WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Jul 7, 2022 – 04:11 pm BST

PDB ID	:	6H7J
Title	:	ACTIVATED TURKEY BETA1 ADRENOCEPTOR WITH BOUND AGONIST ISOPRENALINE AND NANOBODY Nb80
Authors	:	Warne, T.; Edwards, P.C.; Dore, A.S.; Leslie, A.G.W.; Tate, C.G.
Deposited on	:	2018-07-31
Resolution	:	2.80 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	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.29
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0267
CCP4	:	7.1.010 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.29

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 2.80 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.321
Clashscore		2
Ramachandran outliers		0
Sidechain outliers		0.6%
RSRZ outliers		14.2%

Worse *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
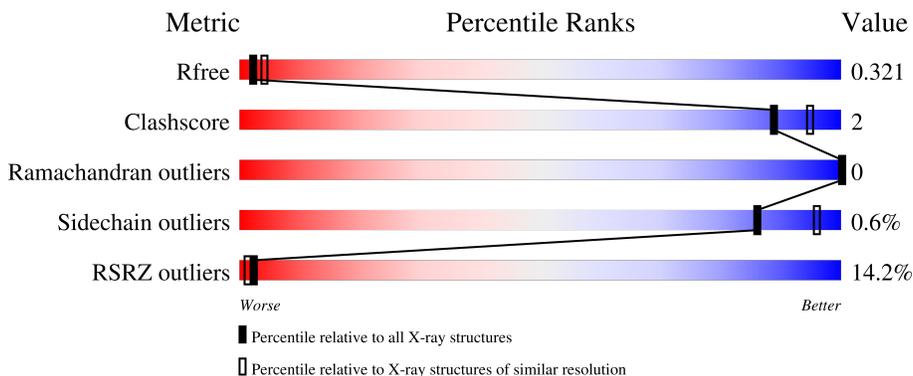
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	E	109	42% / 97% ·
1	F	109	35% / 94% · ·
2	A	307	7% / 87% 7% 6%
2	B	307	8% / 84% 7% 9%
3	C	121	9% / 96% · ·

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Mol	Chain	Length	Quality of chain
3	D	121	3% 96%
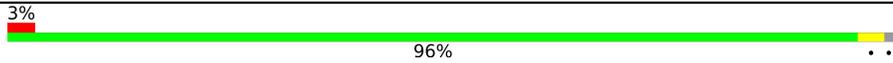
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	2CV	B	404	-	-	-	X

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 8094 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 Thioredoxin 1.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	E	106	Total 788	C 507	N 126	O 155	0	0	0
1	F	106	Total 801	C 517	N 127	O 157	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	32	SER	CYS	engineered mutation	UNP P0AA25
E	35	SER	CYS	engineered mutation	UNP P0AA25
E	109	GLU	-	expression tag	UNP P0AA25
F	32	SER	CYS	engineered mutation	UNP P0AA25
F	35	SER	CYS	engineered mutation	UNP P0AA25
F	109	GLU	-	expression tag	UNP P0AA25

- Molecule 2 is a protein called Beta-1 adrenergic receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	290	Total 2308	C 1523	N 384	O 381	S 20	0	0	0
2	B	280	Total 2226	C 1478	N 363	O 366	S 19	0	0	0

There are 90 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	39	ALA	-	expression tag	UNP P07700
A	40	ALA	-	expression tag	UNP P07700
A	41	ALA	-	expression tag	UNP P07700
A	42	LYS	-	expression tag	UNP P07700
A	43	VAL	-	expression tag	UNP P07700
A	68	SER	ARG	engineered mutation	UNP P07700

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Chain	Residue	Modelled	Actual	Comment	Reference
A	90	VAL	MET	engineered mutation	UNP P07700
A	116	LEU	CYS	engineered mutation	UNP P07700
A	?	-	ARG	deletion	UNP P07700
A	?	-	CYS	deletion	UNP P07700
A	?	-	GLU	deletion	UNP P07700
A	?	-	GLY	deletion	UNP P07700
A	?	-	ARG	deletion	UNP P07700
A	?	-	PHE	deletion	UNP P07700
A	?	-	TYR	deletion	UNP P07700
A	?	-	GLY	deletion	UNP P07700
A	?	-	SER	deletion	UNP P07700
A	?	-	GLN	deletion	UNP P07700
A	?	-	GLU	deletion	UNP P07700
A	?	-	GLN	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	GLN	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	LEU	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	GLN	deletion	UNP P07700
A	?	-	HIS	deletion	UNP P07700
A	?	-	GLN	deletion	UNP P07700
A	?	-	PRO	deletion	UNP P07700
A	?	-	ILE	deletion	UNP P07700
A	?	-	LEU	deletion	UNP P07700
A	?	-	GLY	deletion	UNP P07700
A	?	-	ASN	deletion	UNP P07700
A	?	-	GLY	deletion	UNP P07700
A	284	LYS	ARG	conflict	UNP P07700
A	327	ALA	PHE	engineered mutation	UNP P07700
A	338	MET	PHE	engineered mutation	UNP P07700
A	358	ALA	CYS	engineered mutation	UNP P07700
A	369	HIS	-	expression tag	UNP P07700
A	370	HIS	-	expression tag	UNP P07700
A	371	HIS	-	expression tag	UNP P07700
A	372	HIS	-	expression tag	UNP P07700
A	373	HIS	-	expression tag	UNP P07700
B	39	ALA	-	expression tag	UNP P07700
B	40	ALA	-	expression tag	UNP P07700
B	41	ALA	-	expression tag	UNP P07700

