WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Sep 13, 2023 – 01:38 PM EDT

PDB ID	:	4Q0L
Title	:	Crystal structure of catalytic domain of human carbonic anhydrase isozyme XII with inhibitor
Authors	:	Smirnov, A.; Manakova, E.; Grazulis, S.
Deposited on	:	2014-04-02
Resolution	:	2.00 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
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

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 2.00 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.
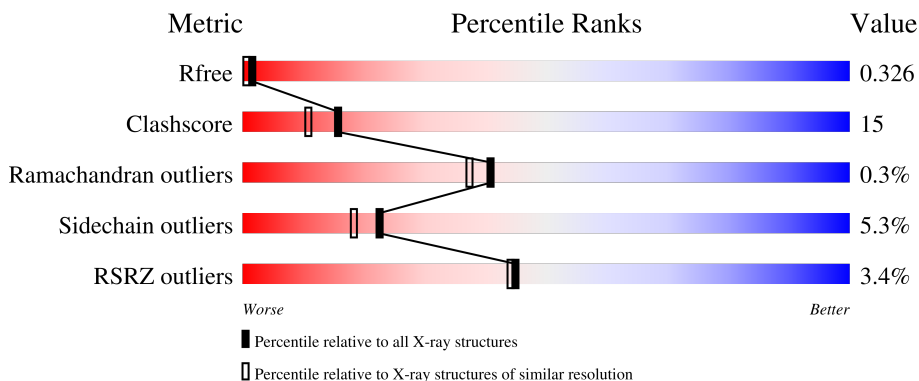
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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	263	6% / 71% / 24%
1	B	263	3% / 71% / 25%
1	C	263	3% / 72% / 26%
1	D	263	2% / 71% / 25%

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	V14	D	302[B]	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 8894 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 Carbonic anhydrase 12.

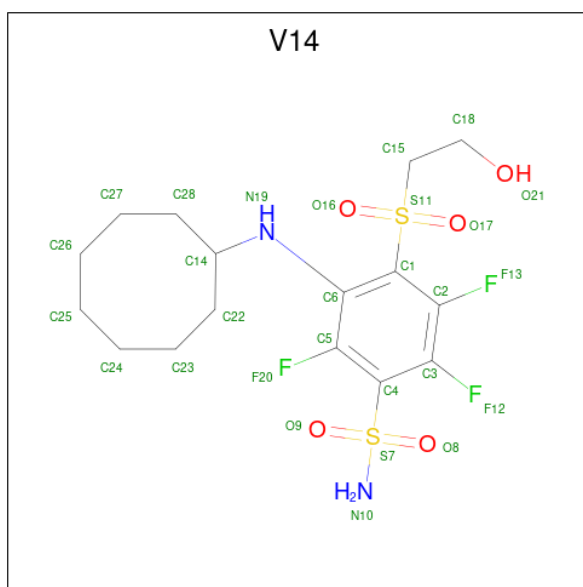| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	261	Total 2098	C 1333	N 357	O 401	S 7	0	0	0
1	B	260	Total 2117	C 1346	N 360	O 404	S 7	0	4	0
1	C	261	Total 2115	C 1343	N 359	O 405	S 8	0	2	0
1	D	260	Total 2100	C 1334	N 357	O 402	S 7	0	2	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP O43570
B	1	MET	-	expression tag	UNP O43570
C	1	MET	-	expression tag	UNP O43570
D	1	MET	-	expression tag	UNP O43570

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

- Molecule 3 is 3-(cyclooctylamino)-2,5,6-trifluoro-4-[(2-hydroxyethyl)sulfonyl]benzenesulfonamide (three-letter code: V14) (formula: $C_{16}H_{23}F_3N_2O_5S_2$).

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	F	N	O	S	0	0
			28	16	3	2	5	2		
3	B	1	Total	C	F	N	O	S	0	0
			28	16	3	2	5	2		
3	C	1	Total	C	F	N	O	S	0	0
			28	16	3	2	5	2		
3	D	1	Total	C	F	N	O	S	0	1
			56	32	6	4	10	4		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	68	Total	O	0	0
			68	68		
4	B	77	Total	O	0	0
			77	77		
4	C	89	Total	O	0	0
			89	89		
4	D	86	Total	O	0	0
			86	86		

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.
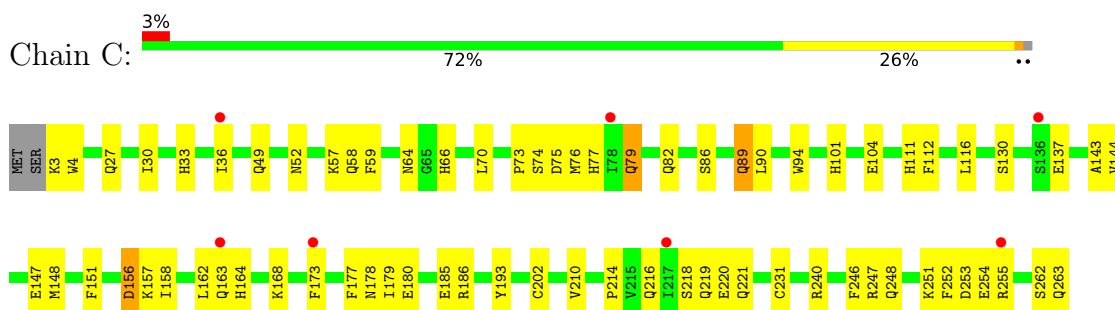
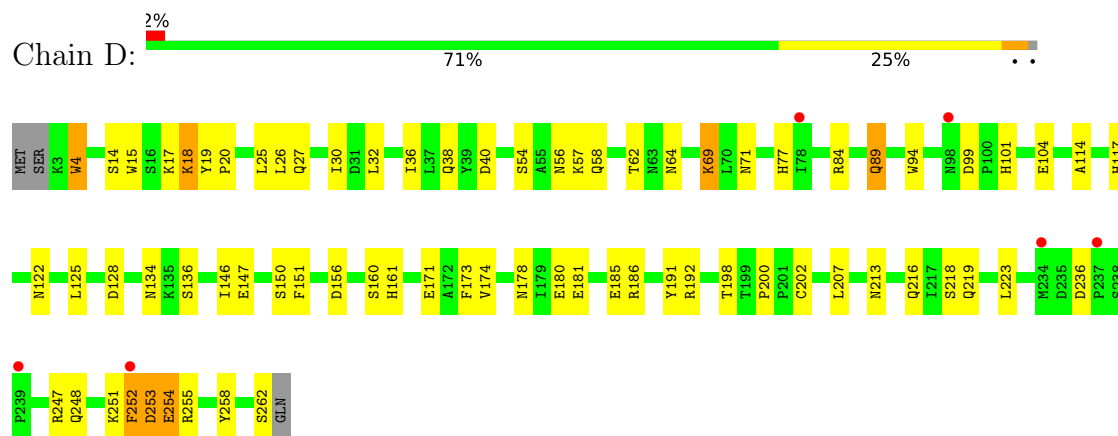- Molecule 1: Carbonic anhydrase 12
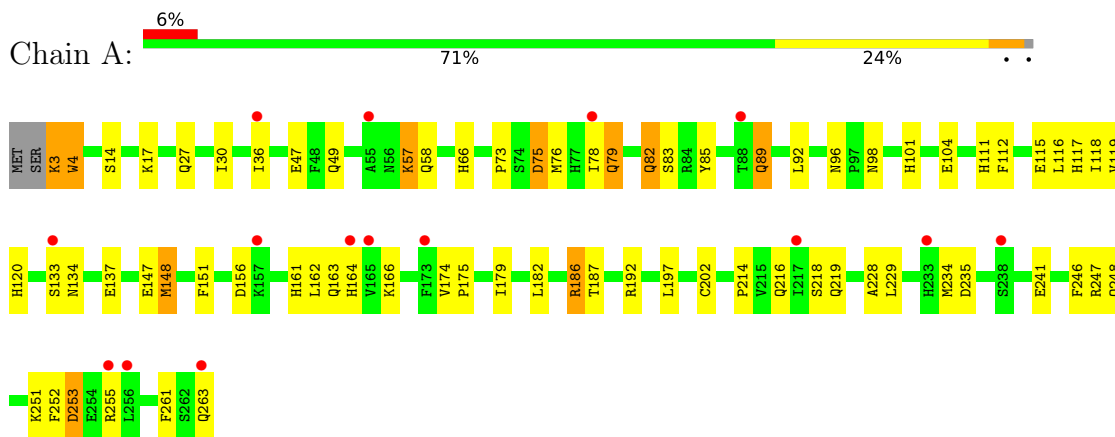
Chain A:

- Molecule 1: Carbonic anhydrase 12

Chain B:

- Molecule 1: Carbonic anhydrase 12

Chain C:

• Molecule 1: Carbonic anhydrase 12

Chain D:
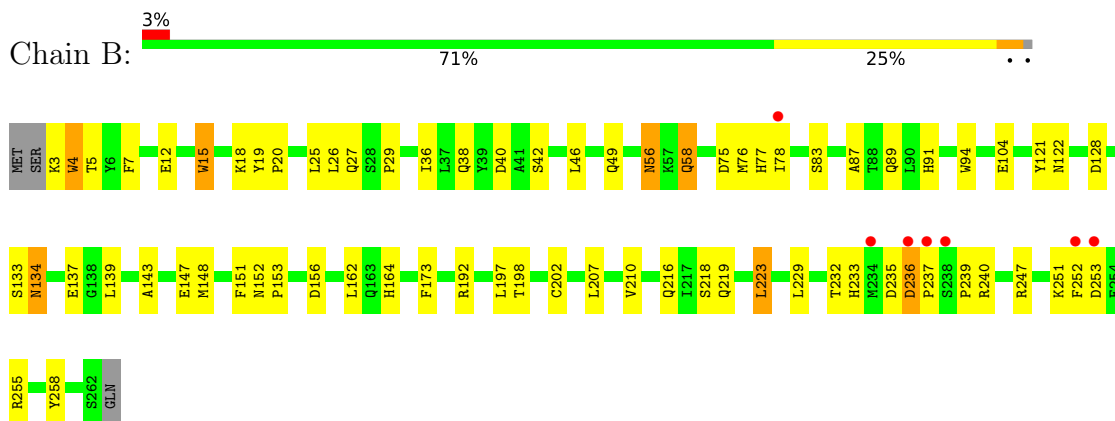
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	46.52Å 75.21Å 77.89Å 109.42° 101.60° 107.95°	Depositor
Resolution (Å)	22.09 – 2.00 22.09 – 2.00	Depositor EDS
% Data completeness (in resolution range)	74.5 (22.09-2.00) 74.6 (22.09-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	2.67 (at 2.01Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.264 , 0.328 0.263 , 0.326	Depositor DCC
R_{free} test set	4525 reflections (10.08%)	wwPDB-VP
Wilson B-factor (Å^2)	21.9	Xtriage
Anisotropy	0.337	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 48.5	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	8894	wwPDB-VP
Average B, all atoms (Å^2)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 71.21 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.7325e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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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: V14, ZN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z| > 5$	RMSZ	#$|Z| > 5$
1	A	0.79	1/2161 (0.0%)	0.84	2/2942 (0.1%)
1	B	0.80	3/2180 (0.1%)	0.85	0/2968
1	C	0.79	1/2178 (0.0%)	0.82	0/2964
1	D	0.81	3/2163 (0.1%)	0.83	2/2946 (0.1%)
All	All	0.80	8/8682 (0.1%)	0.83	4/11820 (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	B	0	1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	94	TRP	CD2-CE2	5.87	1.48	1.41
1	D	4	TRP	CD2-CE2	5.83	1.48	1.41
1	B	94	TRP	CD2-CE2	5.80	1.48	1.41
1	B	4	TRP	CD2-CE2	5.41	1.47	1.41
1	A	4	TRP	CD2-CE2	5.30	1.47	1.41
1	B	15	TRP	CD2-CE2	5.15	1.47	1.41
1	D	15	TRP	CD2-CE2	5.07	1.47	1.41
1	D	94	TRP	CD2-CE2	5.03	1.47	1.41

