89.3 (50.00-2.35) 89.5 (50.00-2.35)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	7.47 (at 2.34Å)	Xtriage
Refinement program	TNT, BUSTER-TNT 2.1.1	Depositor
R, R_{free}	0.187 , 0.230 0.187 , 0.233	Depositor DCC
R_{free} test set	1062 reflections (1.88%)	wwPDB-VP
Wilson B-factor (Å ²)	30.4	Xtriage
Anisotropy	0.444	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 41.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	8775	wwPDB-VP
Average B, all atoms (Å ²)	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.26% 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: NAP, 311

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	0.86	1/2081 (0.0%)	1.11	4/2808 (0.1%)
1	B	0.89	2/2163 (0.1%)	1.09	7/2915 (0.2%)
1	D	0.93	2/2110 (0.1%)	1.08	5/2846 (0.2%)
1	E	0.92	3/2057 (0.1%)	1.10	4/2776 (0.1%)
All	All	0.90	8/8411 (0.1%)	1.09	20/11345 (0.2%)

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	167	VAL	CA-CB	6.06	1.61	1.53
1	D	233	MET	SD-CE	5.99	1.94	1.79
1	E	233	MET	CG-SD	5.93	1.95	1.80
1	E	175	VAL	CA-CB	5.65	1.63	1.54
1	A	233	MET	SD-CE	5.32	1.92	1.79
1	D	208	VAL	CA-CB	5.25	1.60	1.53
1	B	175	VAL	CA-CB	5.12	1.63	1.55
1	E	39	VAL	CA-CB	5.02	1.60	1.54

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	268	ILE	N-CA-C	7.60	118.37	110.62
1	A	268	ILE	N-CA-C	7.50	118.27	110.62
1	D	24	ASN	N-CA-C	-7.14	104.56	113.28
1	A	37	VAL	N-CA-C	6.98	118.17	108.12
1	A	171	LEU	N-CA-C	-6.55	104.18	111.71
1	B	37	VAL	N-CA-C	6.42	117.10	108.11
1	B	171	LEU	N-CA-C	-5.84	104.99	111.71
1	D	37	VAL	N-CA-C	5.82	116.50	108.12
1	D	176	ALA	N-CA-C	5.63	118.80	109.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	171	LEU	N-CA-C	-5.60	105.27	111.71
1	B	194	PHE	N-CA-C	5.59	118.13	111.71
1	E	206	VAL	N-CA-C	-5.54	99.90	107.99
1	E	162	ASN	N-CA-C	-5.45	103.88	111.52
1	B	164	SER	N-CA-C	5.44	117.66	109.23
1	A	61	VAL	N-CA-C	5.42	117.70	108.86
1	D	26	GLU	N-CA-C	5.38	117.44	108.02
1	B	67	SER	N-CA-C	5.33	117.40	108.23
1	E	268	ILE	N-CA-C	5.29	116.02	110.62
1	E	155	LEU	N-CA-C	5.27	120.10	113.25
1	B	155	LEU	N-CA-C	5.02	119.77	113.25

There are no chirality outliers.

There are no planarity outliers.

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	2036	0	2073	59	0
1	B	2125	0	2152	64	0
1	D	2072	0	2099	50	0
1	E	2019	0	2056	55	0
2	A	48	0	25	1	0
2	B	48	0	25	4	0
2	D	48	0	25	4	0
2	E	48	0	25	3	0
3	A	24	0	23	1	0
3	B	24	0	23	1	0
3	D	24	0	23	0	0
3	E	24	0	23	3	0
4	A	55	0	0	2	0
4	B	65	0	0	2	0
4	D	60	0	0	2	0
4	E	55	0	0	1	0
All	All	8775	0	8572	205	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 12.