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Chain	Residue	Modelled	Actual	Comment	Reference
B	42	LYS	-	expression tag	UNP P07700
B	43	VAL	-	expression tag	UNP P07700
B	68	SER	ARG	engineered mutation	UNP P07700
B	90	VAL	MET	engineered mutation	UNP P07700
B	116	LEU	CYS	engineered mutation	UNP P07700
B	?	-	ARG	deletion	UNP P07700
B	?	-	CYS	deletion	UNP P07700
B	?	-	GLU	deletion	UNP P07700
B	?	-	GLY	deletion	UNP P07700
B	?	-	ARG	deletion	UNP P07700
B	?	-	PHE	deletion	UNP P07700
B	?	-	TYR	deletion	UNP P07700
B	?	-	GLY	deletion	UNP P07700
B	?	-	SER	deletion	UNP P07700
B	?	-	GLN	deletion	UNP P07700
B	?	-	GLU	deletion	UNP P07700
B	?	-	GLN	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	GLN	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	LEU	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	GLN	deletion	UNP P07700
B	?	-	HIS	deletion	UNP P07700
B	?	-	GLN	deletion	UNP P07700
B	?	-	PRO	deletion	UNP P07700
B	?	-	ILE	deletion	UNP P07700
B	?	-	LEU	deletion	UNP P07700
B	?	-	GLY	deletion	UNP P07700
B	?	-	ASN	deletion	UNP P07700
B	?	-	GLY	deletion	UNP P07700
B	284	LYS	ARG	conflict	UNP P07700
B	327	ALA	PHE	engineered mutation	UNP P07700
B	338	MET	PHE	engineered mutation	UNP P07700
B	358	ALA	CYS	engineered mutation	UNP P07700
B	369	HIS	-	expression tag	UNP P07700
B	370	HIS	-	expression tag	UNP P07700
B	371	HIS	-	expression tag	UNP P07700
B	372	HIS	-	expression tag	UNP P07700
B	373	HIS	-	expression tag	UNP P07700

- Molecule 3 is a protein called Camelid antibody fragment Nb80.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	119	Total 901	C 561	N 157	O 179	S 4	0	0	0
3	D	120	Total 910	C 566	N 159	O 181	S 4	0	0	0

- Molecule 4 is ISOPRENALINE (three-letter code: 5FW) (formula: $C_{11}H_{17}NO_3$).
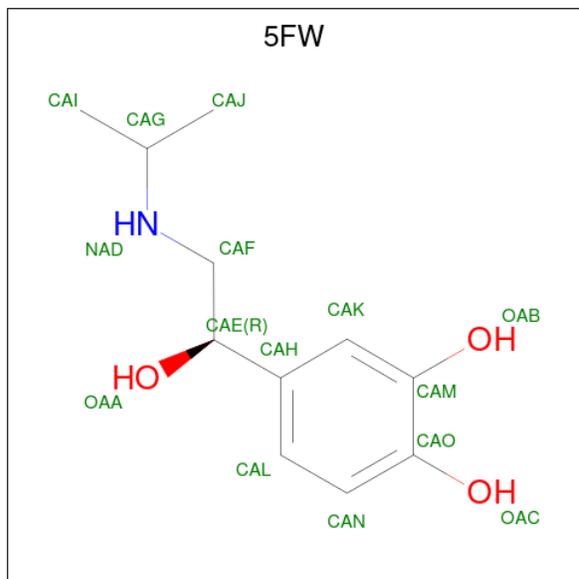
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total 15	C 11	N 1	O 3	0	0
4	B	1	Total 15	C 11	N 1	O 3	0	0

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total 1	Na 1	0	0
5	B	1	Total 1	Na 1	0	0

- Molecule 6 is HEGA-10 (three-letter code: 2CV) (formula: $C_{18}H_{37}NO_7$).
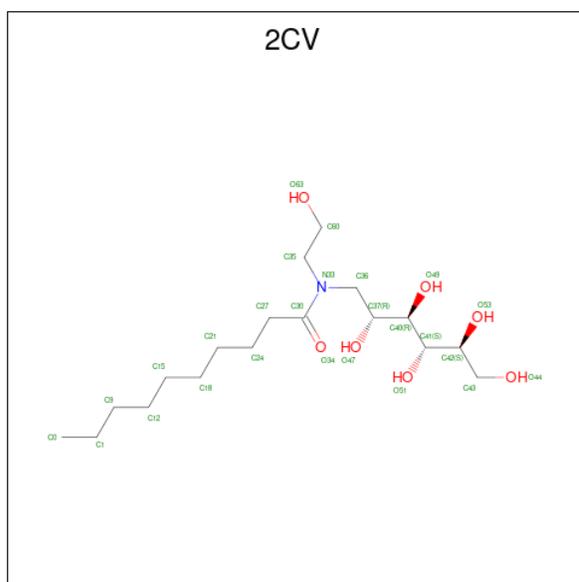
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total 26	C 18	N 1	O 7	0	0
6	A	1	Total 16	C 14	N 1	O 1	0	0
6	A	1	Total 21	C 16	N 1	O 4	0	0
6	B	1	Total 26	C 18	N 1	O 7	0	0
6	B	1	Total 19	C 15	N 1	O 3	0	0