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	40	ASP	CB-CG-OD1	5.60	123.34	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	76	MET	CG-SD-CE	5.34	108.74	100.20
1	D	252	PHE	N-CA-C	-5.30	96.68	111.00
1	A	192	ARG	NE-CZ-NH2	5.08	122.84	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	253	ASP	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	2098	0	1987	52	0
1	B	2117	0	2008	60	0
1	C	2115	0	2000	63	0
1	D	2100	0	1987	70	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	28	0	22	6	0
3	B	28	0	23	6	0
3	C	28	0	22	7	0
3	D	56	0	45	10	0
4	A	68	0	0	2	0
4	B	77	0	0	3	0
4	C	89	0	0	2	0
4	D	86	0	0	4	0
All	All	8894	0	8094	244	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 15.

All (244) 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:263:GLN:HA	4:C:461:HOH:O	1.61	1.01
1:A:148:MET:SD	1:A:219:GLN:OE1	2.25	0.94
1:D:252:PHE:CE1	1:D:255:ARG:HB3	2.03	0.94
1:B:252:PHE:O	1:B:252:PHE:CD2	2.22	0.92
1:C:58:GLN:HB3	1:C:173:PHE:CD2	2.05	0.92
1:A:186:ARG:HH21	1:A:186:ARG:HG3	1.33	0.91
1:C:248:GLN:HE21	1:D:251:LYS:NZ	1.70	0.89
1:C:148[B]:MET:SD	1:C:219:GLN:OE1	2.34	0.85
1:D:99:ASP:OD1	1:D:101:HIS:HD2	1.61	0.82
1:C:89:GLN:HE21	3:C:302:V14:H6	1.45	0.82
1:C:58:GLN:HB3	1:C:173:PHE:HD2	1.45	0.81
1:C:248:GLN:HE21	1:D:251:LYS:HZ2	1.26	0.80
1:D:64:ASN:ND2	3:D:302[B]:V14:H4	1.95	0.80
1:C:220[B]:GLU:N	1:C:220[B]:GLU:OE1	2.15	0.78
1:B:252:PHE:CE1	1:B:255:ARG:HB3	2.19	0.77
1:D:27:GLN:HE22	1:D:202:CYS:HB3	1.49	0.77
1:B:27:GLN:HE21	1:B:247:ARG:HH22	1.32	0.76
1:B:252:PHE:CE1	1:B:255:ARG:CB	2.69	0.75
1:C:251:LYS:HZ2	1:D:248:GLN:HE21	1.34	0.74
1:D:64:ASN:HD21	3:D:302[B]:V14:H4	1.52	0.74
1:C:156:ASP:OD2	1:C:221:GLN:NE2	2.21	0.74
1:C:164:HIS:HB3	4:C:480:HOH:O	1.87	0.74
1:D:54:SER:HB3	1:D:57:LYS:HG2	1.70	0.73
1:A:186:ARG:HH21	1:A:186:ARG:CG	2.02	0.72
1:D:36:ILE:HD13	1:D:252:PHE:CE2	2.24	0.72
1:D:27:GLN:HE21	1:D:247:ARG:HH22	1.36	0.72
1:C:27:GLN:NE2	1:C:247:ARG:HH12	1.86	0.71
1:D:252:PHE:CE1	1:D:255:ARG:CB	2.73	0.71
3:A:302:V14:H18	3:A:302:V14:H5	1.72	0.71
1:B:27:GLN:HE22	1:B:202:CYS:HB3	1.55	0.70
1:C:89:GLN:HE21	3:C:302:V14:C18	2.04	0.70
1:B:151:PHE:HB2	1:D:18:LYS:HE3	1.74	0.68
1:D:219:GLN:NE2	4:D:464:HOH:O	2.27	0.68
1:C:89:GLN:NE2	3:C:302:V14:H6	2.09	0.68
1:A:186:ARG:HG3	1:A:186:ARG:NH2	2.09	0.67
1:B:58:GLN:HB2	1:B:173:PHE:CD2	2.29	0.67
1:B:40:ASP:OD1	1:B:42:SER:HB3	1.95	0.67
1:D:36:ILE:HB	1:D:252:PHE:HE2	1.59	0.66
1:A:27:GLN:NE2	1:A:247:ARG:HH12	1.93	0.66
1:D:178:ASN:HB3	1:D:181:GLU:OE2	1.96	0.66
1:C:148[B]:MET:CE	1:C:219:GLN:OE1	2.44	0.65
1:D:30:ILE:HG21	1:D:255:ARG:HH11	1.62	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:302:V14:H6	3:A:302:V14:H8	1.62	0.64
1:D:223:LEU:CD2	4:D:462:HOH:O	2.45	0.64
1:A:27:GLN:HE22	1:A:202:CYS:HB3	1.63	0.63
1:D:26:LEU:HD22	1:D:255:ARG:HD2	1.80	0.63
1:B:252:PHE:CE1	1:B:255:ARG:HB2	2.33	0.63
1:B:252:PHE:O	1:B:252:PHE:HD2	1.81	0.63
1:B:207:LEU:HD23	4:B:430:HOH:O	1.99	0.62
1:B:164:HIS:CD2	4:B:433:HOH:O	2.52	0.62
1:D:252:PHE:HE1	1:D:255:ARG:HB3	1.58	0.62
1:D:253:ASP:C	1:D:254:GLU:HG2	2.20	0.62
1:A:147:GLU:OE2	1:A:216:GLN:NE2	2.33	0.62
1:A:166:LYS:HE3	1:A:228:ALA:O	2.00	0.61
1:C:27:GLN:HE21	1:C:247:ARG:HH12	1.47	0.61
1:C:253:ASP:O	1:C:255:ARG:HG3	2.01	0.60
1:B:49:GLN:OE1	1:B:77:HIS:NE2	2.33	0.60
1:A:248:GLN:HE21	1:B:251:LYS:NZ	1.99	0.60
3:A:302:V14:H8	3:A:302:V14:C18	2.15	0.60
3:C:302:V14:F20	3:C:302:V14:H9	1.91	0.60
1:B:26:LEU:HD22	1:B:255:ARG:HD3	1.83	0.59
1:C:30:ILE:HG21	1:C:252:PHE:CD1	2.37	0.59
1:A:118:ILE:HG22	1:A:120:HIS:CE1	2.38	0.59
1:A:166:LYS:HA	1:A:229:LEU:HD22	1.85	0.59
1:B:58:GLN:HB2	1:B:173:PHE:HD2	1.68	0.58
1:D:69:LYS:NZ	1:D:71:ASN:OD1	2.32	0.58
1:D:69:LYS:HD3	3:D:302[B]:V14:C18	2.32	0.58
1:D:26:LEU:HA	1:D:255:ARG:NH2	2.19	0.58
1:A:4:TRP:O	1:A:66:HIS:HE1	1.87	0.58
1:D:64:ASN:HD21	3:D:302[B]:V14:C15	2.16	0.58
1:A:14:SER:HB3	1:A:17:LYS:HD2	1.86	0.57
1:B:4:TRP:HZ2	3:B:302:V14:H5	1.68	0.57
1:C:157:LYS:HB2	1:C:177:PHE:CE2	2.39	0.57
1:B:133:SER:HB3	3:B:302:V14:H17	1.86	0.57
1:A:27:GLN:HE21	1:A:247:ARG:HH22	1.52	0.57
1:C:27:GLN:HE22	1:C:202:CYS:HB3	1.70	0.57
1:A:73:PRO:HB2	1:A:75:ASP:OD1	2.05	0.57
1:A:47:GLU:HG3	1:A:79:GLN:HB3	1.86	0.57
1:D:30:ILE:HG21	1:D:255:ARG:NH1	2.19	0.57
1:D:186:ARG:CZ	1:D:213:ASN:HD21	2.19	0.56
1:A:151:PHE:HA	1:A:218:SER:HB3	1.88	0.56
3:C:302:V14:C18	3:C:302:V14:H8	2.19	0.56
1:A:253:ASP:N	1:A:253:ASP:OD1	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:73:PRO:HB2	1:C:75:ASP:OD1	2.05	0.56
1:C:248:GLN:HE21	1:D:251:LYS:HZ3	1.54	0.56
1:D:151:PHE:HA	1:D:218:SER:HB3	1.88	0.55
1:D:99:ASP:OD1	1:D:101:HIS:CD2	2.51	0.55
1:D:64:ASN:ND2	3:D:302[B]:V14:C15	2.69	0.55
1:C:58:GLN:HB3	1:C:173:PHE:CE2	2.42	0.55
1:C:251:LYS:NZ	1:D:248:GLN:HE21	2.04	0.55
1:A:104:GLU:HG2	1:A:246:PHE:HB2	1.89	0.54
1:A:163:GLN:NE2	4:A:462:HOH:O	2.38	0.54
1:B:5:THR:OG1	1:B:7:PHE:O	2.24	0.54
1:B:83:SER:CB	1:B:122:ASN:HD21	2.20	0.54
1:A:251:LYS:HB3	1:A:253:ASP:OD1	2.08	0.54
1:D:69:LYS:HZ2	1:D:89:GLN:HB3	1.73	0.54
1:B:252:PHE:HE1	1:B:255:ARG:HB3	1.72	0.54
1:A:101:HIS:HB3	1:A:111:HIS:HB3	1.90	0.54
1:C:251:LYS:HZ2	1:D:248:GLN:NE2	2.04	0.54
1:B:252:PHE:CD1	1:B:255:ARG:HB2	2.44	0.53
1:D:36:ILE:CB	1:D:252:PHE:HE2	2.22	0.53
1:D:178:ASN:ND2	1:D:180:GLU:OE1	2.41	0.53
1:A:252:PHE:CZ	1:A:255:ARG:HB3	2.44	0.53
1:A:179:ILE:HG23	1:A:182:LEU:HD12	1.90	0.52
1:D:36:ILE:HB	1:D:252:PHE:CE2	2.44	0.52
1:C:27:GLN:HE21	1:C:247:ARG:HH22	1.57	0.52
1:A:92:LEU:HG	1:A:116:LEU:HD12	1.91	0.52
1:C:147:GLU:OE2	1:C:216:GLN:NE2	2.43	0.52
1:A:133:SER:OG	3:A:302:V14:H21	2.09	0.51
1:B:121:TYR:CE1	1:B:128:ASP:HA	2.45	0.51
1:B:133:SER:CB	3:B:302:V14:H17	2.41	0.51
1:D:192:ARG:HD2	1:D:207:LEU:HD11	1.91	0.51