All (205) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:262:ARG:HB2	1:B:262:ARG:HH11	1.05	1.12
1:E:262:ARG:HB2	1:E:262:ARG:HH11	1.14	1.08
1:D:231:VAL:HG12	1:D:233:MET:HG2	1.40	0.98
1:A:179:MET:HE2	1:B:286:MET:SD	2.10	0.90
1:B:284:TYR:CD2	1:B:286:MET:HE1	2.10	0.87
1:D:122:THR:O	1:D:124:THR:HG22	1.76	0.86
1:B:262:ARG:HH11	1:B:262:ARG:CB	1.89	0.85
1:D:262:ARG:HH11	1:D:262:ARG:HA	1.44	0.83
1:B:262:ARG:HB2	1:B:262:ARG:NH1	1.91	0.83
1:E:262:ARG:HH11	1:E:262:ARG:CB	1.93	0.80
1:A:68:LYS:O	1:A:72:GLN:HG3	1.82	0.80
1:E:231:VAL:HG12	1:E:233:MET:HG2	1.64	0.79
1:D:19:MET:SD	1:D:31:MET:HE2	2.23	0.78
1:A:140:MET:HE3	1:A:140:MET:HA	1.66	0.77
1:D:231:VAL:CG1	1:D:233:MET:HG2	2.15	0.76
1:B:44:LYS:HG3	2:B:502:NAP:H3B	1.68	0.75
1:B:124:THR:HG21	4:B:858:HOH:O	1.86	0.75
1:A:137:ARG:NH2	1:B:145:LEU:HD22	2.04	0.73
1:D:19:MET:HE3	1:D:23:SER:HB2	1.70	0.73
1:E:284:TYR:CE2	1:E:286:MET:HE1	2.23	0.73
1:A:68:LYS:HG2	1:A:72:GLN:HE21	1.57	0.70
1:E:26:GLU:HA	1:E:26:GLU:OE1	1.93	0.68
1:A:126:LEU:HD23	1:A:126:LEU:N	2.08	0.68
1:E:231:VAL:HG12	1:E:233:MET:CG	2.24	0.68
1:D:262:ARG:HH11	1:D:262:ARG:CA	2.06	0.67
1:E:40:THR:OG1	1:E:120:HIS:HD2	1.78	0.67
1:E:284:TYR:CD2	1:E:286:MET:HE1	2.29	0.66
1:A:124:THR:HG21	4:A:975:HOH:O	1.94	0.66
1:E:179:MET:HE3	3:E:604:311:H1A	1.78	0.66
1:A:231:VAL:HG12	1:A:233:MET:HG2	1.78	0.66
1:A:284:TYR:CE2	1:A:286:MET:HE1	2.32	0.65
1:A:262:ARG:HH11	1:A:262:ARG:CB	2.10	0.64
1:B:284:TYR:CE2	1:B:286:MET:HE1	2.33	0.64
1:A:68:LYS:HG2	1:A:72:GLN:NE2	2.13	0.64
1:E:222:THR:HG21	2:E:504:NAP:O2A	1.98	0.64
1:A:262:ARG:HB2	1:A:262:ARG:NH1	2.12	0.64
1:D:40:THR:OG1	1:D:120:HIS:HD2	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:26:GLU:HA	1:B:26:GLU:OE1	1.97	0.63
1:B:222:THR:HG21	2:B:502:NAP:O2A	1.98	0.63
1:E:140:MET:HA	1:E:140:MET:HE3	1.79	0.63
1:B:263:TRP:CH2	1:E:279:LEU:HD21	2.34	0.63
1:A:262:ARG:HH11	1:A:262:ARG:HB2	1.63	0.63
1:B:93:MET:HG3	1:B:120:HIS:CE1	2.33	0.63
1:E:243:LEU:HG	1:E:247:LYS:HE3	1.80	0.63
1:A:233:MET:HE2	1:B:283:SER:HB2	1.82	0.61
1:A:26:GLU:HA	1:A:26:GLU:OE1	2.00	0.61
1:A:284:TYR:HE2	1:A:286:MET:HE1	1.66	0.61
1:A:262:ARG:HH11	1:A:262:ARG:HA	1.65	0.60
1:E:169:SER:O	2:E:504:NAP:H6N	2.01	0.60
1:D:262:ARG:HH11	1:D:262:ARG:CB	2.14	0.60
1:B:263:TRP:HH2	1:E:279:LEU:CD2	2.15	0.60
1:B:140:MET:HE3	1:B:140:MET:HA	1.83	0.60
1:D:87:HIS:HD2	4:D:916:HOH:O	1.84	0.59
1:E:179:MET:HE3	3:E:604:311:C1	2.32	0.59
1:B:243:LEU:HG	1:B:247:LYS:HE3	1.85	0.59
1:B:40:THR:OG1	1:B:120:HIS:HD2	1.86	0.58
1:E:44:LYS:HG3	2:E:504:NAP:H3B	1.85	0.58
1:B:284:TYR:HD2	1:B:286:MET:HE1	1.67	0.58
1:A:222:THR:HG21	2:A:501:NAP:O2A	2.04	0.57
1:B:263:TRP:HH2	1:E:279:LEU:HD21	1.68	0.57
1:B:279:LEU:HD21	1:E:263:TRP:CH2	2.39	0.57
1:D:140:MET:HA	1:D:140:MET:HE3	1.85	0.57
1:B:279:LEU:CD2	1:E:263:TRP:HH2	2.18	0.57
1:A:263:TRP:CD1	1:A:263:TRP:N	2.69	0.57
1:D:233:MET:HE2	1:E:283:SER:CB	2.35	0.57
1:D:273:ARG:O	1:D:277:GLU:HG3	2.05	0.57
1:A:140:MET:HE3	1:A:140:MET:CA	2.31	0.56
1:B:94:GLU:OE1	1:B:138:LYS:HE2	2.05	0.56
1:E:284:TYR:CD2	1:E:286:MET:CE	2.89	0.56
1:A:288:ARG:O	1:A:288:ARG:HG2	2.06	0.56
1:E:262:ARG:HB2	1:E:262:ARG:NH1	2.00	0.56
1:A:178:PRO:O	1:A:179:MET:HB2	2.06	0.56
1:D:263:TRP:N	1:D:263:TRP:CD1	2.72	0.56
1:D:19:MET:HE1	1:D:23:SER:O	2.06	0.56
1:E:243:LEU:O	1:E:247:LYS:HG3	2.06	0.56
1:A:120:HIS:HE1	1:A:146:SER:OG	1.89	0.55
1:B:23:SER:O	1:B:251:LEU:HD22	2.06	0.55
1:E:179:MET:HE1	1:E:230:ILE:CG2	2.36	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:87:HIS:HD2	4:A:1025:HOH:O	1.88	0.55
1:A:270:ASN:HD22	1:A:270:ASN:C	2.13	0.55
1:E:274:LYS:HD3	4:E:1003:HOH:O	2.06	0.55
1:B:19:MET:SD	1:B:31:MET:HE2	2.46	0.55
1:A:283:SER:HB2	1:B:233:MET:HE2	1.89	0.55
1:A:68:LYS:CG	1:A:72:GLN:HE21	2.19	0.55
1:D:262:ARG:HB2	1:D:262:ARG:NH1	2.21	0.55
1:A:231:VAL:HG12	1:A:233:MET:CG	2.38	0.54
1:A:179:MET:HE1	1:A:230:ILE:CG2	2.38	0.54
1:D:19:MET:CE	1:D:23:SER:HB2	2.37	0.54
1:D:145:LEU:HD22	1:E:137:ARG:NH2	2.23	0.54
1:A:40:THR:OG1	1:A:120:HIS:HD2	1.91	0.54
1:D:222:THR:HG21	2:D:503:NAP:O2A	2.08	0.54
1:A:262:ARG:HH11	1:A:262:ARG:CA	2.20	0.53
1:B:243:LEU:O	1:B:247:LYS:HG3	2.08	0.53
1:E:200:GLU:O	1:E:204:SER:OG	2.26	0.53
1:B:255:GLU:OE2	1:B:257:TYR:OH	2.22	0.53
1:D:119:ASN:ND2	2:D:503:NAP:H4D	2.25	0.52
1:A:233:MET:HE2	1:B:283:SER:CB	2.40	0.52
1:D:126:LEU:HD23	1:D:126:LEU:N	2.24	0.52
1:E:219:ASP:OD2	1:E:238:LYS:HG2	2.10	0.52
1:B:169:SER:O	2:B:502:NAP:H6N	2.09	0.51
1:B:55:ALA:HA	1:B:83:ALA:HB2	1.93	0.51
1:D:18:GLN:O	1:D:28:ARG:NH2	2.44	0.51
1:D:23:SER:O	1:D:251:LEU:HD22	2.10	0.51
1:D:26:GLU:OE1	1:D:26:GLU:HA	2.11	0.50
1:E:231:VAL:CG1	1:E:233:MET:HG2	2.37	0.50
1:A:42:ALA:HB3	1:A:63:VAL:HB	1.93	0.50
1:B:97:THR:O	1:B:101:GLN:HG3	2.11	0.50
1:D:68:LYS:HB3	4:D:941:HOH:O	2.10	0.50
1:D:243:LEU:O	1:D:247:LYS:HG3	2.11	0.50
1:A:122:THR:O	1:A:124:THR:HG22	2.12	0.50
1:B:200:GLU:O	1:B:204:SER:OG	2.28	0.49
1:D:44:LYS:HG3	2:D:503:NAP:H3B	1.94	0.49
1:D:233:MET:HE2	1:E:283:SER:HB2	1.95	0.49
1:D:179:MET:HE2	1:E:286:MET:SD	2.53	0.49
1:D:23:SER:HB3	1:D:31:MET:HE2	1.93	0.49
1:E:120:HIS:HE1	1:E:146:SER:OG	1.96	0.49
1:E:140:MET:HE3	1:E:144:PHE:HB3	1.94	0.49
1:A:278:GLU:HG2	1:D:266:LEU:HD21	1.95	0.48
1:B:227:VAL:HB	1:B:231:VAL:HB	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:231:VAL:HG12	1:B:233:MET:CG	2.44	0.48
1:D:261:SER:O	1:D:265:THR:HG23	2.13	0.48
1:B:279:LEU:HD21	1:E:263:TRP:HH2	1.77	0.48
1:E:216:GLY:HA3	1:E:259:ASP:OD2	2.13	0.48
1:D:243:LEU:HG	1:D:247:LYS:HE3	1.96	0.48
1:E:262:ARG:O	1:E:262:ARG:HG3	2.14	0.48
1:B:140:MET:HE3	1:B:140:MET:CA	2.43	0.48
1:B:216:GLY:HA3	1:B:259:ASP:OD2	2.13	0.48
1:D:233:MET:CE	1:E:283:SER:HB2	2.44	0.48
1:A:68:LYS:HD3	1:A:72:GLN:NE2	2.28	0.48
1:D:231:VAL:HG12	1:D:233:MET:CG	2.29	0.47
1:A:93:MET:HG3	1:A:120:HIS:CE1	2.49	0.47
1:B:279:LEU:CD2	1:E:263:TRP:CH2	2.97	0.47
1:A:263:TRP:N	1:A:263:TRP:HD1	2.13	0.47
1:B:53:HIS:O	1:B:57:MET:HG3	2.14	0.47
1:B:136:VAL:HG22	1:B:182:ALA:HB2	1.97	0.47
1:D:169:SER:O	2:D:503:NAP:H6N	2.14	0.47
1:E:286:MET:HE3	1:E:286:MET:HB2	1.45	0.47
1:B:42:ALA:HB3	1:B:63:VAL:HB	1.97	0.47
1:A:217:LEU:O	1:A:218:ILE:HD13	2.16	0.46
1:B:64:THR:O	1:B:65:ALA:HB2	2.15	0.46
1:D:120:HIS:HE1	1:D:146:SER:OG	1.97	0.46
1:A:233:MET:CE	1:B:283:SER:HB2	2.45	0.46
1:B:263:TRP:CD1	1:B:263:TRP:N	2.80	0.46
1:E:52:TYR:O	1:E:56:LYS:HG3	2.16	0.46
1:E:141:GLU:HA	1:E:145:LEU:HB2	1.97	0.46
1:A:126:LEU:N	1:A:126:LEU:CD2	2.77	0.46
1:A:137:ARG:NH2	1:B:145:LEU:CD2	2.76	0.46
1:B:287:ASP:OD2	1:B:287:ASP:N	2.38	0.46
1:A:52:TYR:O	1:A:56:LYS:HG3	2.16	0.46
1:A:28:ARG:HG2	1:A:31:MET:HE3	1.98	0.46
1:E:227:VAL:HB	1:E:231:VAL:HB	1.98	0.46
1:D:178:PRO:O	1:D:179:MET:HB2	2.15	0.45
1:A:216:GLY:HA3	1:A:259:ASP:OD2	2.16	0.45
1:B:284:TYR:HD2	1:B:286:MET:CE	2.26	0.45
3:B:602:311:H10	3:B:602:311:H2A	1.64	0.45
1:B:141:GLU:HA	1:B:145:LEU:HB2	1.98	0.45
1:B:231:VAL:HG12	1:B:233:MET:HG2	1.99	0.45
1:E:40:THR:CB	1:E:120:HIS:HD2	2.29	0.45
1:A:283:SER:CB	1:B:233:MET:HE2	2.46	0.45
1:B:136:VAL:HA	1:B:182:ALA:HB1	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:262:ARG:O	1:B:262:ARG:HG3	2.15	0.44
1:D:94:GLU:OE1	1:D:138:LYS:HE2	2.16	0.44
1:D:140:MET:HE3	1:D:144:PHE:HB3	2.00	0.44
1:D:274:LYS:H	1:D:274:LYS:HG2	1.61	0.44
1:B:276:LEU:HD23	1:B:276:LEU:HA	1.83	0.44
1:E:68:LYS:HD2	1:E:72:GLN:NE2	2.32	0.44
1:B:66:ARG:HB2	2:B:502:NAP:O2X	2.17	0.44
1:A:140:MET:O	1:A:144:PHE:HB3	2.17	0.44
1:D:199:LYS:O	1:D:203:VAL:HG13	2.17	0.44
1:B:278:GLU:HG2	1:E:263:TRP:HZ2	1.82	0.43
1:A:200:GLU:O	1:A:204:SER:OG	2.36	0.43
1:E:231:VAL:CG1	1:E:233:MET:CG	2.95	0.43
1:A:43:SER:C	1:A:44:LYS:HG2	2.43	0.43
1:A:278:GLU:O	1:A:281:SER:OG	2.36	0.43
1:A:218:ILE:O	1:A:224:MET:HE3	2.19	0.43
1:D:227:VAL:HB	1:D:231:VAL:HB	2.01	0.43
1:D:262:ARG:HH11	1:D:262:ARG:HB2	1.77	0.43
1:E:179:MET:CE	3:E:604:311:H1A	2.48	0.43
1:B:287:ASP:O	1:B:288:ARG:CB	2.67	0.42
1:D:283:SER:HB2	1:E:233:MET:HE2	2.01	0.42
1:E:219:ASP:OD1	1:E:237:PRO:HA	2.19	0.42
1:A:248:GLY:HA3	1:A:256:VAL:HG21	2.02	0.42
1:D:144:PHE:O	1:D:147:TYR:HB2	2.20	0.42
1:E:284:TYR:HD2	1:E:286:MET:CE	2.32	0.42
1:B:40:THR:CB	1:B:120:HIS:HD2	2.32	0.42
1:B:125:SER:HB2	4:B:926:HOH:O	2.19	0.42
1:B:88:TYR:CD1	1:B:88:TYR:C	2.98	0.42
1:A:273:ARG:O	1:A:277:GLU:HG3	2.21	0.41
1:E:161:SER:O	1:E:162:ASN:HB2	2.20	0.41
1:E:42:ALA:HB3	1:E:63:VAL:HB	2.03	0.41
1:A:176:ALA:HB2	1:B:195:SER:HB3	2.02	0.41
1:B:169:SER:N	1:B:213:CYS:O	2.45	0.41
1:A:270:ASN:C	1:A:270:ASN:ND2	2.78	0.41
1:A:199:LYS:O	1:A:203:VAL:HG13	2.21	0.41
1:B:287:ASP:O	1:B:288:ARG:HB3	2.20	0.41
1:A:287:ASP:OD2	1:A:287:ASP:N	2.54	0.41
3:A:601:311:H10	3:A:601:311:H2A	1.82	0.41
1:D:263:TRP:N	1:D:263:TRP:HD1	2.19	0.41
1:E:148:VAL:O	1:E:152:VAL:HG23	2.21	0.41
1:A:120:HIS:CE1	1:A:146:SER:OG	2.73	0.41
1:D:251:LEU:HD12	1:D:253:GLN:HE21	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:52:TYR:O	1:D:56:LYS:HG3	2.21	0.40
1:B:286:MET:HE3	1:B:286:MET:HB2	1.37	0.40
1:A:141:GLU:HA	1:A:145:LEU:HB2	2.03	0.40
1:D:185:ALA:HB2	1:E:193:PHE:HB2	2.03	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	264/286 (92%)	253 (96%)	9 (3%)	2 (1%)	16	17
1	B	278/286 (97%)	265 (95%)	13 (5%)	0	100	100
1	D	272/286 (95%)	261 (96%)	9 (3%)	2 (1%)	18	20
1	E	262/286 (92%)	252 (96%)	10 (4%)	0	100	100
All	All	1076/1144 (94%)	1031 (96%)	41 (4%)	4 (0%)	30	34