- Molecule 7 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	5	Total 5	O 5	0	0
7	C	5	Total 5	O 5	0	0
7	B	5	Total 5	O 5	0	0
7	D	5	Total 5	O 5	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: Thioredoxin 1
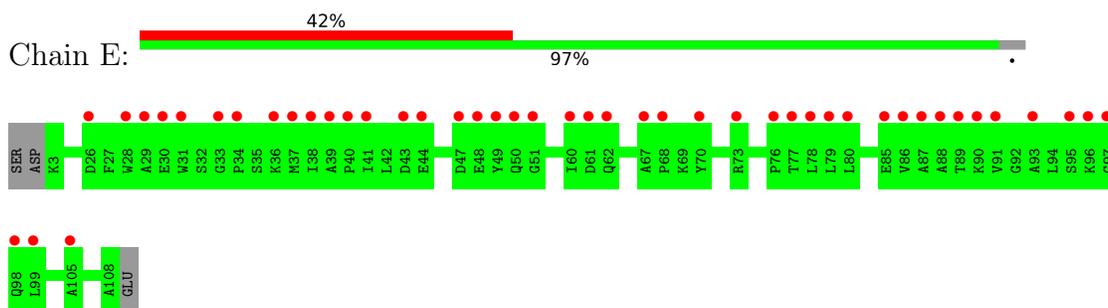
- Molecule 1: Thioredoxin 1
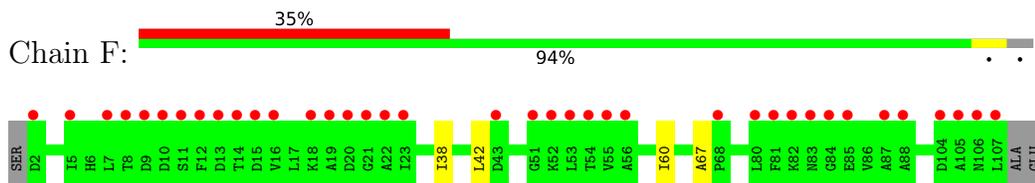
- Molecule 2: Beta-1 adrenergic receptor
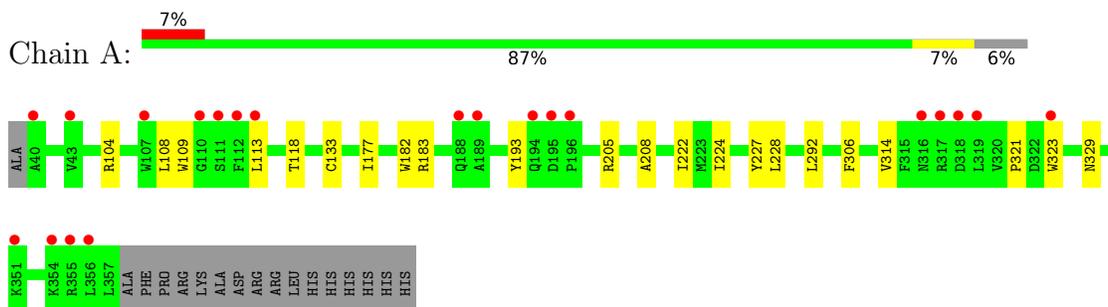
- Molecule 2: Beta-1 adrenergic receptor
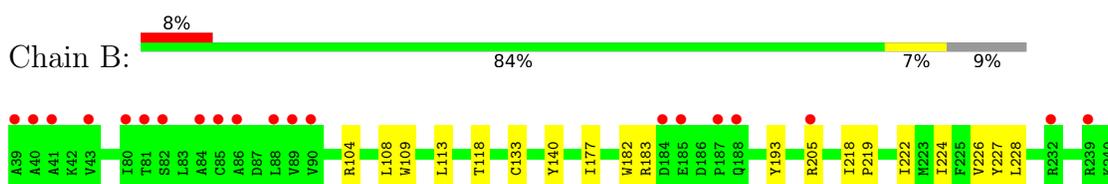
I241 ASP ARG ALA SER LYS ARG LYS THR SER ARG VAL MET ALA M283 L292 F306 N310 I311 V312 N313 V314 R317 D318 L319 N329 F359 PRO ARG LYS ALA ASP ARG ARG LEU HIS HIS HIS HIS HIS HIS

• Molecule 3: Camelid antibody fragment Nb80

9%

Chain C: 96%

SER GLN V2 L11 P41 S56 N73 A74 A75 N76 P87 E88 D89 T90 T117 V118 S119 S120

• Molecule 3: Camelid antibody fragment Nb80

3%

Chain D: 96%
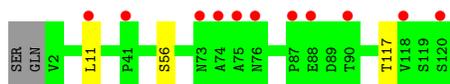
SER Q1 L11 V12 Q13 S30 V48 S56 F67 T117 S120

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	116.73Å 121.18Å 129.54Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	41.38 – 2.80 41.38 – 2.80	Depositor EDS
% Data completeness (in resolution range)	64.9 (41.38-2.80) 64.9 (41.38-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.96 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.8.0174	Depositor
R, R_{free}	0.285 , 0.317 0.289 , 0.321	Depositor DCC
R_{free} test set	1439 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å^2)	56.1	Xtriage
Anisotropy	0.367	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	(Not available) , (Not available)	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	0.015 for k,h,-l	Xtriage
F_o,F_c correlation	0.80	EDS
Total number of atoms	8094	wwPDB-VP
Average B, all atoms (Å^2)	73.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.14% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: 2CV, NA, 5FW

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	E	0.45	0/803	0.53	0/1096
1	F	0.45	0/816	0.55	0/1109
2	A	0.44	0/2362	0.62	0/3215
2	B	0.44	0/2280	0.61	0/3107
3	C	0.41	0/918	0.56	0/1244
3	D	0.43	0/927	0.58	0/1256
All	All	0.44	0/8106	0.59	0/11027