1:C:30:ILE:HD13	1:C:252:PHE:CE1	2.46	0.51
1:C:151:PHE:CZ	1:C:156:ASP:OD1	2.64	0.51
1:C:74:SER:O	1:C:86:SER:HB3	2.11	0.50
1:B:162:LEU:HD22	1:B:229:LEU:HD21	1.94	0.50
1:A:96:ASN:OD1	1:A:98:ASN:HB2	2.11	0.50
1:C:185:GLU:OE1	1:C:186:ARG:NH2	2.41	0.50
1:D:26:LEU:HD22	1:D:255:ARG:CD	2.41	0.50
1:B:46:LEU:HD22	1:B:78:ILE:CG2	2.43	0.49
1:C:168:LYS:HD2	1:C:231:CYS:O	2.12	0.49
1:D:69:LYS:HD3	3:D:302[B]:V14:H6	1.94	0.49
1:A:248:GLN:HA	4:A:429:HOH:O	2.12	0.49
1:A:89:GLN:HE21	3:A:302:V14:H6	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:252:PHE:HD1	1:D:255:ARG:NE	2.10	0.49
1:B:83:SER:HB2	1:B:122:ASN:HD21	1.78	0.49
1:A:261:PHE:HE1	1:A:263:GLN:HE21	1.60	0.48
1:B:76:MET:HB3	1:B:87:ALA:HB3	1.95	0.48
1:B:233:HIS:O	1:B:236:ASP:HB2	2.13	0.48
1:D:26:LEU:HA	1:D:255:ARG:HH21	1.76	0.48
1:B:27:GLN:HE21	1:B:247:ARG:NH2	2.06	0.48
1:B:29:PRO:HG3	1:B:104:GLU:HB3	1.96	0.48
1:C:4:TRP:O	1:C:66:HIS:HE1	1.96	0.48
1:C:151:PHE:HA	1:C:218:SER:HB3	1.96	0.48
1:A:115:GLU:OE1	1:A:117:HIS:NE2	2.42	0.48
1:A:252:PHE:CE1	1:A:255:ARG:HD2	2.48	0.48
1:C:64:ASN:O	1:C:168:LYS:HE3	2.14	0.48
1:D:223:LEU:HD22	4:D:462:HOH:O	2.11	0.48
3:B:302:V14:F20	3:B:302:V14:H9	2.04	0.48
1:D:122:ASN:OD1	1:D:125:LEU:HG	2.13	0.47
1:D:104:GLU:OE1	1:D:117:HIS:HE1	1.97	0.47
1:B:27:GLN:NE2	1:B:247:ARG:HH12	2.12	0.47
1:C:77:HIS:CD2	1:C:79:GLN:HE22	2.33	0.47
1:D:252:PHE:HD1	1:D:255:ARG:HE	1.63	0.47
1:A:82:GLN:OE1	1:A:83:SER:N	2.47	0.47
1:D:58:GLN:HB2	1:D:173:PHE:HB3	1.95	0.47
1:B:237:PRO:C	1:B:239:PRO:HD3	2.35	0.47
1:A:27:GLN:HE21	1:A:247:ARG:HH12	1.58	0.47
1:D:27:GLN:NE2	1:D:247:ARG:HH12	2.13	0.47
1:C:101:HIS:HB3	1:C:111:HIS:HB3	1.97	0.47
1:B:252:PHE:O	1:B:252:PHE:CG	2.65	0.46
1:C:137:GLU:OE2	1:C:137:GLU:HA	2.16	0.46
1:C:253:ASP:N	1:C:253:ASP:OD1	2.49	0.46
1:C:151:PHE:HZ	1:C:156:ASP:OD1	1.99	0.46
1:C:178:ASN:OD1	1:C:180:GLU:HB2	2.16	0.46
1:C:240:ARG:HE	1:C:240:ARG:HB2	1.51	0.46
1:D:69:LYS:HD3	3:D:302[B]:V14:O21	2.15	0.46
1:A:161:HIS:CD2	1:A:174:VAL:HG22	2.51	0.46
1:B:148:MET:SD	1:B:219:GLN:HB3	2.56	0.46
1:C:112:PHE:HE2	1:C:214:PRO:HG3	1.81	0.46
1:B:151:PHE:HA	1:B:218:SER:HB3	1.98	0.46
1:D:27:GLN:HE21	1:D:247:ARG:NH2	2.10	0.46
1:C:57:LYS:HD3	1:C:59:PHE:CZ	2.51	0.46
1:D:69:LYS:HZ2	1:D:89:GLN:CB	2.29	0.46
3:D:302[B]:V14:F20	3:D:302[B]:V14:H9	2.06	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:36:ILE:HB	1:B:252:PHE:HE2	1.80	0.45
1:D:26:LEU:CD2	1:D:255:ARG:HD3	2.46	0.45
1:D:32:LEU:HD13	1:D:191:TYR:CD1	2.51	0.45
1:A:248:GLN:HE21	1:B:251:LYS:HZ3	1.64	0.45
1:C:143:ALA:HB3	1:C:210:VAL:HG22	1.98	0.45
1:C:253:ASP:C	1:C:255:ARG:HG3	2.36	0.45
1:C:52:ASN:OD1	1:C:178:ASN:HB2	2.17	0.45
3:D:302[A]:V14:H12	3:D:302[A]:V14:H23	1.71	0.45
1:A:4:TRP:O	1:A:66:HIS:CE1	2.70	0.45
1:B:83:SER:HB2	1:B:122:ASN:ND2	2.32	0.45
1:B:19:TYR:HA	1:B:20:PRO:HD2	1.85	0.44
1:D:14:SER:HB3	1:D:17:LYS:HE2	2.00	0.44
1:D:223:LEU:HD21	4:D:462:HOH:O	2.13	0.44
1:A:30:ILE:HG21	1:A:252:PHE:CD1	2.52	0.44
1:D:252:PHE:CD1	1:D:255:ARG:HB2	2.53	0.44
1:A:57:LYS:HG2	1:A:58:GLN:H	1.83	0.44
1:D:252:PHE:CZ	1:D:255:ARG:O	2.70	0.44
1:B:27:GLN:NE2	1:B:247:ARG:HH22	2.09	0.44
1:B:198:THR:OG1	3:B:302:V14:N10	2.50	0.43
1:B:235:ASP:O	1:B:237:PRO:HD3	2.17	0.43
1:C:33:HIS:O	1:C:36:ILE:HG13	2.18	0.43
1:D:62:THR:HG23	1:D:171:GLU:HG2	1.99	0.43
1:C:27:GLN:HE21	1:C:247:ARG:NH1	2.15	0.43
1:C:156:ASP:O	1:C:158:ILE:N	2.52	0.43
3:C:302:V14:H8	3:C:302:V14:H5	1.84	0.43
1:A:134:ASN:O	1:A:134:ASN:ND2	2.52	0.43
1:B:134:ASN:HD22	1:B:134:ASN:H	1.67	0.43
1:D:26:LEU:CD2	1:D:255:ARG:CD	2.97	0.43
1:A:85:TYR:OH	1:A:137:GLU:O	2.28	0.43
1:C:30:ILE:HG12	1:C:193:TYR:CZ	2.53	0.43
1:D:4:TRP:CD2	1:D:200:PRO:HG2	2.54	0.43
1:D:147:GLU:HG3	1:D:216:GLN:HG2	2.00	0.43
1:A:3:LYS:HD3	1:A:3:LYS:N	2.34	0.42
1:A:162:LEU:C	1:A:164:HIS:H	2.21	0.42
1:B:223:LEU:HD22	4:B:472:HOH:O	2.19	0.42
1:B:12:GLU:HA	1:B:15:TRP:CD1	2.54	0.42
1:C:164:HIS:N	1:C:164:HIS:CD2	2.85	0.42
1:D:114:ALA:HB3	1:D:146:ILE:HB	2.01	0.42
1:B:143:ALA:HB3	1:B:210:VAL:HG22	2.01	0.42
1:C:162:LEU:O	1:C:163:GLN:C	2.58	0.42
1:C:248:GLN:NE2	1:D:251:LYS:HZ2	2.03	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:19:TYR:HA	1:D:20:PRO:HD2	1.85	0.42
1:B:56:ASN:N	1:B:56:ASN:OD1	2.52	0.42
1:D:38:GLN:O	1:D:258:TYR:HA	2.20	0.42
1:C:76:MET:HE1	1:C:179:ILE:HG13	2.01	0.42
1:B:83:SER:CB	1:B:122:ASN:ND2	2.83	0.42
1:D:77:HIS:HD2	1:D:84:ARG:HG2	1.85	0.42
1:D:198:THR:OG1	3:D:302[B]:V14:N10	2.53	0.42
1:A:36:ILE:H	1:A:36:ILE:HG13	1.68	0.42
1:C:156:ASP:C	1:C:158:ILE:N	2.72	0.42
1:B:3[B]:LYS:HD2	1:B:3[B]:LYS:HA	1.47	0.42
1:B:232:THR:CG2	1:B:240:ARG:H	2.33	0.42
1:B:252:PHE:CZ	1:B:255:ARG:O	2.73	0.42
1:B:147:GLU:O	1:B:216:GLN:HA	2.20	0.41
1:B:252:PHE:CZ	1:B:255:ARG:C	2.93	0.41
1:D:69:LYS:O	1:D:69:LYS:HG3	2.19	0.41
1:A:82:GLN:OE1	1:A:82:GLN:C	2.59	0.41
3:C:302:V14:H6	3:C:302:V14:H8	1.85	0.41
1:B:152:ASN:HA	1:B:153:PRO:HD2	1.84	0.41
1:A:119:VAL:HG11	3:A:302:V14:H23	2.03	0.41
1:A:197:LEU:O	1:A:202:CYS:HA	2.21	0.41
1:A:58:GLN:HG2	1:A:175:PRO:HA	2.01	0.41
1:A:58:GLN:HA	1:A:174:VAL:O	2.21	0.41
1:A:186:ARG:CG	1:A:186:ARG:NH2	2.72	0.41
1:B:91:HIS:CE1	3:B:302:V14:C4	3.04	0.41
1:C:70:LEU:HB3	1:C:90:LEU:HG	2.03	0.41
1:C:104:GLU:HG2	1:C:246:PHE:HB2	2.03	0.41
1:C:157:LYS:CB	1:C:177:PHE:CE2	3.03	0.41
1:D:64:ASN:OD1	1:D:64:ASN:C	2.59	0.41
1:C:58:GLN:HE21	1:C:58:GLN:HA	1.86	0.40
1:A:248:GLN:HG2	1:B:251:LYS:HZ3	1.86	0.40
1:B:46:LEU:HD22	1:B:78:ILE:HG21	2.03	0.40
1:C:254:GLU:C	1:C:255:ARG:HG2	2.42	0.40
1:A:112:PHE:HE2	1:A:214:PRO:HG3	1.86	0.40
1:B:38:GLN:O	1:B:258:TYR:HA	2.22	0.40
1:C:76:MET:CE	1:C:179:ILE:HG13	2.52	0.40
1:C:116:LEU:HB3	1:C:144:VAL:HB	2.02	0.40
1:D:161:HIS:CD2	1:D:174:VAL:HG22	2.56	0.40
1:B:139:LEU:HD13	1:B:197:LEU:HD21	2.03	0.40