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	288	ARG
1	D	219	ASP
1	A	65	ALA
1	D	65	ALA

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	222/237 (94%)	202 (91%)	20 (9%)	9	9
1	B	230/237 (97%)	210 (91%)	20 (9%)	9	10
1	D	223/237 (94%)	204 (92%)	19 (8%)	10	11
1	E	220/237 (93%)	202 (92%)	18 (8%)	10	11
All	All	895/948 (94%)	818 (91%)	77 (9%)	9	10

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	GLU
1	A	28	ARG
1	A	44	LYS
1	A	61	VAL
1	A	68	LYS
1	A	124	THR
1	A	126	LEU
1	A	145	LEU
1	A	160	GLN
1	A	203	VAL
1	A	204	SER
1	A	205	ARG
1	A	215	LEU
1	A	222	THR
1	A	225	LYS
1	A	262	ARG
1	A	266	LEU
1	A	278	GLU
1	A	286	MET
1	A	287	ASP
1	B	26	GLU
1	B	28	ARG
1	B	44	LYS
1	B	68	LYS
1	B	101	GLN
1	B	124	THR
1	B	145	LEU
1	B	160	GLN
1	B	204	SER
1	B	205	ARG

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Mol	Chain	Res	Type
1	B	222	THR
1	B	225	LYS
1	B	233	MET
1	B	262	ARG
1	B	265	THR
1	B	266	LEU
1	B	278	GLU
1	B	286	MET
1	B	287	ASP
1	B	288	ARG
1	D	23	SER
1	D	24	ASN
1	D	26	GLU
1	D	44	LYS
1	D	68	LYS
1	D	124	THR
1	D	126	LEU
1	D	145	LEU
1	D	160	GLN
1	D	203	VAL
1	D	204	SER
1	D	205	ARG
1	D	222	THR
1	D	225	LYS
1	D	240	GLU
1	D	262	ARG
1	D	266	LEU
1	D	274	LYS
1	D	278	GLU
1	E	25	GLU
1	E	26	GLU
1	E	44	LYS
1	E	68	LYS
1	E	128	LEU
1	E	145	LEU
1	E	160	GLN
1	E	203	VAL
1	E	204	SER
1	E	205	ARG
1	E	222	THR
1	E	225	LYS
1	E	262	ARG

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Mol	Chain	Res	Type
1	E	265	THR
1	E	266	LEU
1	E	278	GLU
1	E	286	MET
1	E	287	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	72	GLN
1	A	87	HIS
1	A	119	ASN
1	A	120	HIS
1	A	270	ASN
1	B	72	GLN
1	B	119	ASN
1	B	120	HIS
1	B	253	GLN
1	B	270	ASN
1	D	87	HIS
1	D	119	ASN
1	D	120	HIS
1	D	270	ASN
1	E	119	ASN
1	E	120	HIS
1	E	130	HIS
1	E	162	ASN
1	E	232	HIS
1	E	270	ASN

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

8 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	NAP	A	501	-	50,52,52	1.13	5 (10%)	71,80,80	1.01	4 (5%)
2	NAP	D	503	-	50,52,52	0.82	0	71,80,80	0.99	4 (5%)
2	NAP	B	502	-	50,52,52	1.09	4 (8%)	71,80,80	0.84	0
3	311	D	603	-	26,26,26	2.25	11 (42%)	37,38,38	2.39	15 (40%)
3	311	A	601	-	26,26,26	2.06	9 (34%)	37,38,38	2.38	14 (37%)
2	NAP	E	504	-	50,52,52	1.03	4 (8%)	71,80,80	1.06	4 (5%)
3	311	E	604	-	26,26,26	2.67	16 (61%)	37,38,38	3.04	22 (59%)
3	311	B	602	-	26,26,26	2.22	9 (34%)	37,38,38	1.91	13 (35%)

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	NAP	A	501	-	-	1/35/67/67	0/5/5/5
2	NAP	D	503	-	-	3/35/67/67	0/5/5/5
2	NAP	B	502	-	-	6/35/67/67	0/5/5/5
3	311	D	603	-	-	0/12/24/24	0/3/3/3
3	311	A	601	-	-	0/12/24/24	0/3/3/3
2	NAP	E	504	-	-	3/35/67/67	0/5/5/5
3	311	E	604	-	-	1/12/24/24	0/3/3/3
3	311	B	602	-	-	0/12/24/24	0/3/3/3

All (58) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	604	311	C7-C14	5.56	1.51	1.39
3	D	603	311	C11-C20	5.23	1.61	1.53
3	B	602	311	C2-C20	4.92	1.63	1.53
3	B	602	311	C11-C10	4.62	1.63	1.52
3	E	604	311	C8-C7	4.53	1.46	1.38
3	A	601	311	C17-N21	4.46	1.41	1.34
3	A	601	311	C8-C7	4.25	1.45	1.38
3	D	603	311	C12-N22	3.90	1.54	1.47
3	D	603	311	C6-C17	3.69	1.46	1.39
3	E	604	311	C8-C15	3.65	1.46	1.39
3	E	604	311	C13-C20	3.62	1.60	1.52
3	E	604	311	C16-N21	3.60	1.40	1.34
3	E	604	311	C11-C20	3.52	1.59	1.53
3	B	602	311	C19-N22	3.51	1.42	1.34
3	D	603	311	C13-N22	3.44	1.50	1.46
3	B	602	311	C14-C18	3.27	1.41	1.37
2	A	501	NAP	C7N-N7N	3.26	1.39	1.33
3	E	604	311	C4-C6	-3.24	1.33	1.38
3	D	603	311	C3-C20	3.22	1.59	1.53
3	A	601	311	C8-C15	3.20	1.45	1.39
3	E	604	311	C12-N22	3.05	1.52	1.47
3	A	601	311	C15-C16	2.99	1.53	1.49
3	D	603	311	C15-C16	-2.96	1.44	1.49
3	A	601	311	C13-N22	2.91	1.49	1.46
3	B	602	311	C9-C18	2.90	1.42	1.37
3	A	601	311	C12-N22	2.88	1.52	1.47
3	E	604	311	C6-C17	-2.79	1.33	1.39
3	E	604	311	C17-N21	2.76	1.38	1.34
3	D	603	311	C8-C7	2.76	1.43	1.38
3	E	604	311	C2-C20	2.70	1.58	1.53
3	B	602	311	C13-C20	2.69	1.58	1.52
3	E	604	311	C1-C14	2.61	1.55	1.51
2	B	502	NAP	O4B-C1B	2.59	1.48	1.42
3	E	604	311	C15-C16	2.52	1.52	1.49
3	A	601	311	C4-C6	2.48	1.43	1.38
2	B	502	NAP	O4D-C1D	2.48	1.44	1.40
3	A	601	311	O23-C19	2.42	1.27	1.22
3	D	603	311	C9-C18	2.40	1.41	1.37
3	A	601	311	F24-C18	-2.36	1.29	1.35
3	B	602	311	C13-N22	2.36	1.49	1.46
3	B	602	311	C3-C20	2.35	1.58	1.53
3	D	603	311	C2-C20	2.30	1.58	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	504	NAP	C6A-N6A	2.30	1.40	1.34
3	E	604	311	O23-C19	2.25	1.27	1.22
3	E	604	311	C11-C10	2.22	1.57	1.52
2	B	502	NAP	C7N-N7N	2.21	1.37	1.33
3	B	602	311	C8-C7	2.21	1.42	1.38
2	E	504	NAP	O4D-C1D	2.18	1.43	1.40
3	E	604	311	C9-C15	2.17	1.43	1.39
2	E	504	NAP	P2B-O2B	2.15	1.63	1.59
2	A	501	NAP	P2B-O2B	2.13	1.63	1.59
2	A	501	NAP	O4B-C1B	2.12	1.46	1.42
2	B	502	NAP	PA-O3	2.06	1.61	1.59
2	A	501	NAP	C3D-C4D	2.04	1.58	1.53
2	E	504	NAP	C4N-C3N	2.03	1.42	1.39
3	D	603	311	C7-C14	2.02	1.43	1.39
3	D	603	311	C1-C14	2.01	1.54	1.51
2	A	501	NAP	C2N-N1N	2.00	1.37	1.35