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

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	E	788	0	770	0	0
1	F	801	0	802	2	0
2	A	2308	0	2418	12	0
2	B	2226	0	2322	12	0
3	C	901	0	861	1	0
3	D	910	0	872	1	0
4	A	15	0	15	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	15	0	15	1	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	63	0	90	2	0
6	B	45	0	62	1	0
7	A	5	0	0	0	0
7	B	5	0	0	0	0
7	C	5	0	0	0	0
7	D	5	0	0	0	0
All	All	8094	0	8227	31	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

The worst 5 of 31 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)
2:B:227:TYR:HB3	2:B:292:LEU:HD11	1.77	0.67
2:A:227:TYR:HB3	2:A:292:LEU:HD11	1.76	0.66
2:A:104:ARG:HG3	2:A:108:LEU:HD11	1.92	0.50
2:B:183:ARG:HD2	2:B:193:TYR:CD2	2.46	0.50
2:B:140:TYR:HB2	2:B:226:VAL:HG13	1.94	0.49

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	E	104/109 (95%)	103 (99%)	1 (1%)	0	100	100
1	F	104/109 (95%)	103 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	A	288/307 (94%)	279 (97%)	9 (3%)	0	100	100
2	B	276/307 (90%)	268 (97%)	8 (3%)	0	100	100
3	C	117/121 (97%)	114 (97%)	3 (3%)	0	100	100
3	D	118/121 (98%)	115 (98%)	3 (2%)	0	100	100
All	All	1007/1074 (94%)	982 (98%)	25 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	80/88 (91%)	80 (100%)	0	100	100
1	F	84/88 (96%)	84 (100%)	0	100	100
2	A	252/266 (95%)	251 (100%)	1 (0%)	91	97
2	B	242/266 (91%)	241 (100%)	1 (0%)	91	97
3	C	94/96 (98%)	93 (99%)	1 (1%)	73	92
3	D	95/96 (99%)	93 (98%)	2 (2%)	53	84
All	All	847/900 (94%)	842 (99%)	5 (1%)	86	96

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	329	ASN
3	C	56	SER
2	B	329	ASN
3	D	30	SER
3	D	56	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	335	ASN
2	B	335	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 9 ligands modelled in this entry, 2 are monoatomic - leaving 7 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
6	2CV	A	405	-	20,20,25	0.49	0	22,23,30	1.29	2 (9%)
6	2CV	A	404	-	15,15,25	0.51	0	16,16,30	1.18	2 (12%)
4	5FW	B	402	-	15,15,15	0.63	0	19,20,20	0.54	0
6	2CV	A	403	-	25,25,25	0.42	0	29,30,30	1.44	5 (17%)
6	2CV	B	401	-	25,25,25	0.41	0	29,30,30	1.61	4 (13%)
6	2CV	B	404	-	18,18,25	0.51	0	20,21,30	0.96	0
4	5FW	A	401	-	15,15,15	0.72	0	19,20,20	0.57	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	2CV	A	405	-	-	4/24/24/34	-
6	2CV	A	404	-	-	4/17/17/34	-
4	5FW	B	402	-	-	0/9/9/9	0/1/1/1
6	2CV	A	403	-	-	7/34/34/34	-
6	2CV	B	401	-	-	13/34/34/34	-
6	2CV	B	404	-	-	7/21/21/34	-
4	5FW	A	401	-	-	0/9/9/9	0/1/1/1

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	B	401	2CV	C43-C42-C41	4.35	121.84	112.41
6	A	405	2CV	C27-C30-N33	3.74	123.85	118.01
6	B	401	2CV	C42-C41-C40	3.31	117.64	112.47
6	A	405	2CV	C60-C35-N33	-3.01	104.75	112.55
6	A	404	2CV	C27-C30-N33	2.99	122.69	118.01

There are no chirality outliers.

5 of 35 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	B	401	2CV	N33-C36-C37-C40
6	B	401	2CV	N33-C36-C37-O47
6	B	404	2CV	N33-C36-C37-O47
6	B	401	2CV	C40-C41-C42-C43
6	B	401	2CV	C24-C27-C30-O34

There are no ring outliers.

4 monomers are involved in 5 short contacts:

| Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	402	5FW	1	0
6	A	403	2CV	2	0
6	B	401	2CV	1	0
4	A	401	5FW	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 2CV A 405