There are no symmetry-related clashes.

5.3　Torsion angles ⓘ

5.3.1　Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	259/263 (98%)	245 (95%)	13 (5%)	1 (0%)	34	30
1	B	261/263 (99%)	254 (97%)	7 (3%)	0	100	100
1	C	261/263 (99%)	247 (95%)	14 (5%)	0	100	100
1	D	260/263 (99%)	251 (96%)	7 (3%)	2 (1%)	19	13
All	All	1041/1052 (99%)	997 (96%)	41 (4%)	3 (0%)	41	37

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	187	THR
1	D	160	SER
1	D	254	GLU

5.3.2　Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	233/235 (99%)	218 (94%)	15 (6%)	17	13
1	B	236/235 (100%)	223 (94%)	13 (6%)	21	17
1	C	235/235 (100%)	227 (97%)	8 (3%)	37	36
1	D	234/235 (100%)	219 (94%)	15 (6%)	17	13
All	All	938/940 (100%)	887 (95%)	51 (5%)	22	18

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LYS
1	A	49	GLN
1	A	57	LYS
1	A	75	ASP
1	A	78	ILE
1	A	79	GLN
1	A	82	GLN
1	A	89	GLN
1	A	148	MET
1	A	156	ASP
1	A	186	ARG
1	A	234	MET
1	A	235	ASP
1	A	241	GLU
1	A	253	ASP
1	B	18	LYS
1	B	25[A]	LEU
1	B	25[B]	LEU
1	B	56	ASN
1	B	58	GLN
1	B	75	ASP
1	B	89	GLN
1	B	134	ASN
1	B	137	GLU
1	B	156	ASP
1	B	192	ARG
1	B	223	LEU
1	B	236	ASP
1	C	3	LYS
1	C	49	GLN
1	C	79	GLN
1	C	82	GLN
1	C	89	GLN
1	C	130	SER
1	C	156	ASP
1	C	262	SER
1	D	18	LYS
1	D	25	LEU
1	D	56	ASN
1	D	69	LYS
1	D	89	GLN
1	D	128	ASP
1	D	134	ASN

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Mol	Chain	Res	Type
1	D	136	SER
1	D	150[A]	SER
1	D	150[B]	SER
1	D	156	ASP
1	D	185	GLU
1	D	236	ASP
1	D	253	ASP
1	D	262	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	27	GLN
1	A	66	HIS
1	A	79	GLN
1	A	111	HIS
1	A	134	ASN
1	A	161	HIS
1	A	163	GLN
1	A	164	HIS
1	A	219	GLN
1	A	248	GLN
1	B	27	GLN
1	B	38	GLN
1	B	66	HIS
1	B	111	HIS
1	B	134	ASN
1	B	164	HIS
1	B	248	GLN
1	C	27	GLN
1	C	58	GLN
1	C	66	HIS
1	C	79	GLN
1	C	134	ASN
1	C	164	HIS
1	C	213	ASN
1	C	248	GLN
1	D	27	GLN
1	D	33	HIS
1	D	82	GLN
1	D	101	HIS
1	D	161	HIS

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Mol	Chain	Res	Type
1	D	213	ASN
1	D	219	GLN
1	D	248	GLN

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, 4 are monoatomic - leaving 5 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	$\#\|Z\| > 2$
3	V14	D	302[B]	2	27,29,29	2.86	5 (18%)	34,43,43	4.04	10 (29%)
3	V14	C	302	2	27,29,29	3.16	8 (29%)	34,43,43	4.23	12 (35%)
3	V14	A	302	2	27,29,29	3.27	11 (40%)	34,43,43	4.37	14 (41%)
3	V14	D	302[A]	2	27,29,29	2.87	7 (25%)	34,43,43	3.71	10 (29%)
3	V14	B	302	2	27,29,29	2.81	6 (22%)	34,43,43	3.20	10 (29%)

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
3	V14	D	302[B]	2	-	8/20/30/30	0/2/2/2
3	V14	C	302	2	-	10/20/30/30	0/2/2/2
3	V14	A	302	2	-	12/20/30/30	0/2/2/2
3	V14	D	302[A]	2	-	16/20/30/30	0/2/2/2
3	V14	B	302	2	-	11/20/30/30	0/2/2/2

All (37) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	302	V14	S7-N10	9.01	1.78	1.60
3	C	302	V14	S7-N10	8.76	1.77	1.60
3	A	302	V14	O17-S11	8.24	1.56	1.44
3	D	302[A]	V14	S7-N10	7.50	1.75	1.60
3	C	302	V14	O17-S11	7.23	1.54	1.44
3	D	302[B]	V14	S7-N10	7.19	1.74	1.60
3	B	302	V14	S7-N10	7.15	1.74	1.60
3	B	302	V14	O17-S11	6.93	1.54	1.44
3	D	302[B]	V14	O16-S11	6.91	1.54	1.44
3	D	302[A]	V14	O17-S11	6.75	1.54	1.44
3	D	302[B]	V14	O17-S11	6.55	1.53	1.44
3	B	302	V14	O16-S11	6.52	1.53	1.44
3	C	302	V14	O16-S11	6.42	1.53	1.44
3	D	302[A]	V14	O16-S11	6.28	1.53	1.44
3	C	302	V14	O9-S7	5.98	1.54	1.43
3	D	302[B]	V14	O9-S7	5.94	1.54	1.43
3	D	302[A]	V14	O9-S7	5.84	1.54	1.43
3	A	302	V14	O8-S7	5.76	1.54	1.43
3	C	302	V14	O8-S7	5.66	1.54	1.43
3	B	302	V14	O9-S7	5.63	1.54	1.43
3	A	302	V14	O16-S11	5.53	1.52	1.44
3	A	302	V14	O9-S7	5.37	1.53	1.43
3	D	302[B]	V14	O8-S7	5.26	1.53	1.43
3	D	302[A]	V14	O8-S7	5.01	1.53	1.43
3	B	302	V14	O8-S7	4.74	1.52	1.43
3	C	302	V14	C22-C14	3.10	1.56	1.52
3	A	302	V14	C15-S11	3.08	1.84	1.77
3	C	302	V14	C15-S11	2.89	1.83	1.77
3	A	302	V14	C2-C1	2.71	1.44	1.39
3	A	302	V14	C22-C14	2.60	1.55	1.52
3	A	302	V14	C6-C5	2.50	1.43	1.39
3	A	302	V14	C28-C14	2.49	1.55	1.52
3	A	302	V14	C4-S7	-2.48	1.75	1.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	302[A]	V14	C15-S11	2.36	1.82	1.77
3	D	302[A]	V14	C6-C5	2.24	1.42	1.39
3	B	302	V14	C6-C5	2.16	1.42	1.39
3	C	302	V14	C28-C14	2.10	1.55	1.52

All (56) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	302[B]	V14	O17-S11-O16	-17.80	97.64	118.44
3	A	302	V14	O17-S11-O16	-16.95	98.62	118.44
3	C	302	V14	O17-S11-O16	-16.61	99.02	118.44
3	D	302[A]	V14	O17-S11-O16	-15.64	100.16	118.44
3	B	302	V14	O17-S11-O16	-10.10	106.64	118.44
3	A	302	V14	C3-C4-C5	9.60	123.41	116.67
3	C	302	V14	O8-S7-O9	-9.59	102.99	118.76
3	B	302	V14	O8-S7-O9	-9.36	103.38	118.76
3	D	302[B]	V14	O8-S7-O9	-9.25	103.55	118.76
3	D	302[A]	V14	O8-S7-O9	-8.25	105.19	118.76
3	A	302	V14	O8-S7-O9	-7.76	106.00	118.76
3	A	302	V14	C4-S7-N10	7.70	122.50	108.26
3	C	302	V14	O8-S7-C4	7.54	118.50	107.30
3	D	302[B]	V14	C3-C4-C5	7.29	121.78	116.67
3	D	302[A]	V14	C3-C4-C5	6.79	121.43	116.67
3	A	302	V14	O9-S7-N10	-6.22	98.14	107.36
3	C	302	V14	C4-S7-N10	6.08	119.49	108.26
3	A	302	V14	C15-S11-C1	6.00	133.03	108.15
3	C	302	V14	O9-S7-N10	-5.40	99.36	107.36
3	B	302	V14	C3-C4-C5	5.33	120.41	116.67
3	C	302	V14	C3-C4-C5	5.18	120.30	116.67
3	C	302	V14	C15-S11-C1	4.93	128.60	108.15
3	B	302	V14	C2-C1-S11	-4.84	108.93	120.84
3	B	302	V14	O9-S7-C4	4.66	114.22	107.30
3	B	302	V14	C15-S11-C1	4.64	127.41	108.15
3	D	302[B]	V14	O9-S7-C4	4.38	113.80	107.30
3	D	302[A]	V14	C2-C1-S11	-4.28	110.32	120.84
3	D	302[A]	V14	C15-S11-C1	4.19	125.51	108.15
3	B	302	V14	O8-S7-N10	3.95	113.21	107.36
3	D	302[A]	V14	O9-S7-C4	3.92	113.12	107.30
3	C	302	V14	O21-C18-C15	3.56	117.55	110.38
3	D	302[B]	V14	C2-C1-S11	-3.56	112.08	120.84
3	D	302[A]	V14	O8-S7-C4	3.43	112.40	107.30
3	A	302	V14	C2-C3-C4	-3.39	117.44	121.74