All (76) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	603	311	C20-C13-N22	-7.23	105.16	111.69
3	E	604	311	C20-C13-N22	-6.58	105.75	111.69
3	E	604	311	C8-C15-C16	6.20	131.09	121.28
3	E	604	311	C8-C7-C14	-5.90	113.17	121.98
3	D	603	311	C11-C20-C13	5.60	111.80	108.32
3	A	601	311	C9-C18-C14	5.15	127.99	124.36
3	A	601	311	C8-C15-C16	5.03	129.25	121.28
3	A	601	311	C8-C7-C14	-5.00	114.52	121.98
3	E	604	311	C9-C15-C16	-4.99	113.61	120.59
3	E	604	311	C5-C16-N21	-4.62	115.88	121.97
3	D	603	311	C6-C17-C19	4.44	127.60	119.17
3	E	604	311	C1-C14-C18	-4.32	116.27	121.94
3	A	601	311	C20-C13-N22	-4.14	107.95	111.69
3	A	601	311	C1-C14-C18	-4.10	116.56	121.94
3	B	602	311	C6-C17-C19	3.93	126.63	119.17
3	E	604	311	C12-N22-C13	3.91	121.39	114.44
3	E	604	311	C6-C4-C5	3.81	125.14	120.24
3	E	604	311	C3-C20-C2	-3.78	102.59	109.34
3	E	604	311	C7-C8-C15	3.77	125.97	121.12
3	E	604	311	C10-C12-N22	-3.77	103.03	110.67
3	B	602	311	C11-C20-C13	-3.73	106.00	108.32
3	B	602	311	C1-C14-C18	-3.60	117.21	121.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	603	311	C19-C17-N21	-3.56	109.57	117.26
3	A	601	311	C7-C8-C15	3.54	125.67	121.12
3	D	603	311	C1-C14-C18	-3.48	117.38	121.94
3	E	604	311	C3-C20-C13	3.38	117.09	109.51
3	A	601	311	C8-C15-C9	-3.12	113.94	118.23
3	B	602	311	C11-C10-C12	-3.05	105.74	110.75
3	E	604	311	C13-N22-C19	-2.96	114.32	121.44
2	A	501	NAP	C4D-O4D-C1D	-2.96	107.22	109.92
3	D	603	311	C9-C15-C16	-2.94	116.47	120.59
3	E	604	311	F24-C18-C9	-2.83	112.98	118.64
3	D	603	311	C1-C14-C7	2.82	125.72	120.28
2	E	504	NAP	O7N-C7N-N7N	-2.82	118.55	122.62
3	A	601	311	C1-C14-C7	2.81	125.69	120.28
2	A	501	NAP	O4D-C4D-C5D	-2.81	100.34	109.33
3	D	603	311	C15-C16-N21	-2.72	112.11	116.04
3	A	601	311	C9-C15-C16	-2.72	116.79	120.59
3	D	603	311	C8-C15-C16	2.69	125.54	121.28
3	D	603	311	C3-C20-C11	-2.69	106.17	110.04
3	D	603	311	C2-C20-C11	2.68	113.91	110.04
3	A	601	311	C5-C16-C15	2.67	126.94	121.97
3	B	602	311	O23-C19-N22	2.67	126.57	122.35
2	A	501	NAP	O2B-P2B-O1X	-2.67	99.82	109.33
3	B	602	311	C2-C20-C11	-2.65	106.23	110.04
3	A	601	311	C4-C6-C17	-2.57	115.56	118.63
3	E	604	311	O23-C19-N22	-2.55	118.34	122.35
3	B	602	311	C5-C16-N21	-2.51	118.66	121.97
3	D	603	311	O23-C19-C17	-2.50	114.38	118.90
2	E	504	NAP	O2N-PN-O1N	2.48	123.97	112.44
3	E	604	311	C9-C18-C14	2.33	126.00	124.36
3	B	602	311	C1-C14-C7	2.30	124.72	120.28
3	A	601	311	C4-C5-C16	2.29	121.99	118.90
3	B	602	311	O23-C19-C17	-2.27	114.80	118.90
3	E	604	311	C3-C20-C11	-2.25	106.80	110.04
3	E	604	311	F24-C18-C14	2.25	120.99	117.66
3	B	602	311	C6-C17-N21	-2.24	120.30	122.92
3	E	604	311	C4-C6-C17	-2.23	115.96	118.63
3	A	601	311	C5-C16-N21	-2.23	119.03	121.97
3	B	602	311	C9-C15-C16	-2.20	117.51	120.59
3	B	602	311	C19-C17-N21	-2.17	112.58	117.26
3	E	604	311	C8-C15-C9	-2.16	115.26	118.23
2	E	504	NAP	N9A-C8A-N7A	-2.16	110.87	113.94
3	E	604	311	C1-C14-C7	2.15	124.43	120.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	602	311	C3-C20-C13	2.14	114.31	109.51
3	D	603	311	C6-C4-C5	-2.14	117.49	120.24
2	D	503	NAP	O3B-C3B-C2B	-2.13	105.22	111.19
2	D	503	NAP	O2B-C2B-C3B	-2.12	104.06	111.68
3	A	601	311	O23-C19-C17	-2.10	115.11	118.90
2	A	501	NAP	O2N-PN-O1N	2.08	122.14	112.44
2	E	504	NAP	O4B-C1B-N9A	2.07	112.06	108.09
3	E	604	311	C7-C14-C18	2.04	119.09	115.80
3	D	603	311	C8-C7-C14	-2.04	118.94	121.98
2	D	503	NAP	O4B-C1B-N9A	2.02	111.98	108.09
3	D	603	311	C5-C16-C15	2.00	125.69	121.97
2	D	503	NAP	O2N-PN-O1N	2.00	121.77	112.44

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	504	NAP	C3B-C2B-O2B-P2B
3	E	604	311	O23-C19-N22-C13
2	E	504	NAP	C1B-C2B-O2B-P2B
2	B	502	NAP	C2B-O2B-P2B-O2X
2	D	503	NAP	C3B-C2B-O2B-P2B
2	B	502	NAP	PN-O3-PA-O1A
2	E	504	NAP	PN-O3-PA-O2A
2	D	503	NAP	O4B-C4B-C5B-O5B
2	B	502	NAP	C2B-O2B-P2B-O3X
2	B	502	NAP	O4B-C4B-C5B-O5B
2	B	502	NAP	C2B-O2B-P2B-O1X
2	A	501	NAP	PN-O3-PA-O2A
2	B	502	NAP	PN-O3-PA-O2A
2	D	503	NAP	PN-O3-PA-O2A

There are no ring outliers.

7 monomers are involved in 17 short contacts:

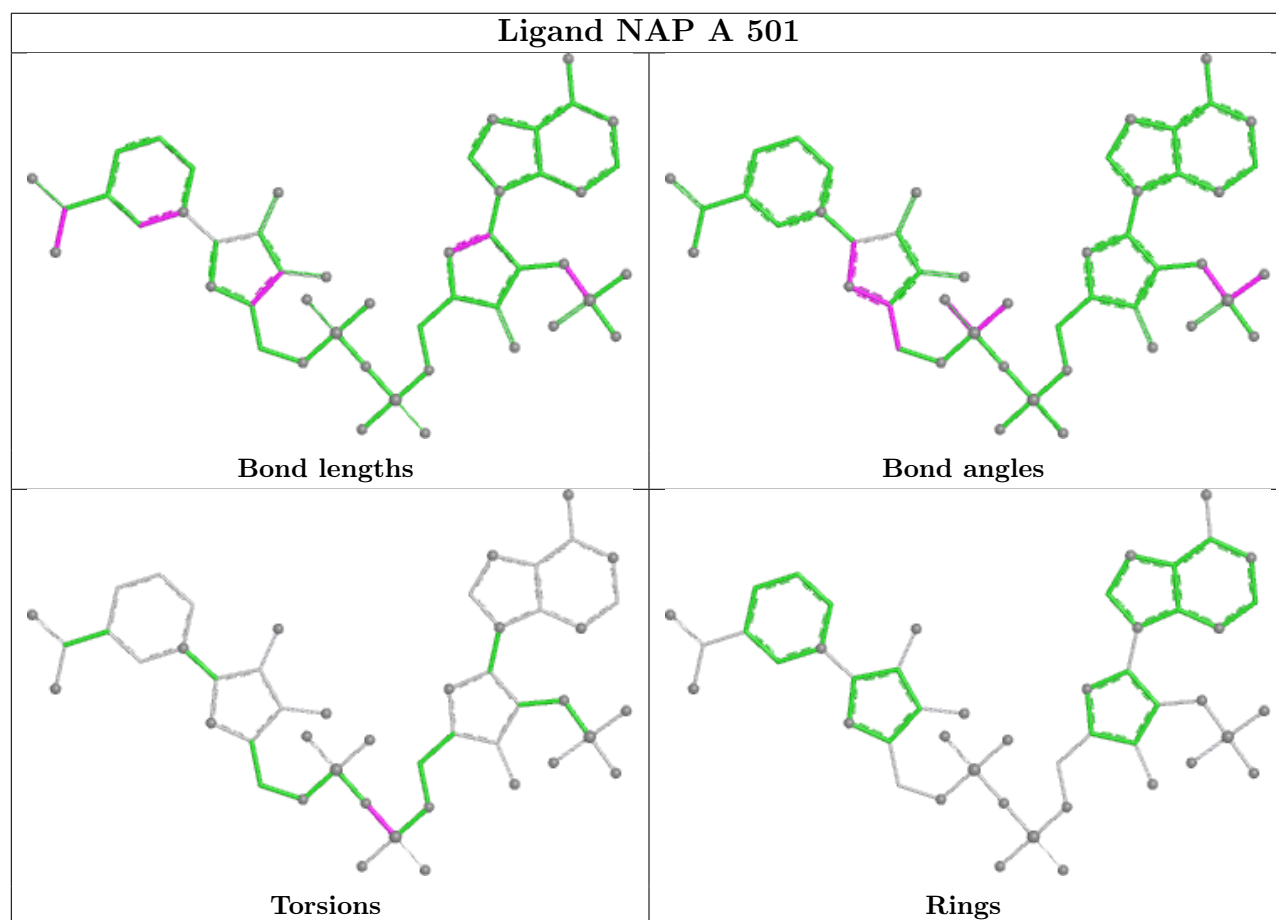
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	NAP	1	0
2	D	503	NAP	4	0
2	B	502	NAP	4	0
3	A	601	311	1	0
2	E	504	NAP	3	0