Bond lengths

Bond angles

Torsions

Rings

Ligand 2CV A 404

Bond lengths

Bond angles

Torsions

Rings

Ligand 2CV A 403

Bond lengths

Bond angles

Torsions

Rings

Ligand 2CV B 401

Bond lengths

Bond angles

Torsions

Rings

Ligand 2CV B 404

Bond lengths

Bond angles

Torsions

Rings
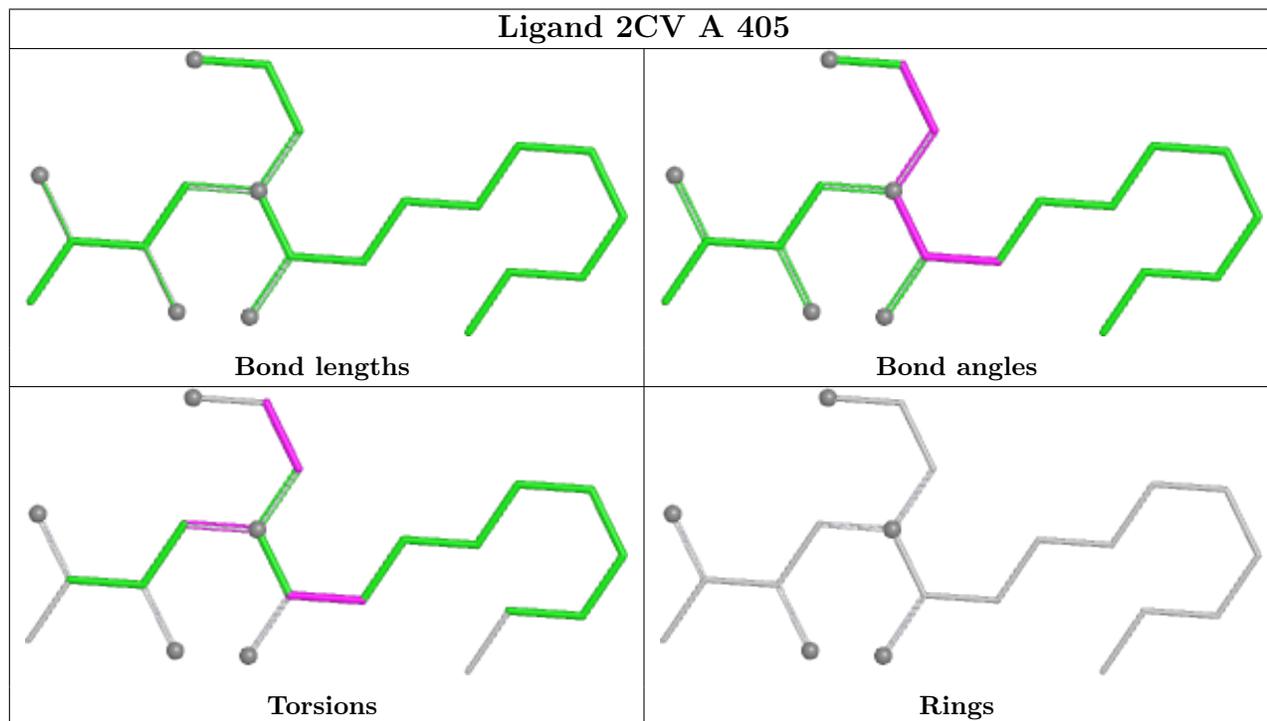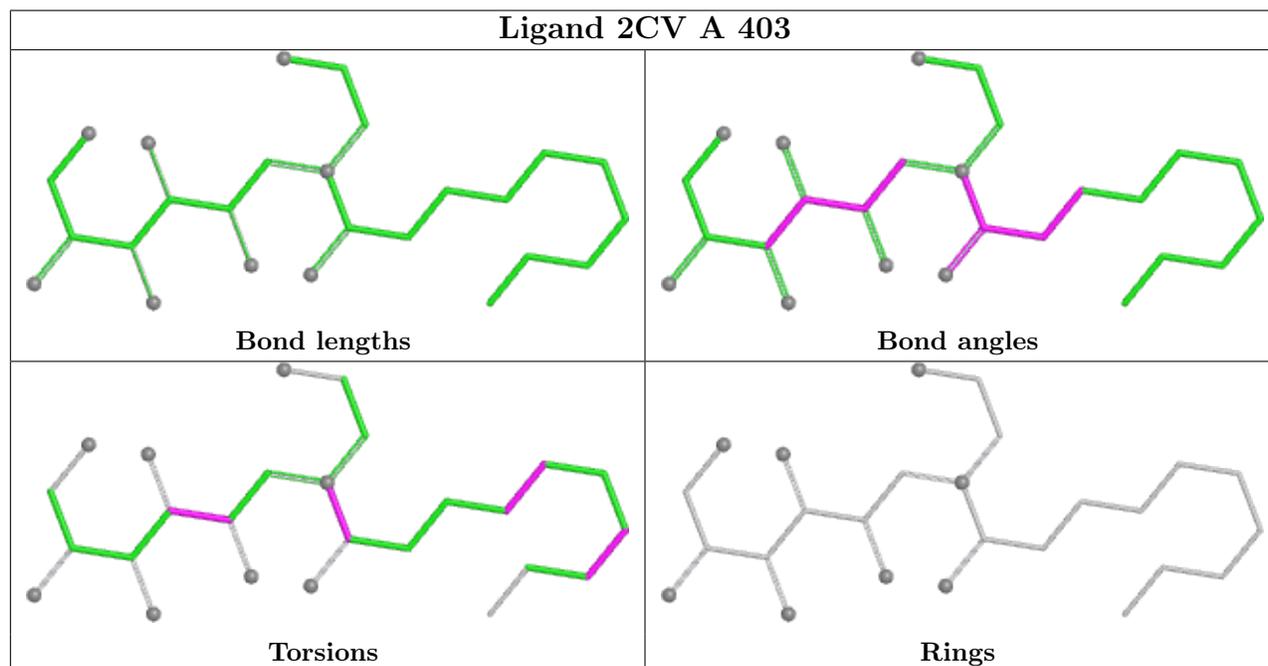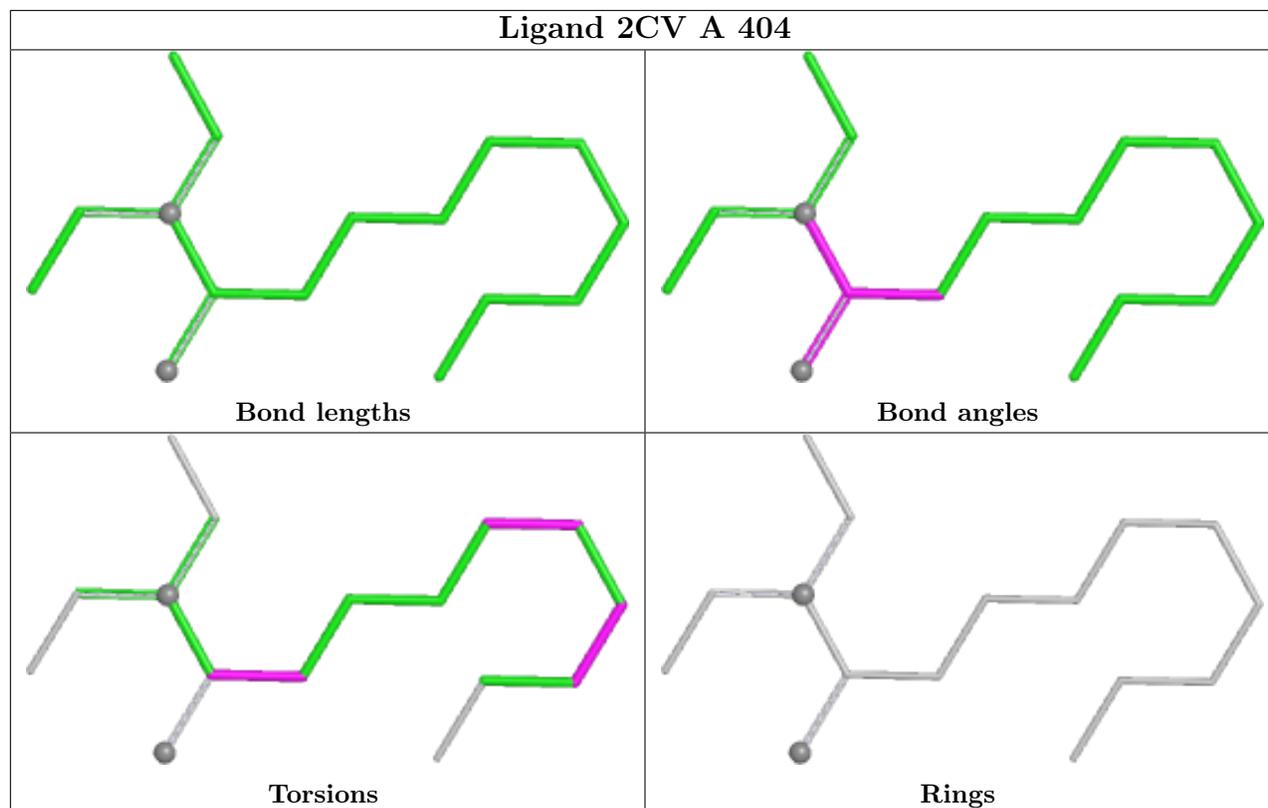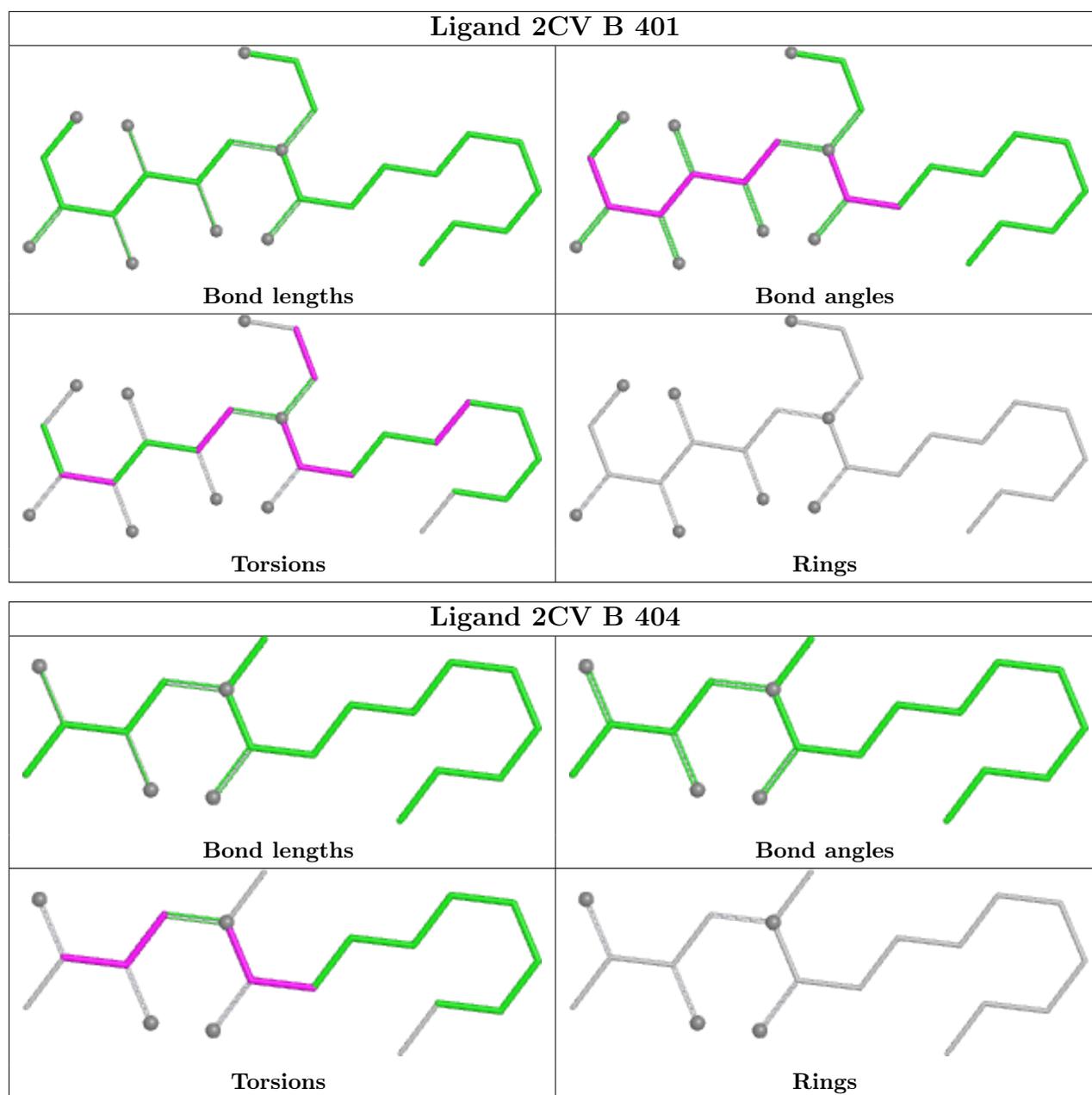
5.7 Other polymers ⓘ