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	302	V14	F13-C2-C3	-2.92	113.19	119.27
3	D	302[B]	V14	C2-C3-C4	-2.82	118.16	121.74
3	A	302	V14	O8-S7-C4	2.77	111.42	107.30
3	C	302	V14	O16-S11-C1	-2.74	99.50	106.54
3	D	302[B]	V14	O8-S7-C4	2.67	111.27	107.30
3	D	302[B]	V14	O17-S11-C15	2.67	112.99	108.20
3	A	302	V14	F20-C5-C4	-2.65	115.73	120.70
3	A	302	V14	F20-C5-C6	2.63	123.51	119.56
3	C	302	V14	F13-C2-C3	-2.60	113.84	119.27
3	D	302[A]	V14	F20-C5-C6	2.54	123.36	119.56
3	D	302[B]	V14	C4-S7-N10	2.48	112.85	108.26
3	B	302	V14	F12-C3-C4	2.47	125.31	120.70
3	D	302[B]	V14	C15-S11-C1	2.43	118.22	108.15
3	C	302	V14	C26-C27-C28	-2.38	107.06	117.44
3	D	302[A]	V14	O9-S7-N10	-2.37	103.85	107.36
3	A	302	V14	F13-C2-C1	2.36	125.11	120.70
3	A	302	V14	O21-C18-C15	2.35	115.12	110.38
3	B	302	V14	O9-S7-N10	-2.31	103.94	107.36
3	A	302	V14	O16-S11-C1	-2.20	100.90	106.54
3	D	302[A]	V14	O8-S7-N10	2.13	110.52	107.36
3	C	302	V14	C2-C3-C4	-2.08	119.10	121.74
3	B	302	V14	C4-S7-N10	2.01	111.97	108.26

There are no chirality outliers.

All (57) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	302	V14	C5-C4-S7-O8
3	A	302	V14	C3-C4-S7-N10
3	A	302	V14	C2-C1-S11-C15
3	A	302	V14	C6-C1-S11-O17
3	A	302	V14	C6-C1-S11-C15
3	A	302	V14	C18-C15-S11-C1
3	A	302	V14	C18-C15-S11-O16
3	A	302	V14	C18-C15-S11-O17
3	A	302	V14	S11-C15-C18-O21
3	B	302	V14	C3-C4-S7-N10
3	B	302	V14	C2-C1-S11-O17
3	B	302	V14	C6-C1-S11-O16
3	B	302	V14	C6-C1-S11-O17
3	B	302	V14	C6-C1-S11-C15
3	B	302	V14	C18-C15-S11-O16

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Mol	Chain	Res	Type	Atoms
3	B	302	V14	S11-C15-C18-O21
3	C	302	V14	C5-C4-S7-O8
3	C	302	V14	C3-C4-S7-N10
3	C	302	V14	C2-C1-S11-C15
3	C	302	V14	C6-C1-S11-O16
3	C	302	V14	C6-C1-S11-O17
3	C	302	V14	C6-C1-S11-C15
3	C	302	V14	C18-C15-S11-C1
3	C	302	V14	S11-C15-C18-O21
3	D	302[A]	V14	C5-C4-S7-O8
3	D	302[A]	V14	C3-C4-S7-N10
3	D	302[A]	V14	C3-C4-S7-O8
3	D	302[A]	V14	C1-C6-N19-C14
3	D	302[A]	V14	C2-C1-S11-O17
3	D	302[A]	V14	C6-C1-S11-O16
3	D	302[A]	V14	C6-C1-S11-O17
3	D	302[A]	V14	C6-C1-S11-C15
3	D	302[A]	V14	C18-C15-S11-C1
3	D	302[A]	V14	C18-C15-S11-O16
3	D	302[A]	V14	C18-C15-S11-O17
3	D	302[B]	V14	C3-C4-S7-N10
3	D	302[B]	V14	C6-C1-S11-O16
3	D	302[B]	V14	C18-C15-S11-C1
3	D	302[B]	V14	C18-C15-S11-O16
3	D	302[B]	V14	S11-C15-C18-O21
3	D	302[A]	V14	S11-C15-C18-O21
3	A	302	V14	C2-C1-S11-O17
3	D	302[B]	V14	C2-C1-S11-O16
3	B	302	V14	C18-C15-S11-C1
3	D	302[A]	V14	C28-C14-N19-C6
3	D	302[B]	V14	C28-C14-N19-C6
3	B	302	V14	C2-C1-S11-C15
3	D	302[A]	V14	C2-C1-S11-C15
3	B	302	V14	C5-C4-S7-O9
3	C	302	V14	C3-C4-S7-O8
3	A	302	V14	C5-C4-S7-N10
3	C	302	V14	C5-C4-S7-N10
3	D	302[A]	V14	C5-C4-S7-N10
3	B	302	V14	C5-C4-S7-N10
3	D	302[B]	V14	C5-C4-S7-N10
3	D	302[A]	V14	C5-C6-N19-C14
3	A	302	V14	C22-C14-N19-C6

There are no ring outliers.

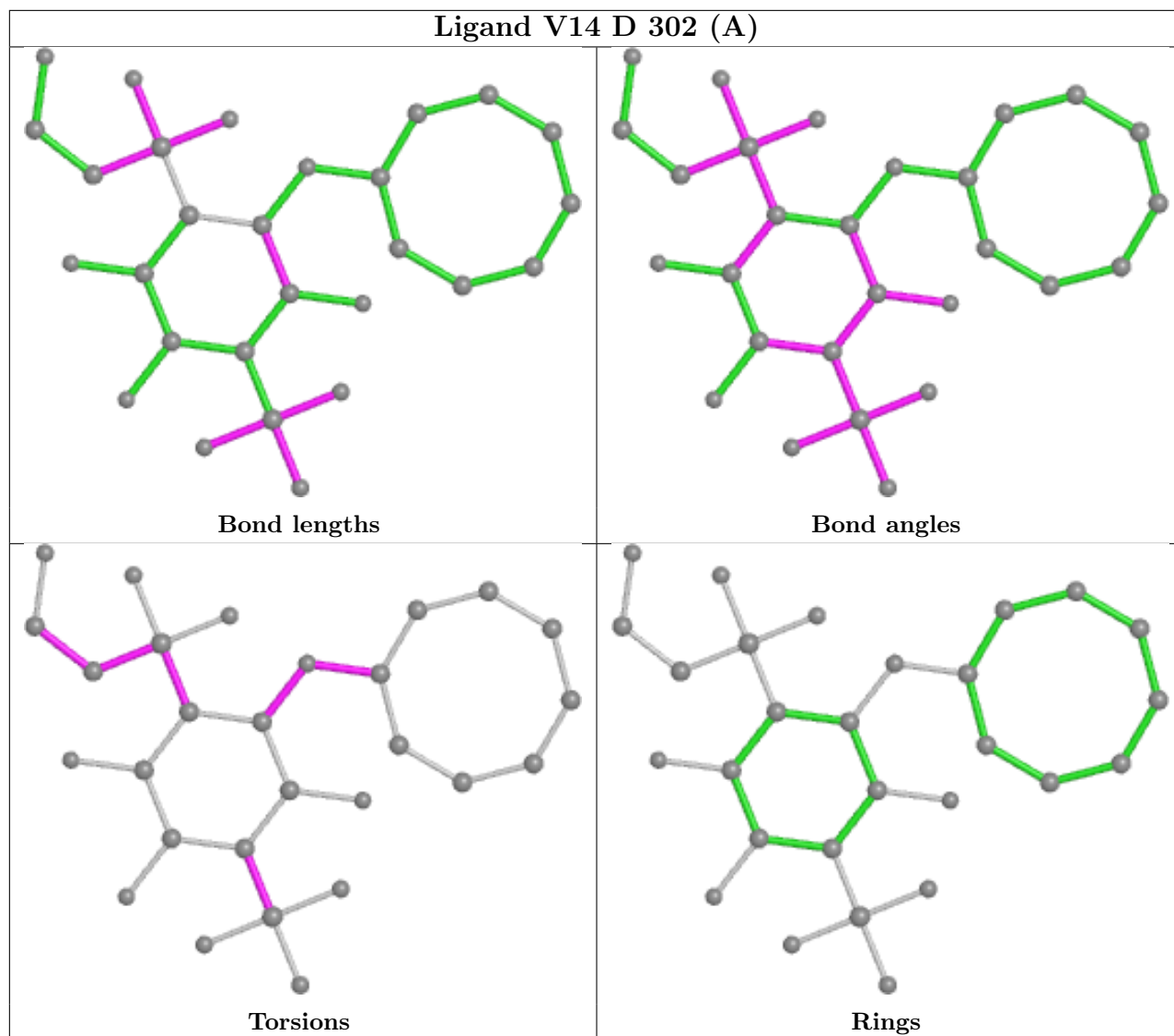5 monomers are involved in 29 short contacts:

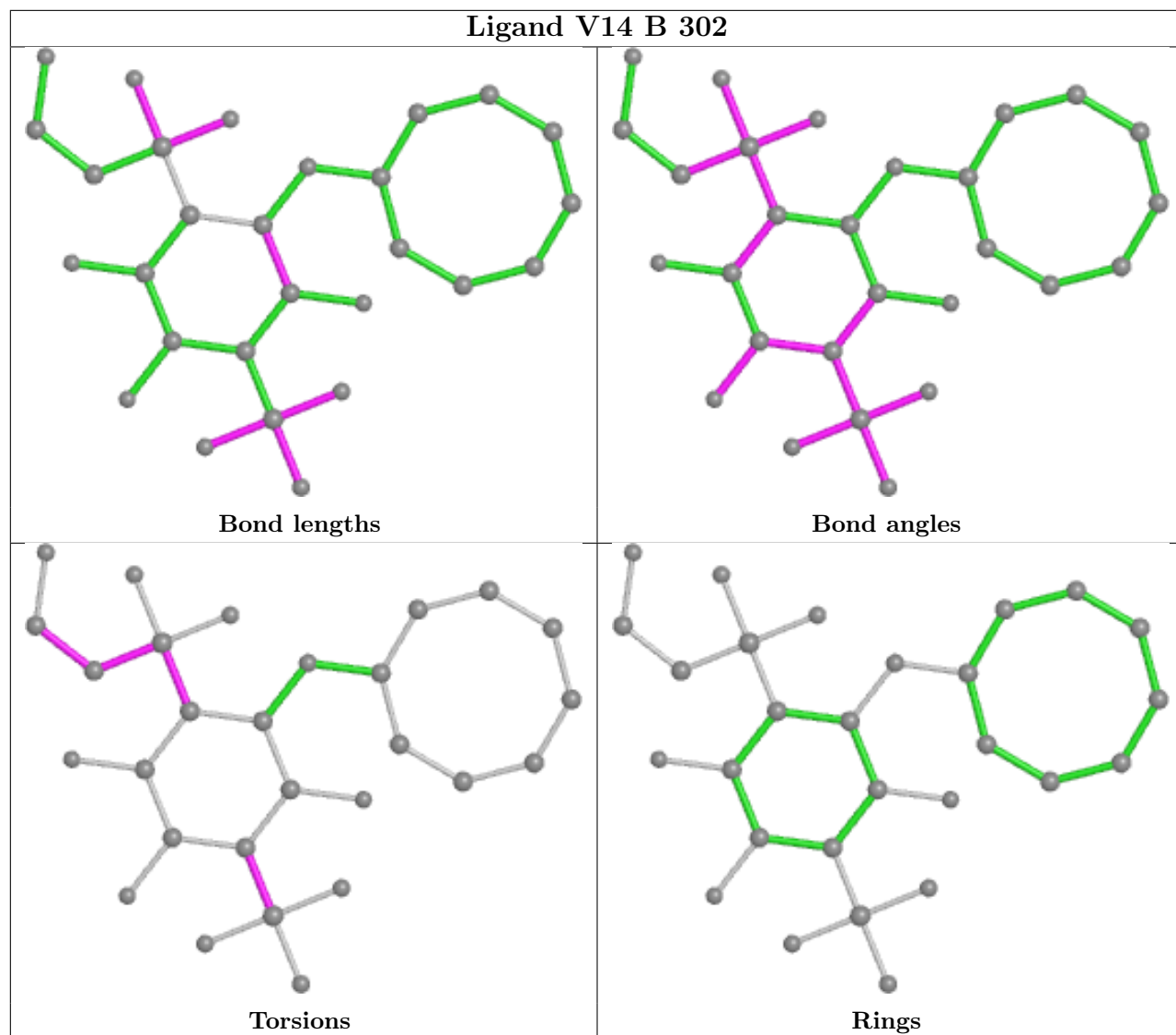| Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	302[B]	V14	9	0
3	C	302	V14	7	0
3	A	302	V14	6	0
3	D	302[A]	V14	1	0
3	B	302	V14	6	0

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 V14 D 302 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand V14 C 302

Bond lengths

Bond angles

Torsions

Rings

Ligand V14 A 302

Bond lengths

Bond angles

Torsions

Rings

Ligand V14 D 302 (A)

Bond lengths

Bond angles

Torsions

Rings

Ligand V14 B 302
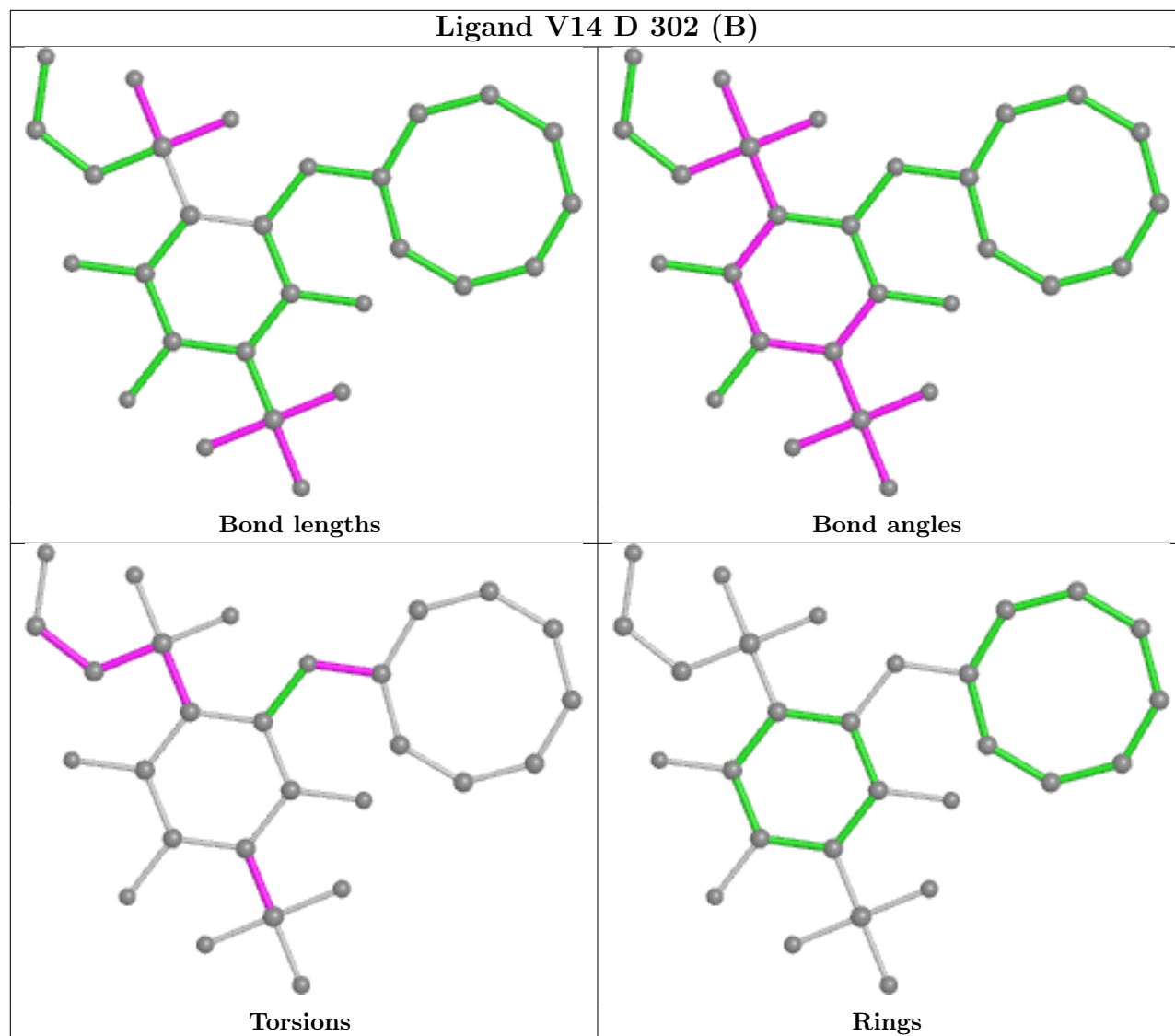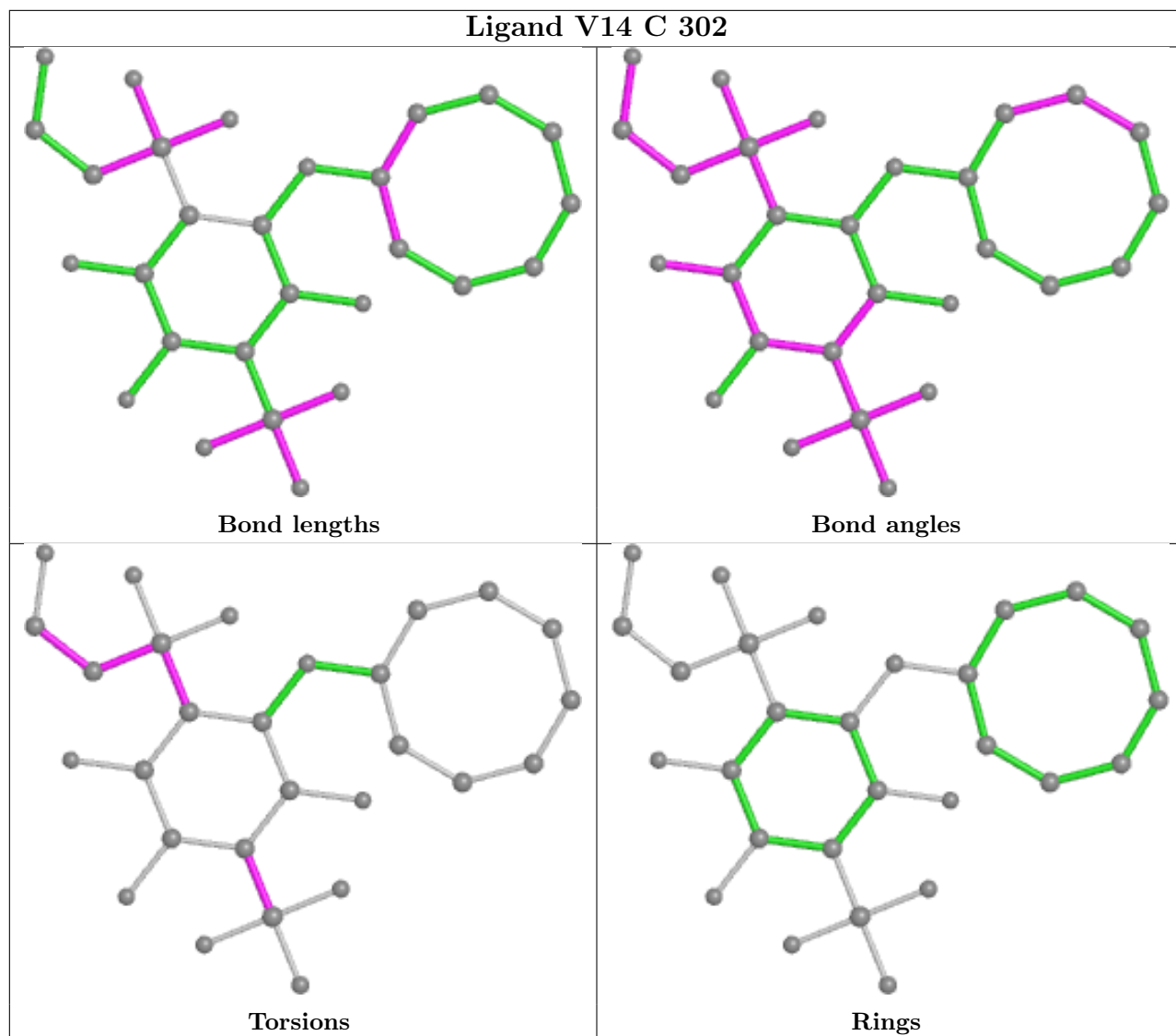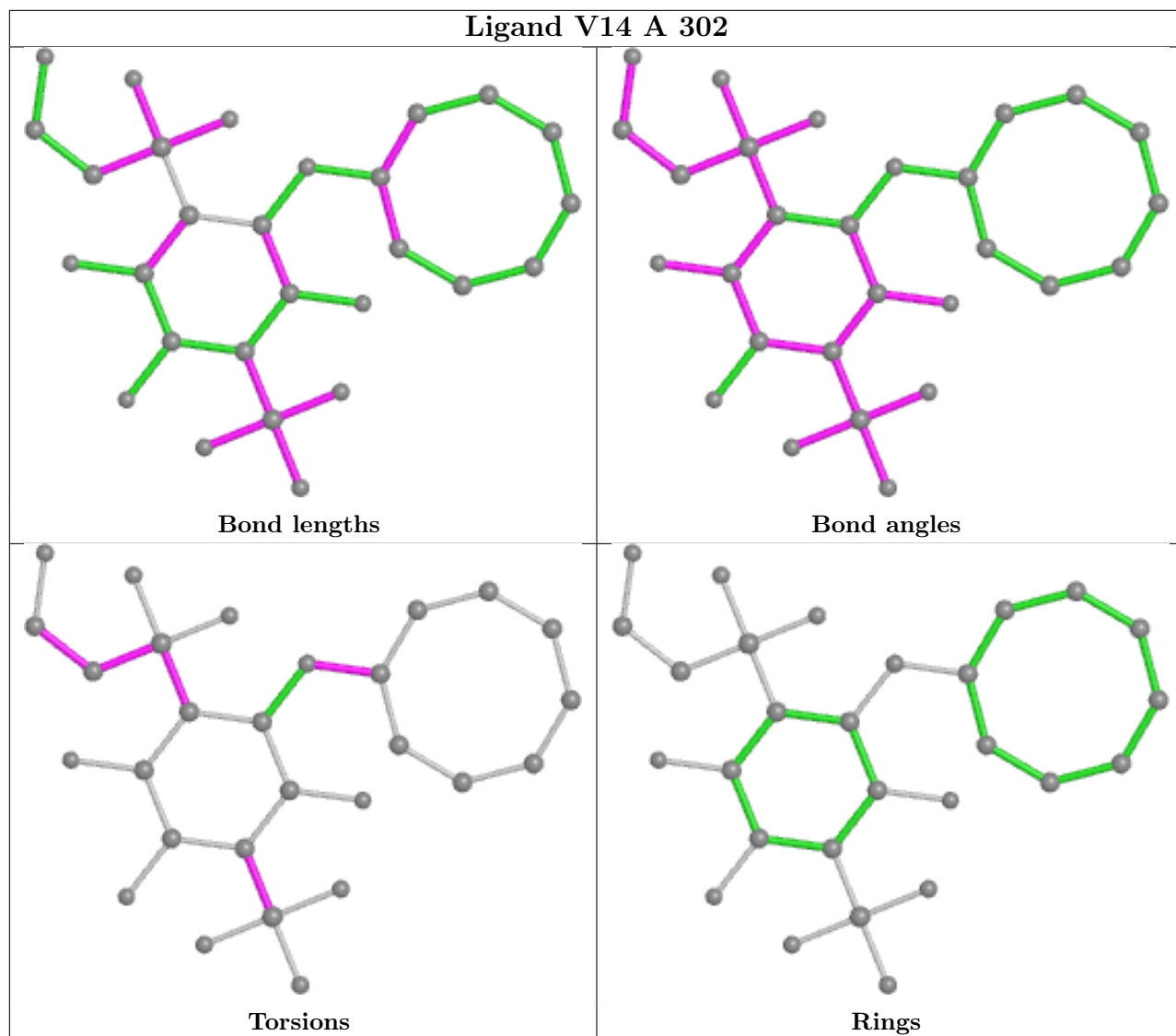
5.7 Other polymers ⓘ