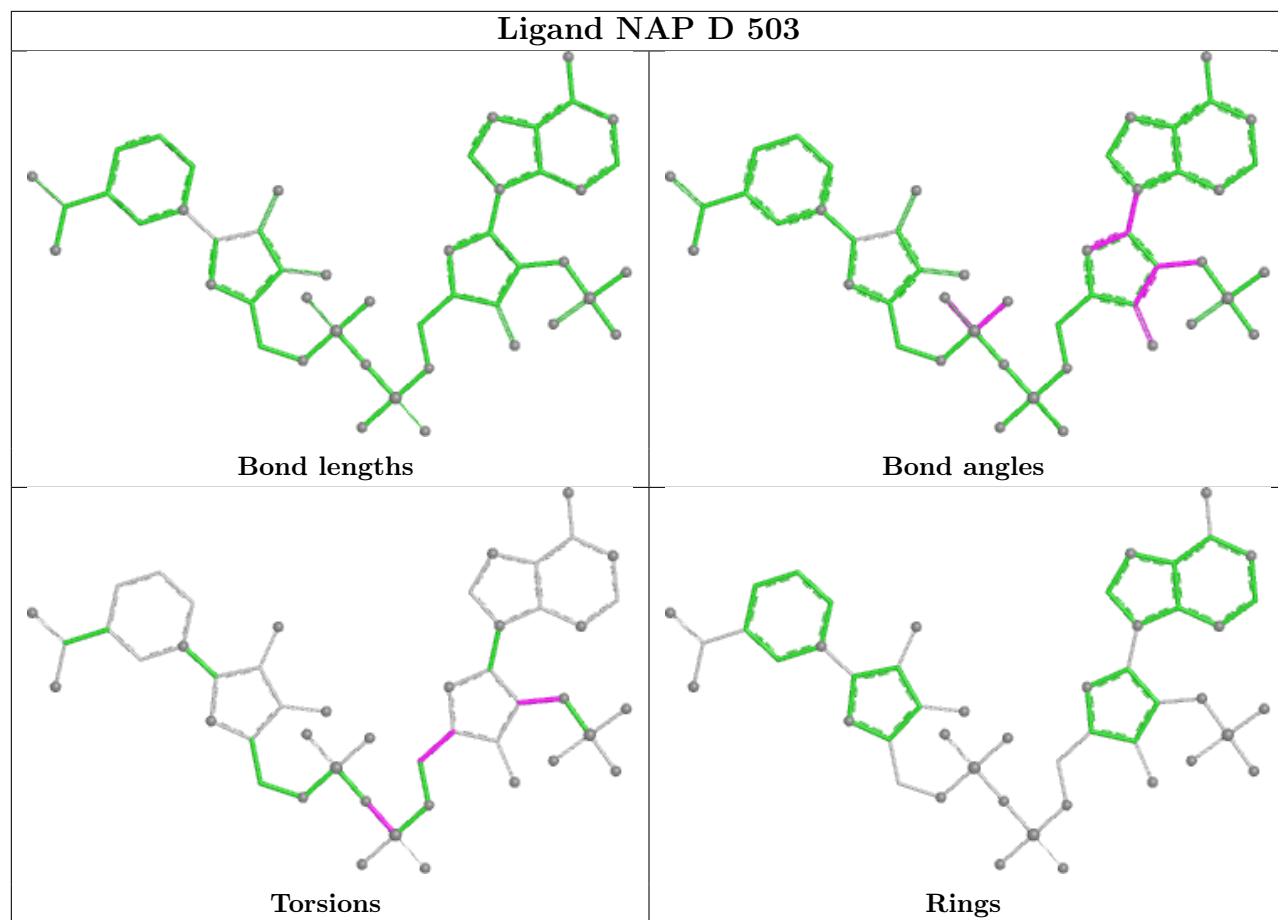
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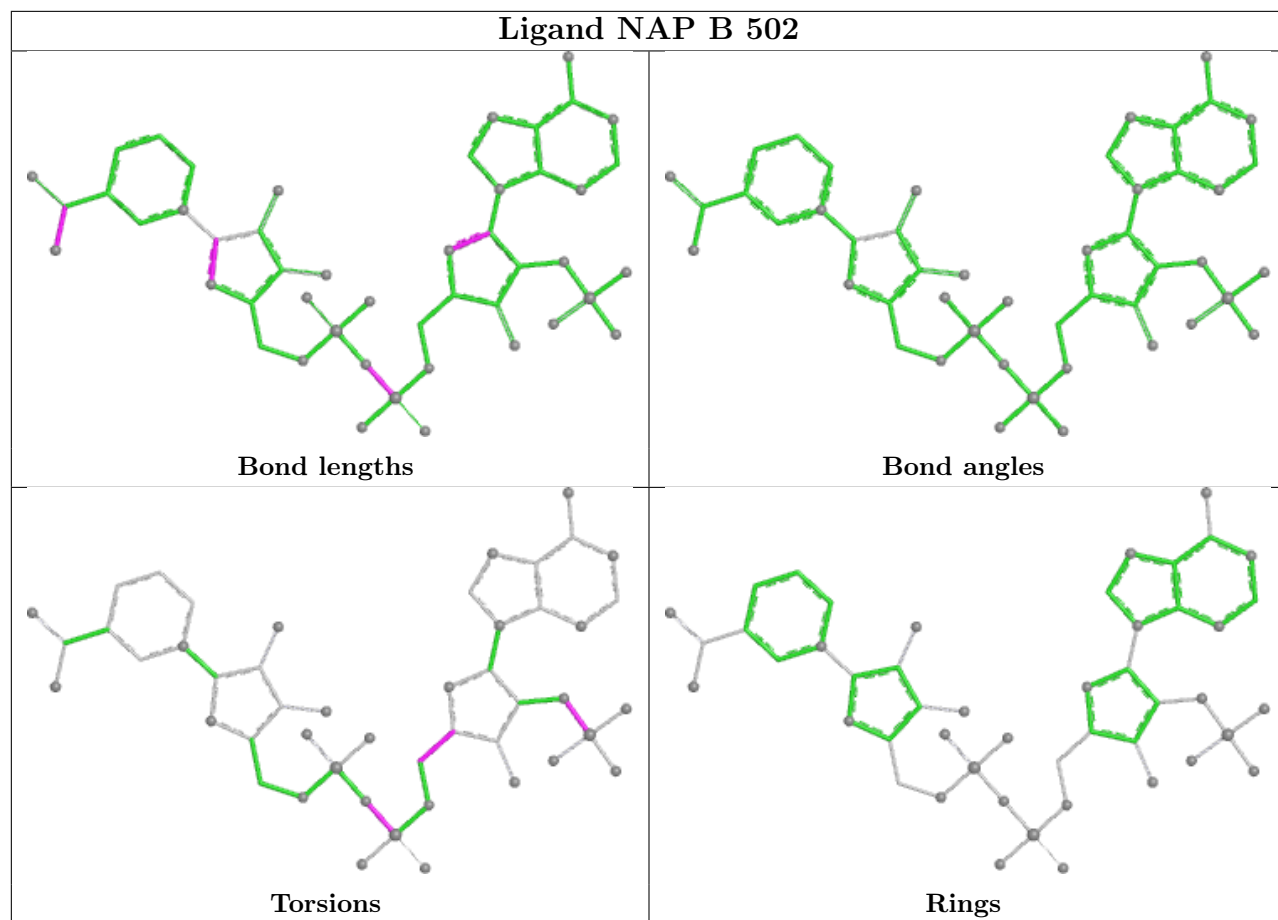
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	604	311	3	0
3	B	602	311	1	0

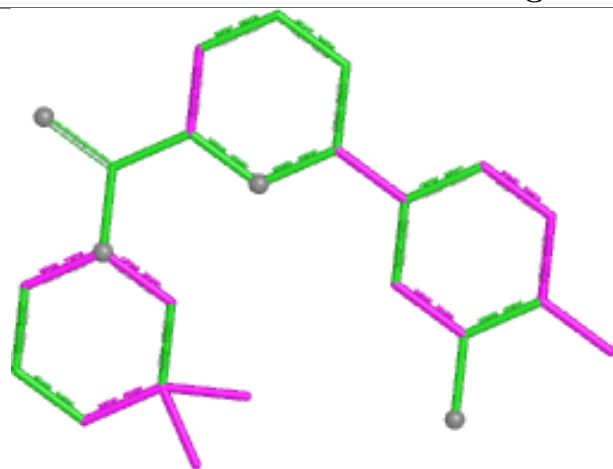
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