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	E	106/109 (97%)	2.24	46 (43%)	0	0	73, 129, 189, 197	0
1	F	106/109 (97%)	1.81	38 (35%)	0	0	62, 112, 150, 178	0
2	A	290/307 (94%)	0.32	21 (7%)	15	8	22, 55, 102, 127	0
2	B	280/307 (91%)	0.59	25 (8%)	9	5	28, 61, 107, 137	0
3	C	119/121 (98%)	0.28	11 (9%)	9	5	25, 49, 88, 95	0
3	D	120/121 (99%)	0.38	4 (3%)	46	36	36, 60, 93, 117	0
All	All	1021/1074 (95%)	0.75	145 (14%)	2	1	22, 64, 140, 197	0

The worst 5 of 145 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	15	ASP	14.7
1	F	14	THR	10.4
1	E	76	PRO	9.8
1	F	16	VAL	8.9
1	E	77	THR	8.3

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

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

## 6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
6	2CV	B	404	19/26	0.79	0.45	26,37,65,77	0
6	2CV	A	404	16/26	0.80	0.28	47,56,79,85	0
6	2CV	B	401	26/26	0.84	0.48	31,53,79,95	0
6	2CV	A	403	26/26	0.88	0.31	34,49,64,66	0
5	NA	B	403	1/1	0.89	0.15	47,47,47,47	0
6	2CV	A	405	21/26	0.89	0.21	40,60,79,106	0