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	261/263 (99%)	0.18	15 (5%)	23	23	8, 20, 37, 48	17 (6%)
1	B	260/263 (98%)	-0.04	7 (2%)	54	53	9, 18, 30, 59	4 (1%)
1	C	261/263 (99%)	0.16	7 (2%)	54	53	10, 20, 35, 49	17 (6%)
1	D	260/263 (98%)	-0.02	6 (2%)	60	59	9, 18, 31, 59	4 (1%)
All	All	1042/1052 (99%)	0.07	35 (3%)	45	44	8, 19, 34, 59	42 (4%)

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	78	ILE	7.5
1	A	78	ILE	7.4
1	B	78	ILE	6.8
1	C	78	ILE	6.3
1	D	252	PHE	6.0
1	D	237	PRO	5.4
1	B	253	ASP	4.1
1	A	55	ALA	4.0
1	C	217	ILE	3.3
1	A	173	PHE	3.3
1	A	255	ARG	3.3
1	B	237	PRO	3.3
1	B	238	SER	3.0
1	A	233	HIS	3.0
1	A	217	ILE	2.9
1	A	256	LEU	2.9
1	B	234	MET	2.8
1	A	263	GLN	2.8
1	D	98	ASN	2.7
1	B	236	ASP	2.7
1	A	238	SER	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	133	SER	2.5
1	D	234	MET	2.3
1	C	36	ILE	2.3
1	C	255	ARG	2.3
1	C	163	GLN	2.3
1	A	157	LYS	2.2
1	A	165	VAL	2.2
1	D	239	PRO	2.2
1	C	136	SER	2.2
1	C	173	PHE	2.2
1	A	164	HIS	2.1
1	A	36	ILE	2.1
1	B	252	PHE	2.1
1	A	88	THR	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	V14	C	302	28/28	0.93	0.12	20,27,30,31	0
3	V14	A	302	28/28	0.94	0.14	21,27,31,33	0
3	V14	B	302	28/28	0.95	0.11	13,19,24,29	0
3	V14	D	302[A]	28/28	0.96	0.13	12,15,17,17	28