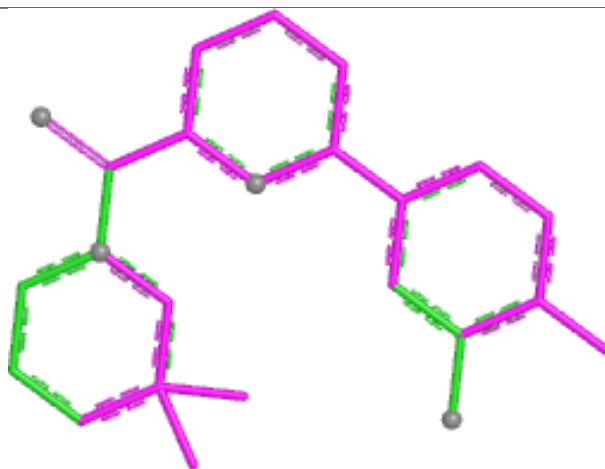




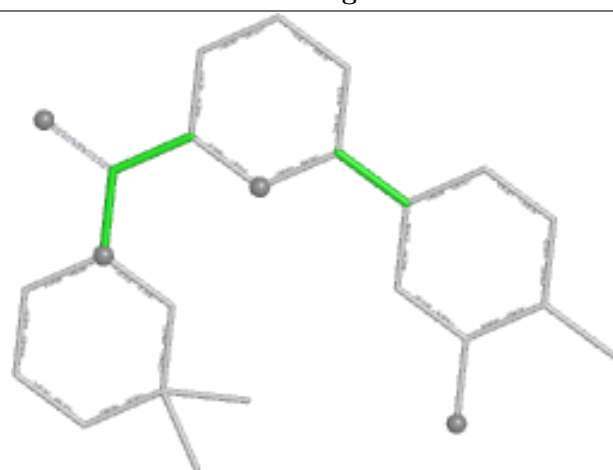
Ligand 311 D 603



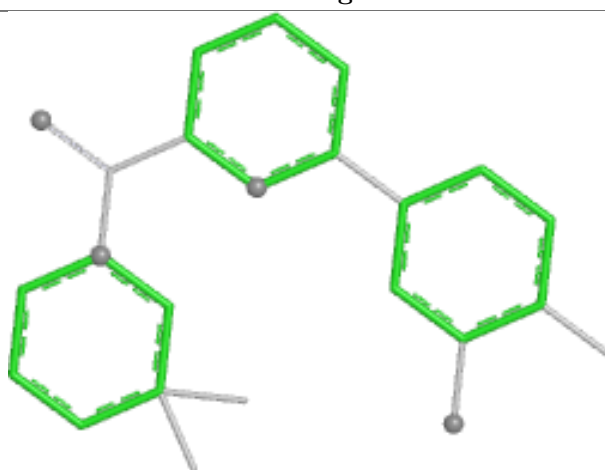
Bond lengths



Bond angles

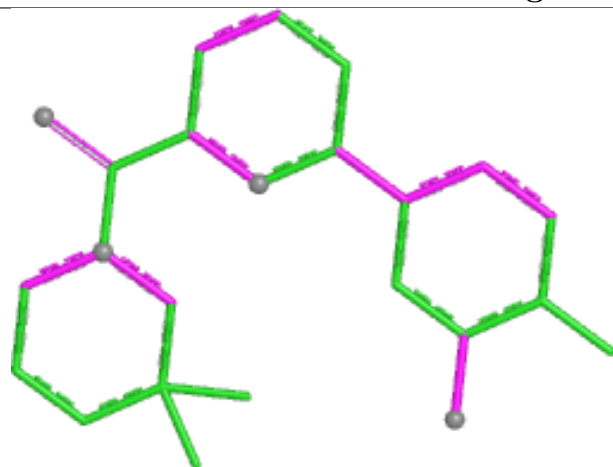


Torsions

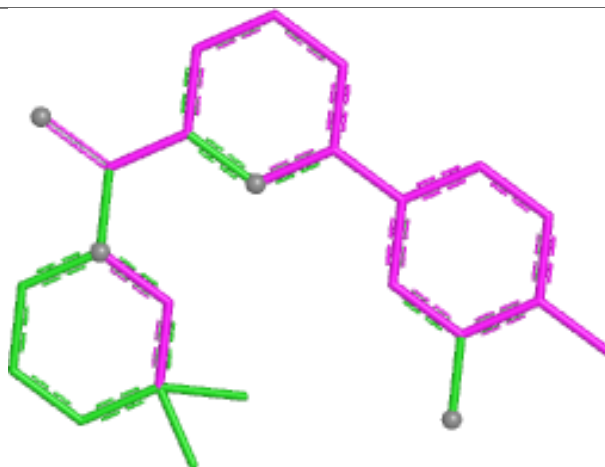


Rings

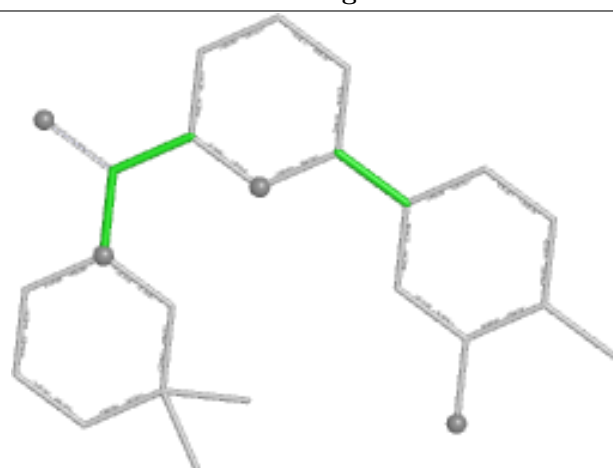
Ligand 311 A 601



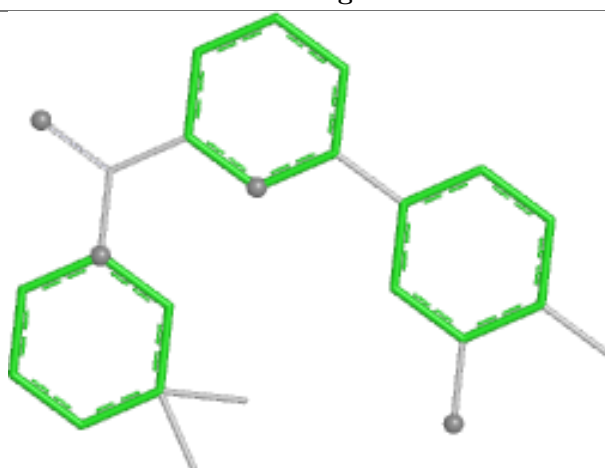
Bond lengths



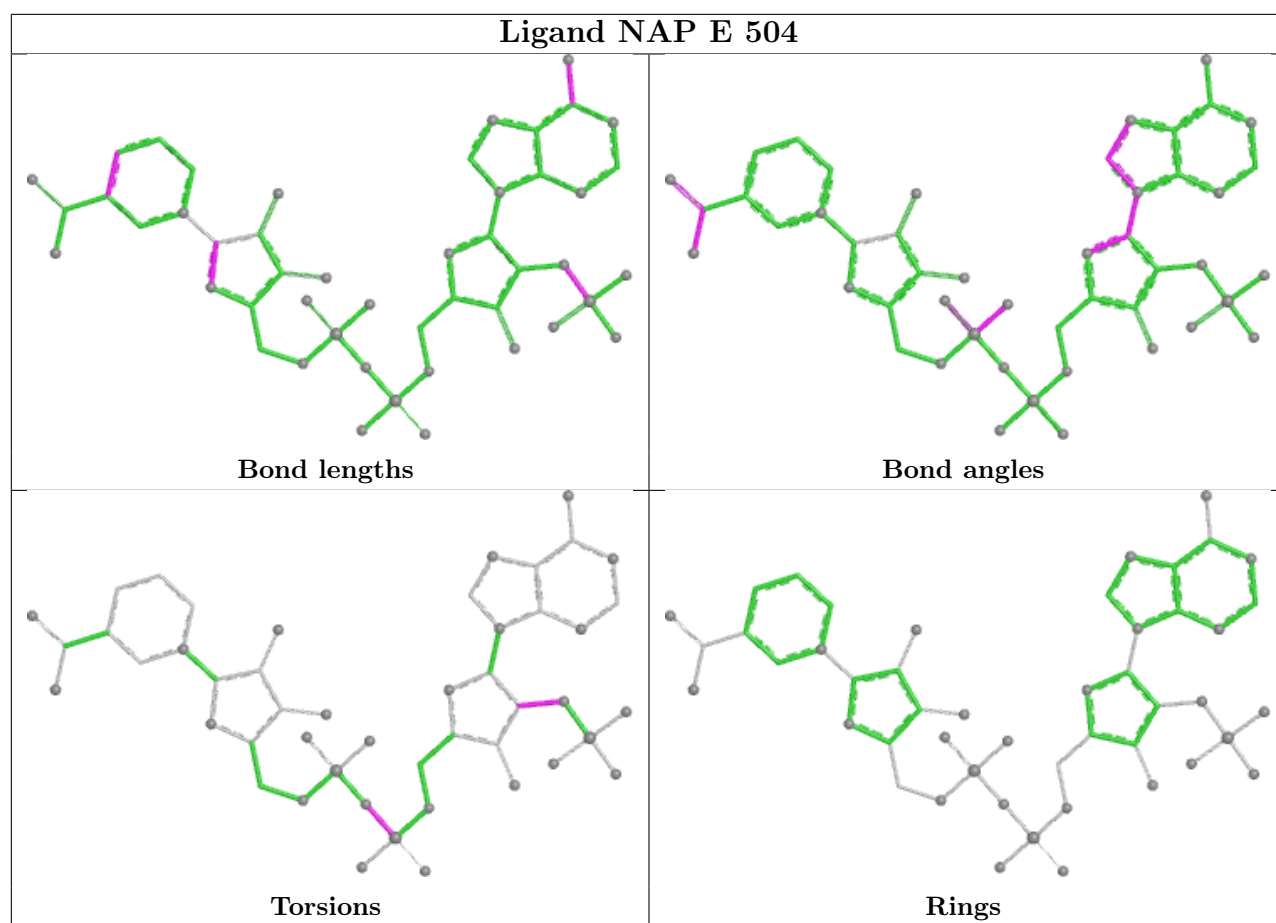
Bond angles



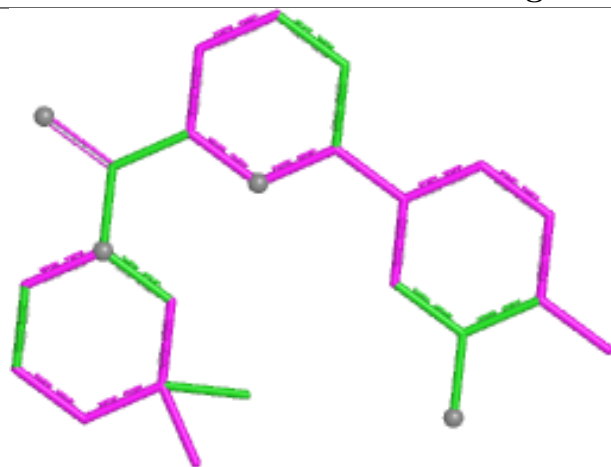
Torsions



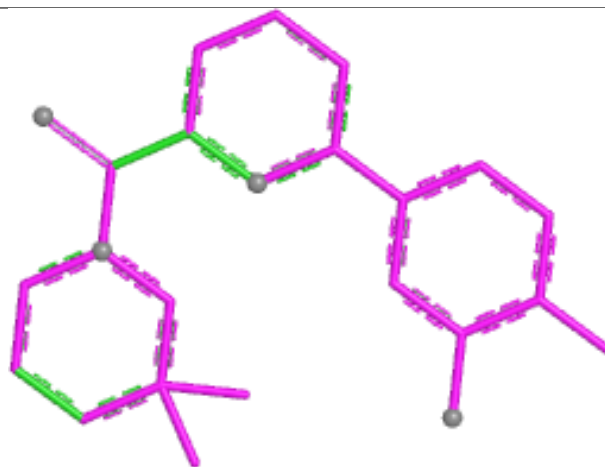
Rings



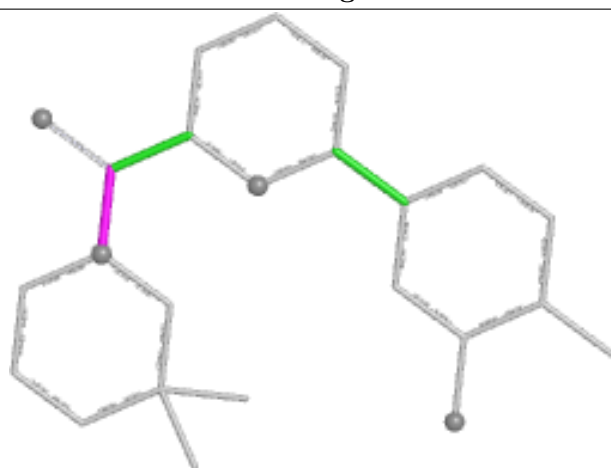
Ligand 311 E 604



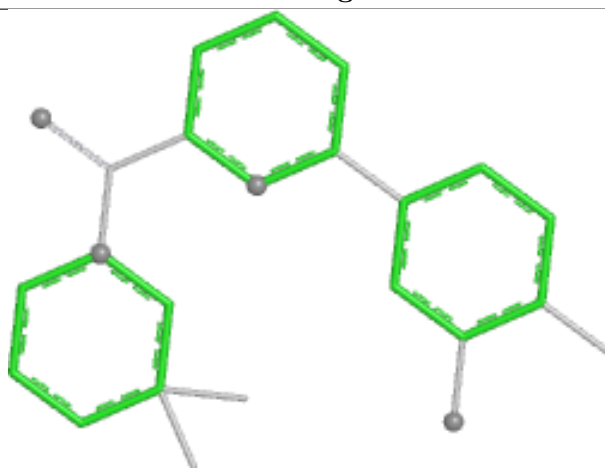
Bond lengths



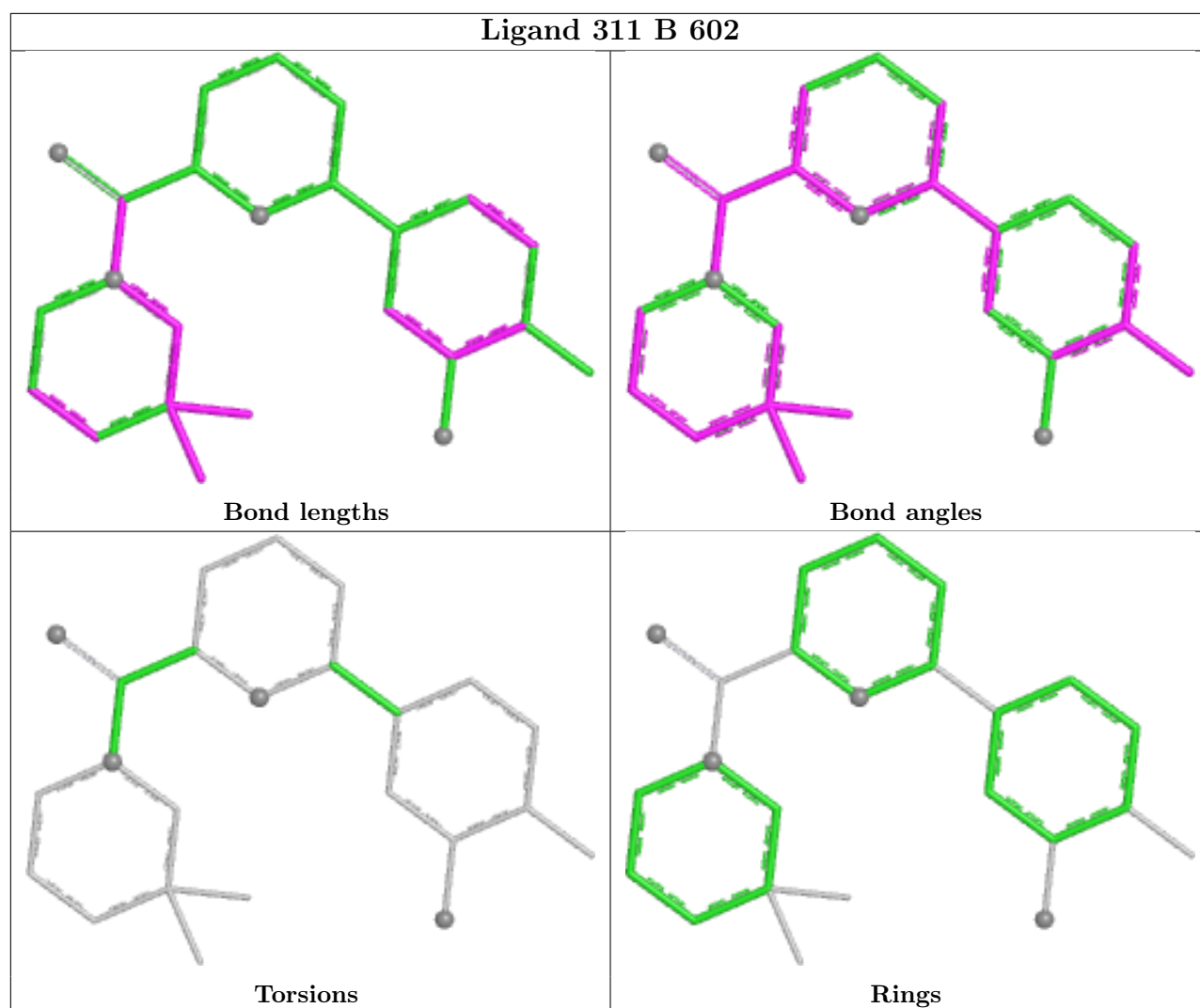
Bond angles



Torsions



Rings



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	264/286 (92%)	-0.22	7 (2%) 56 63	17, 28, 56, 100	2 (0%)
1	B	279/286 (97%)	-0.15	5 (1%) 67 72	18, 30, 60, 100	1 (0%)
1	D	273/286 (95%)	-0.27	10 (3%) 45 51	14, 26, 66, 86	1 (0%)
1	E	263/286 (91%)	-0.01	9 (3%) 48 55	18, 31, 58, 86	1 (0%)
All	All	1079/1144 (94%)	-0.16	31 (2%) 53 60	14, 29, 60, 100	5 (0%)

All (31) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	263	TRP	4.5
1	D	12	SER	4.1
1	A	288	ARG	3.6
1	E	287	ASP	3.6
1	D	17	GLN	3.5
1	A	263	TRP	3.3
1	D	23	SER	3.3
1	B	288	ARG	3.2
1	D	263	TRP	3.1
1	A	289	PHE	3.1