5	NA	A	402	1/1	0.90	0.29	57,57,57,57	0
4	5FW	B	402	15/15	0.92	0.21	44,57,61,61	0
4	5FW	A	401	15/15	0.93	0.24	41,47,61,68	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 2CV B 404:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
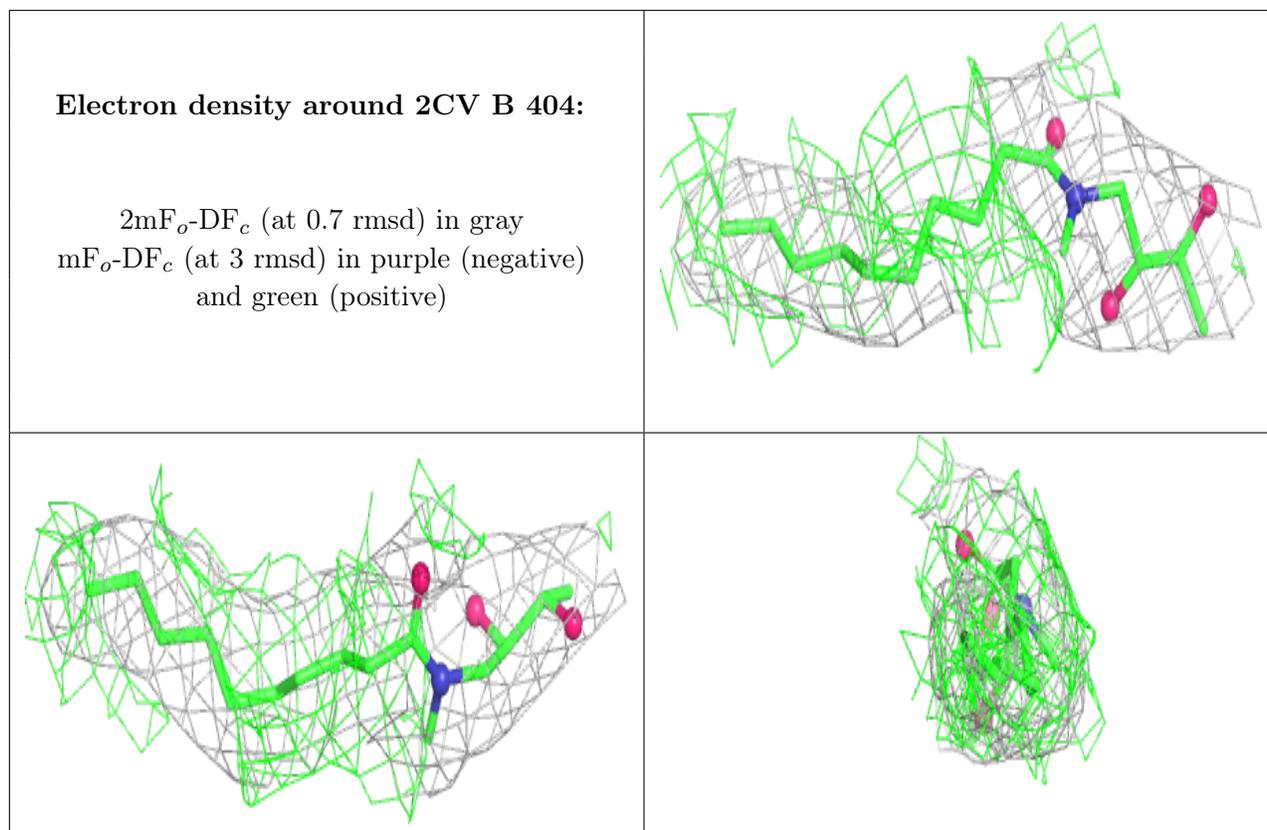
Electron density around 2CV A 404:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
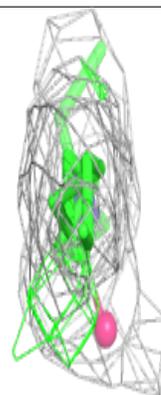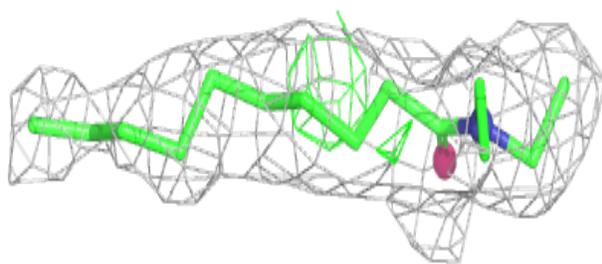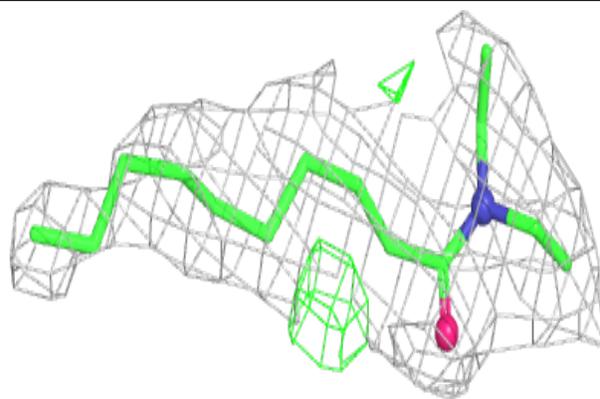
Electron density around 2CV B 401:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
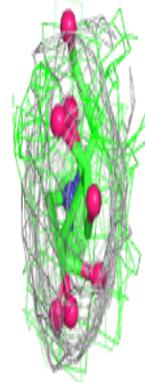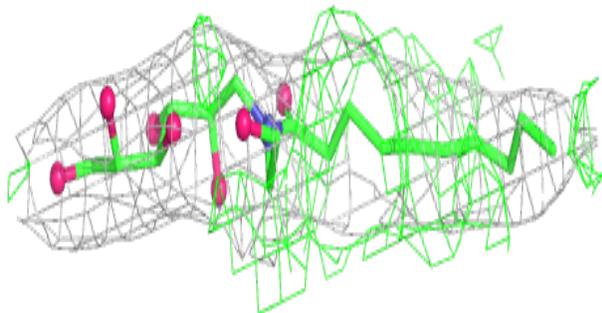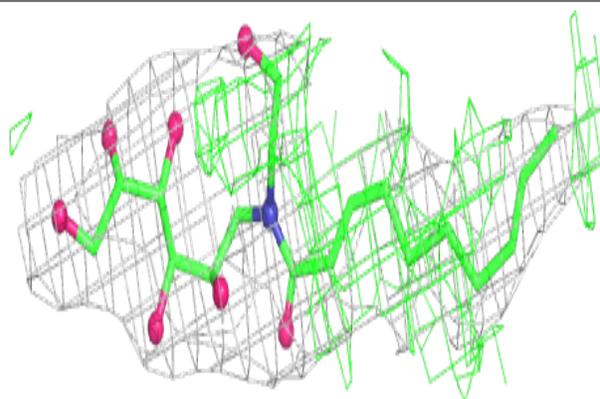
Electron density around 2CV A 403:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
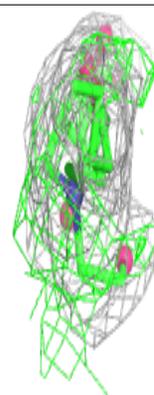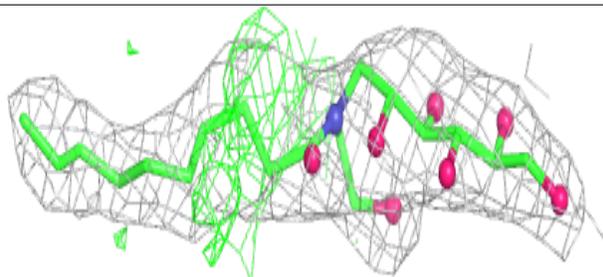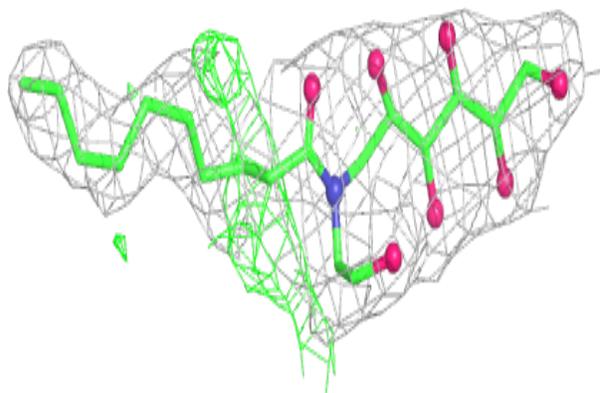
Electron density around 2CV A 405:

$2mF_o\text{-}DF_c$ (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.