3	V14	D	302[B]	28/28	0.96	0.13	15,20,22,23	28
2	ZN	B	301	1/1	1.00	0.04	14,14,14,14	0
2	ZN	C	301	1/1	1.00	0.04	14,14,14,14	0
2	ZN	D	301	1/1	1.00	0.05	11,11,11,11	0
2	ZN	A	301	1/1	1.00	0.04	12,12,12,12	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.
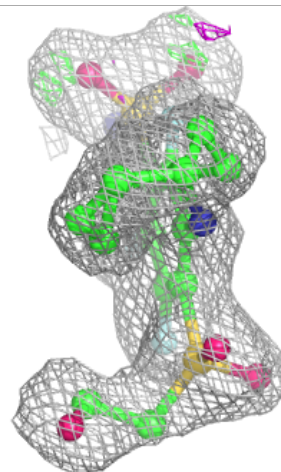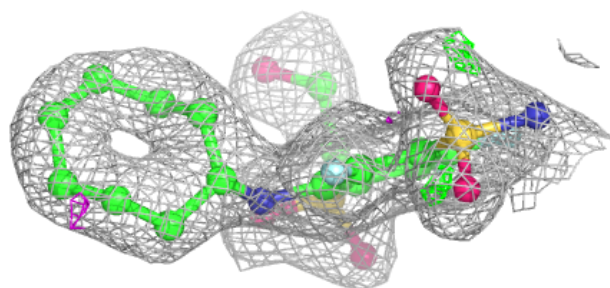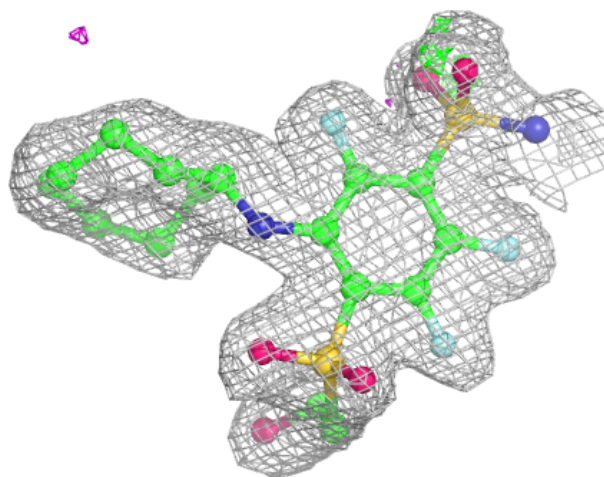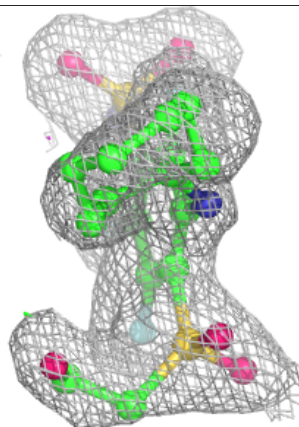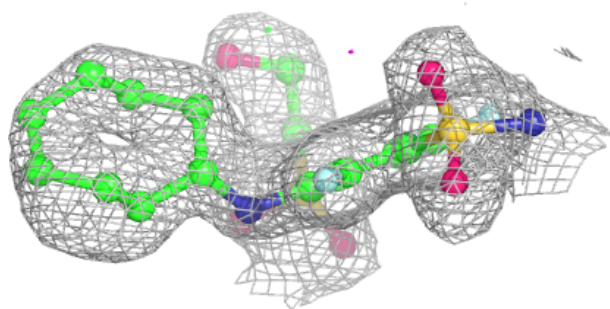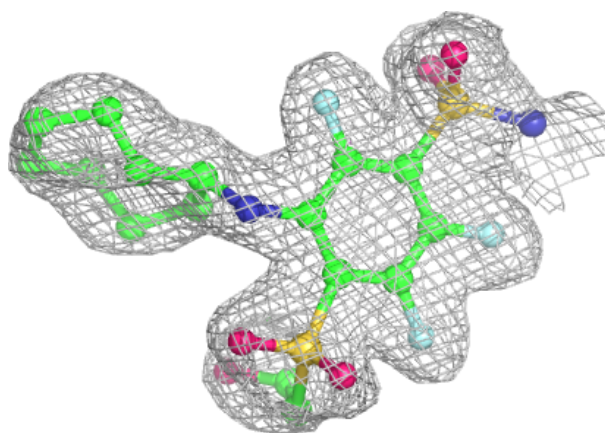
Electron density around V14 C 302:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
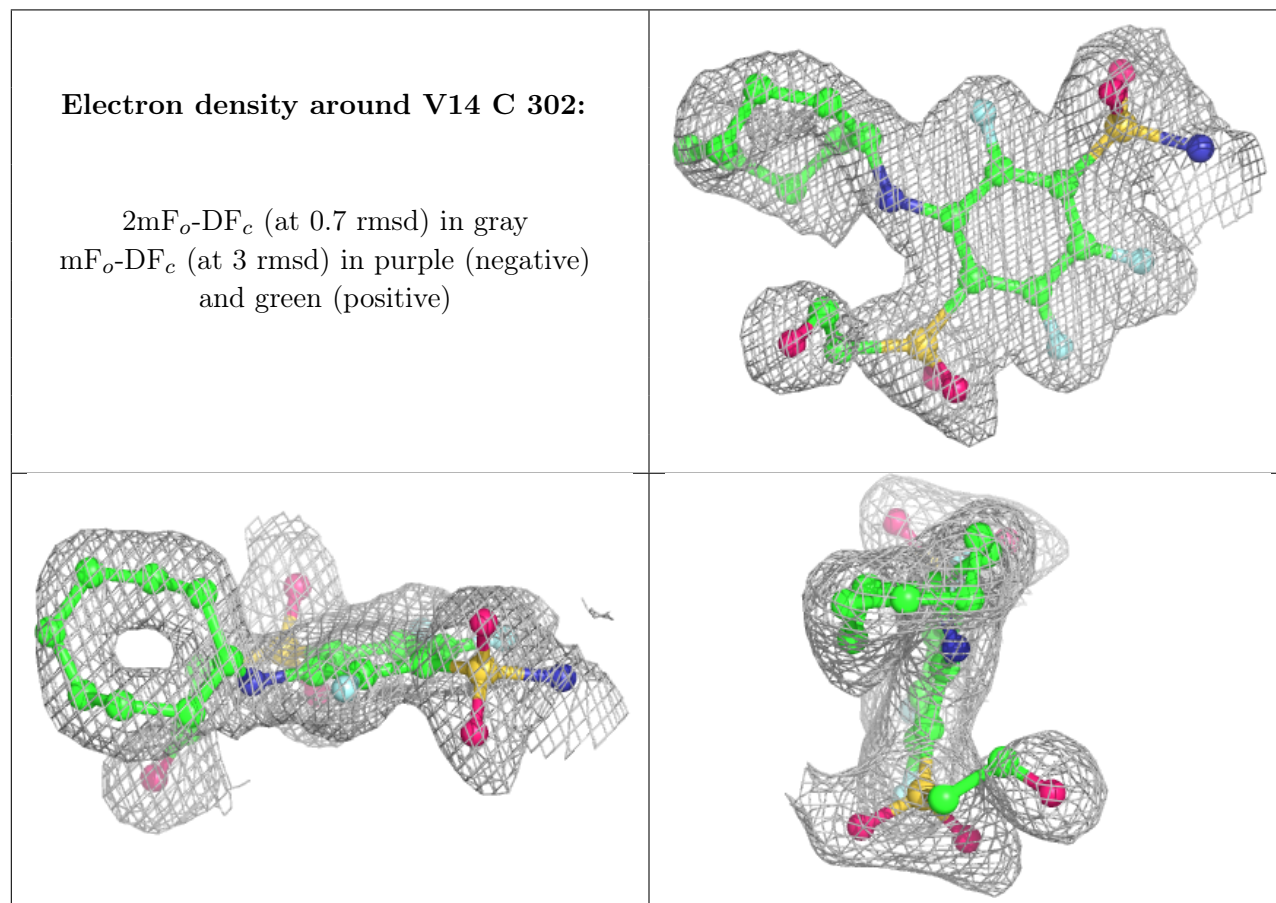
Electron density around V14 A 302:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
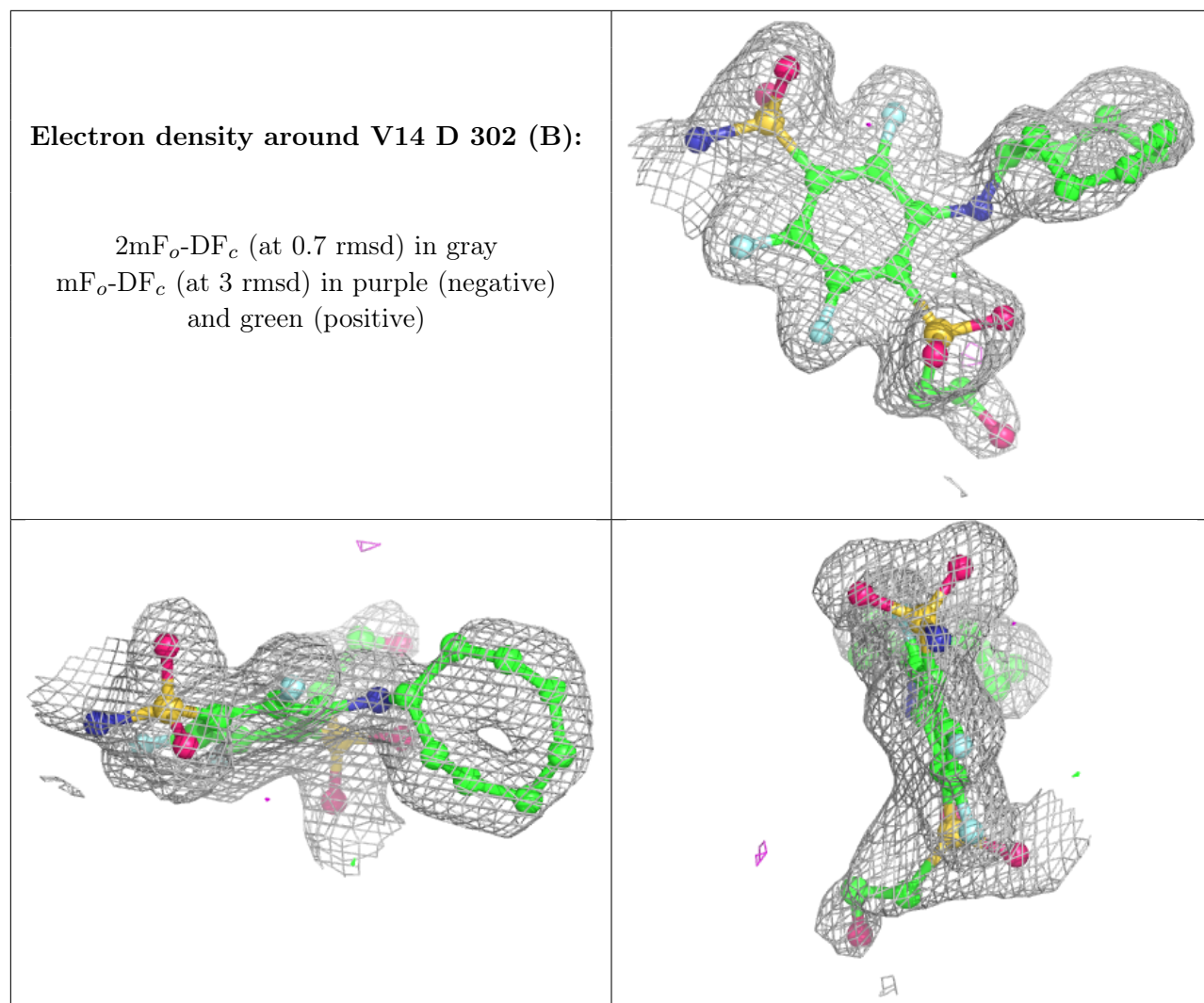and green (positive)
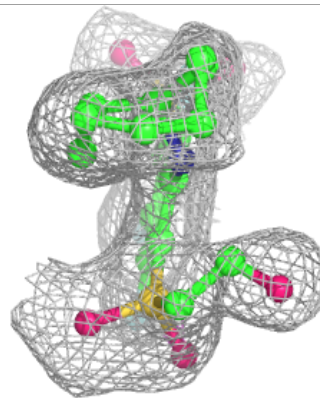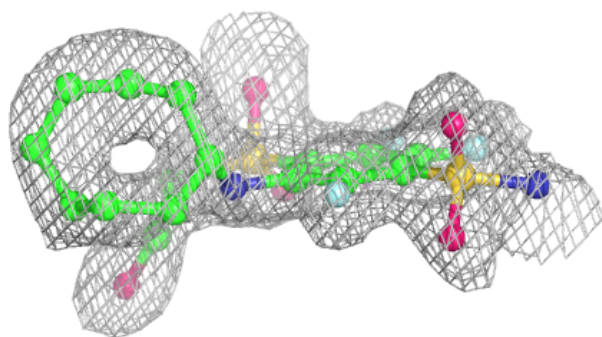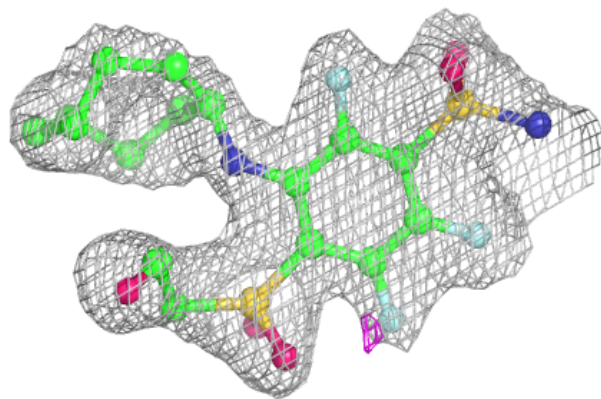
Electron density around V14 B 302:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around V14 D 302 (A):

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

Electron density around V14 D 302 (B):

$2mF_o$-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 ⓘ

There are no such residues in this entry.