1	E	285	ASN	3.0
1	A	232	HIS	2.7
1	A	285	ASN	2.7
1	E	203	VAL	2.7
1	A	266	LEU	2.7
1	D	24	ASN	2.6
1	D	13	MET	2.6
1	D	20	GLY	2.6
1	E	232	HIS	2.6
1	E	68	LYS	2.5
1	D	262	ARG	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	279	LEU	2.4
1	B	263	TRP	2.4
1	B	283	SER	2.3
1	B	262	ARG	2.2
1	E	283	SER	2.2
1	B	23	SER	2.2
1	D	21	ARG	2.1
1	A	233	MET	2.1
1	D	22	GLY	2.1
1	E	282	THR	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

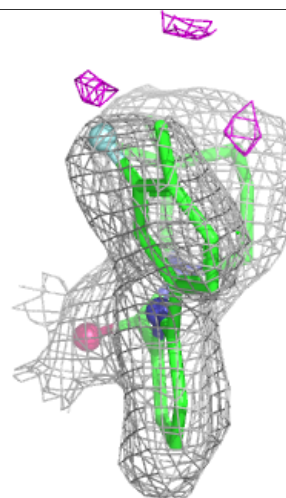
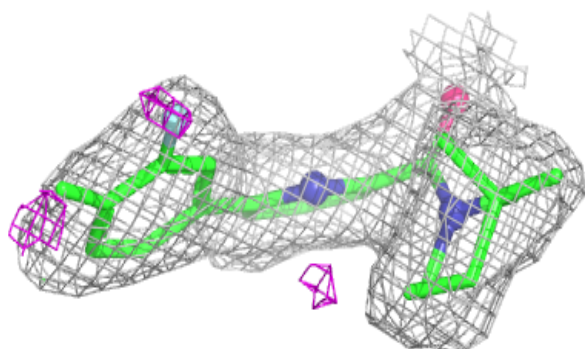
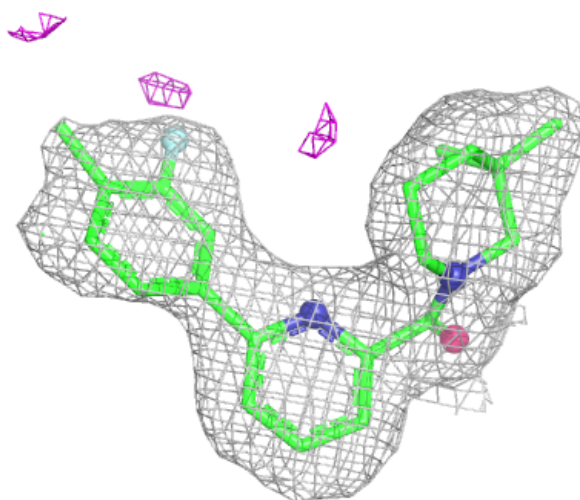
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	311	A	601	24/24	0.95	0.07	18,25,37,38	0
3	311	E	604	24/24	0.95	0.07	16,22,30,43	0
3	311	D	603	24/24	0.96	0.06	11,18,27,28	0
2	NAP	E	504	48/48	0.97	0.06	24,25,29,30	0
3	311	B	602	24/24	0.97	0.06	12,21,26,27	0
2	NAP	D	503	48/48	0.98	0.05	18,20,24,26	0
2	NAP	A	501	48/48	0.98	0.05	22,23,26,28	0
2	NAP	B	502	48/48	0.98	0.05	20,23,27,28	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.

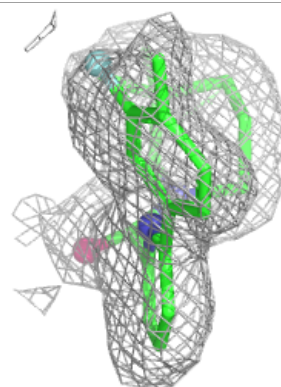
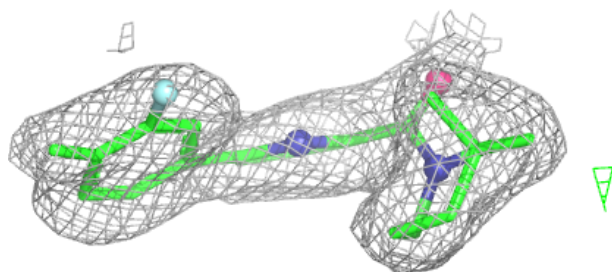
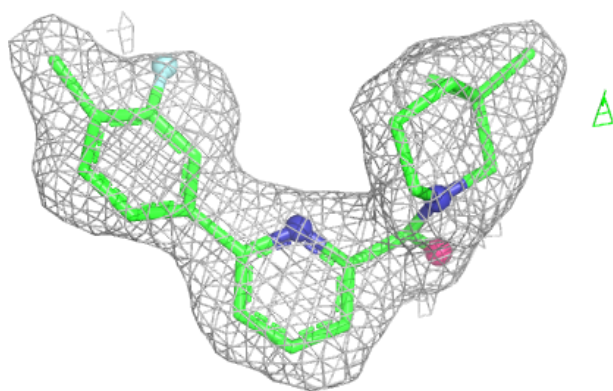
Electron density around 311 A 601:

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

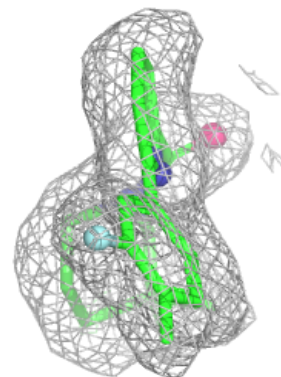
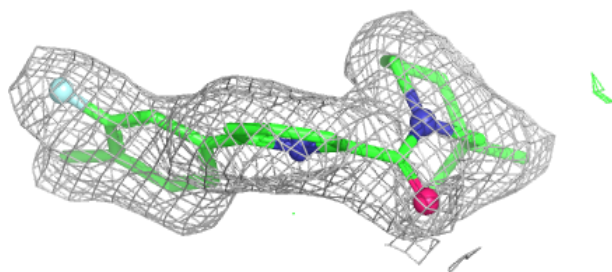
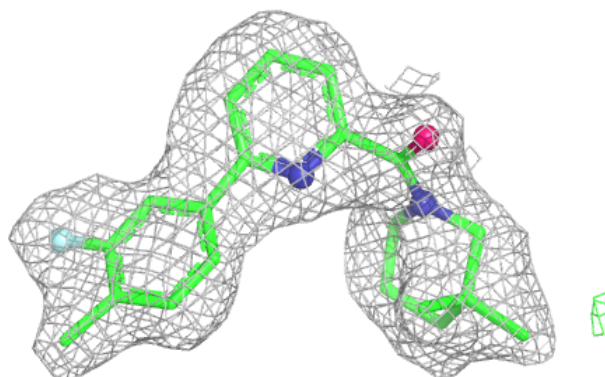


Electron density around 311 E 604:

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

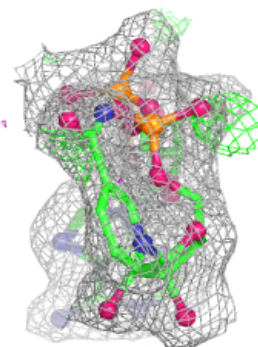
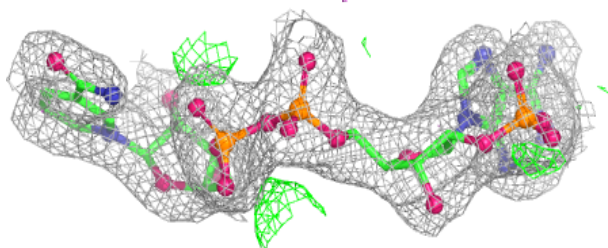
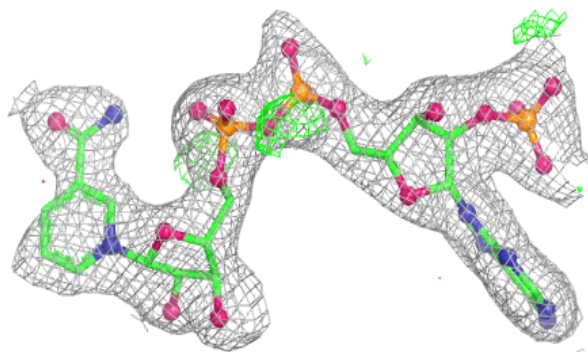
**Electron density around 311 D 603:**

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

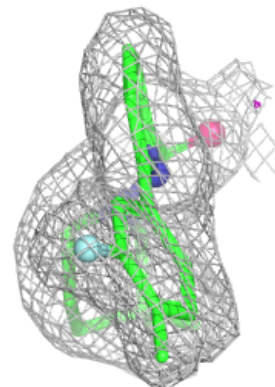
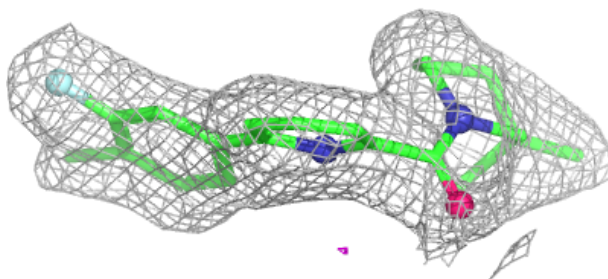
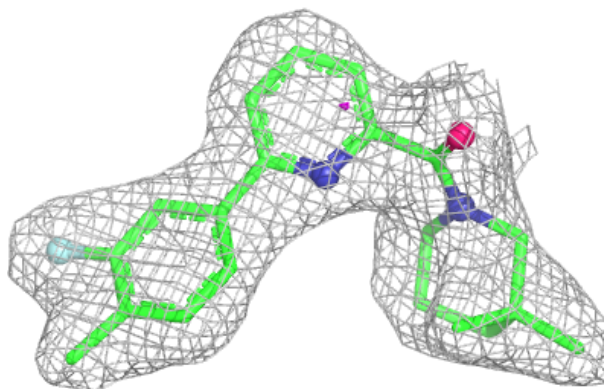


Electron density around NAP E 504:

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

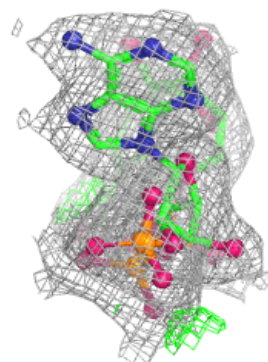
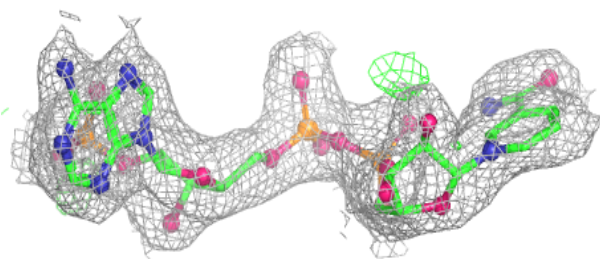
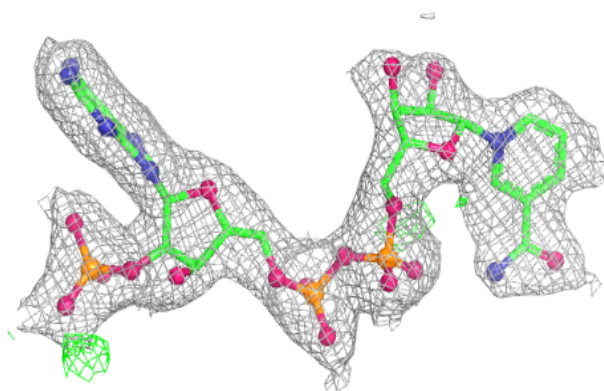
**Electron density around 311 B 602:**

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

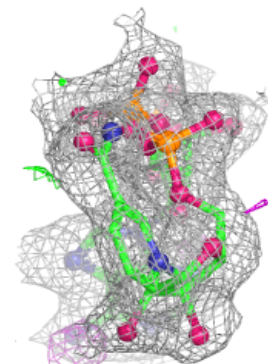
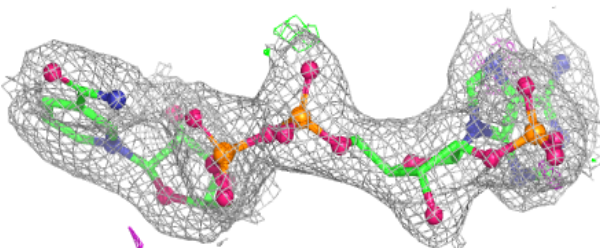
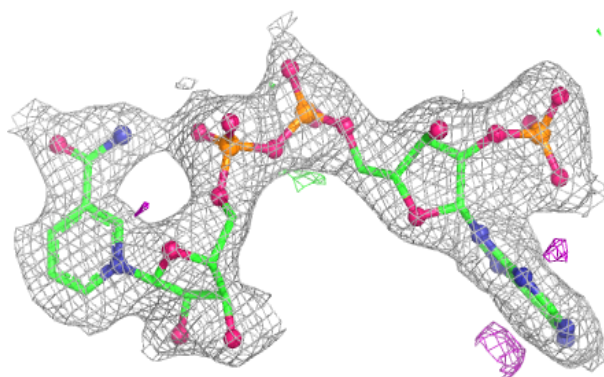


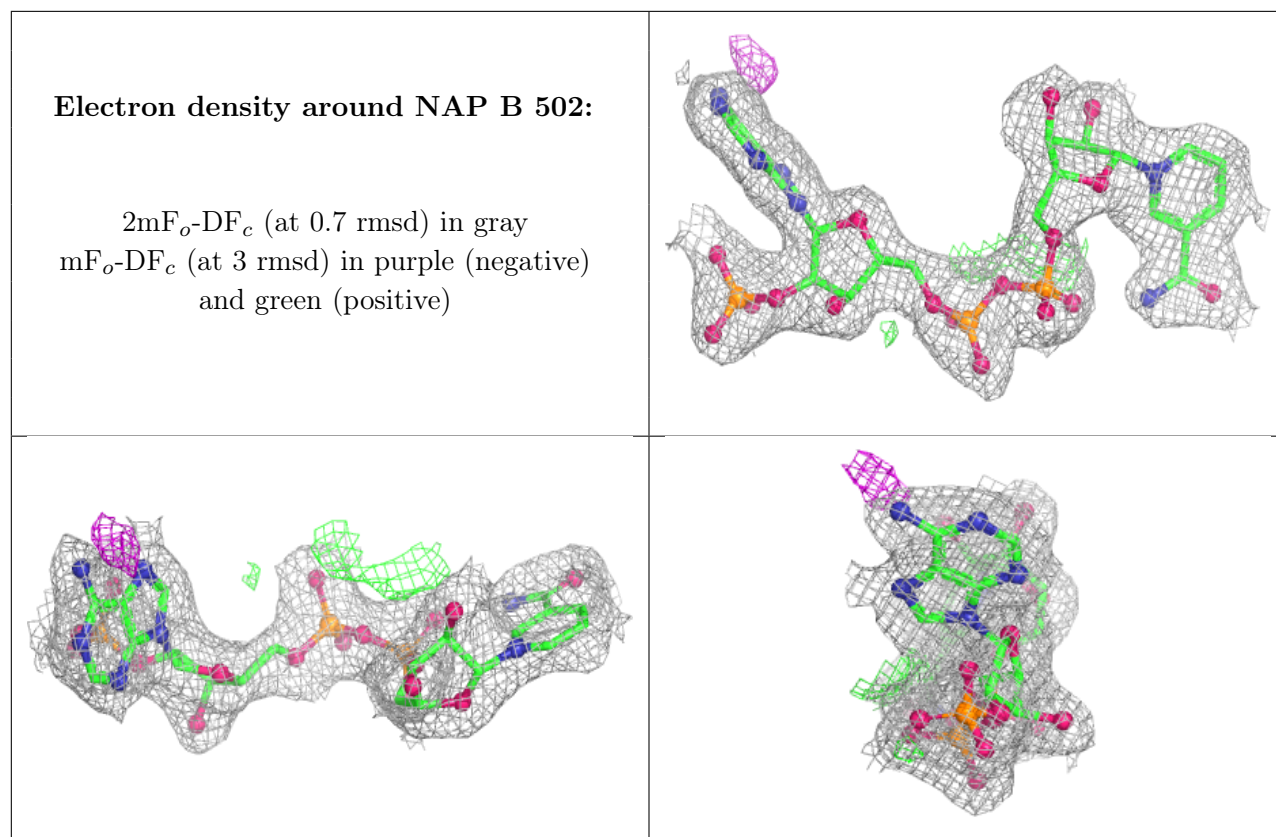
Electron density around NAP D 503:

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

**Electron density around NAP A 501:**

$2mF_o-DF_c$ (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.