W O R L D W I D E

wwPDB

P R O T E I N D A T A B A N K

wwPDB X-ray Structure Validation Summary Report (i)

Jul 7, 2025 – 04:11 PM EDT

PDB ID	:	9NY7 / pdb_00009ny7
Title	:	Crystal structure of the ribose operon repressor, RbsR, bound to ribose
Authors	:	Wells, M.L.; Lu, C.; Sultanov, D.; Weber, K.C.; Gong, Z.; Glasgow, A.
Deposited on	:	2025-03-26
Resolution	:	2.07 Å(reported)

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

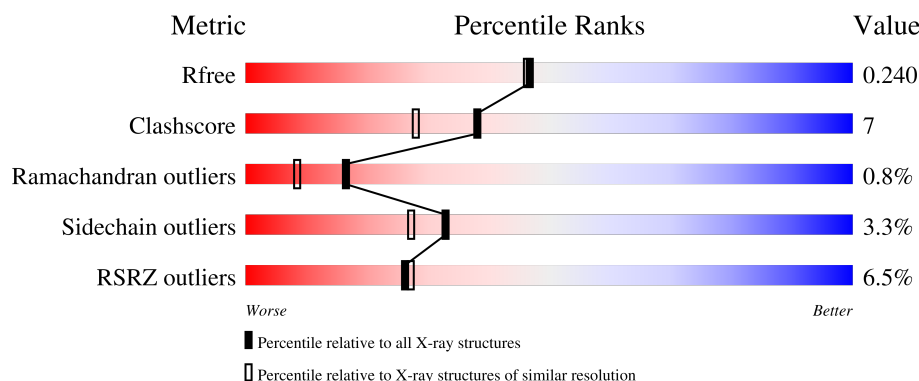|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 2.07 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		0.240
Clashscore		7
Ramachandran outliers		0.8%
Sidechain outliers		3.3%
RSRZ outliers		6.5%

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}	164625	3436 (2.08-2.04)
Clashscore	180529	3661 (2.08-2.04)
Ramachandran outliers	177936	3649 (2.08-2.04)
Sidechain outliers	177891	3649 (2.08-2.04)
RSRZ outliers	164620	3436 (2.08-2.04)

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	330	4% — 69% / 12% · · / 15%
1	B	330	10% — 79% / 18% · ·
1	C	330	2% — 73% / 10% · / 16%
1	D	330	10% — 66% / 15% · / 17%
1	E	330	3% — 73% / 10% · / 15%

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Mol	Chain	Length	Quality of chain
1	F	330	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	RIP	E	401	-	-	X	-

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 13879 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.
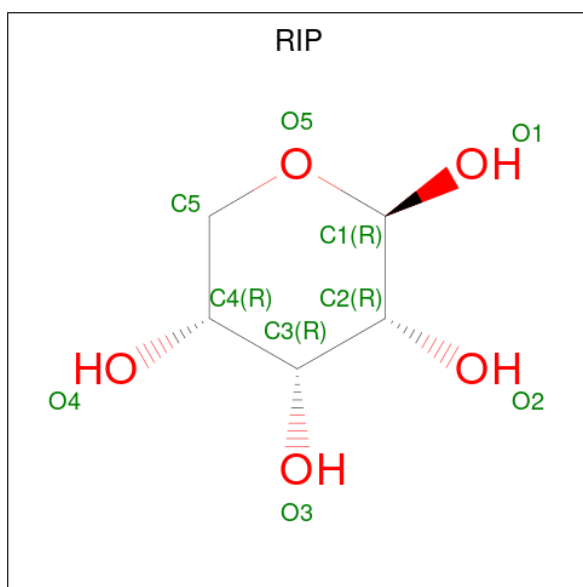
- Molecule 1 is a protein called Ribose operon repressor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	279	Total	C	N	O	S	0	0	0
			2190	1372	383	420	15			
1	B	326	Total	C	N	O	S	0	0	0
			2539	1590	444	489	16			
1	C	278	Total	C	N	O	S	0	1	0
			2190	1372	383	420	15			
1	D	273	Total	C	N	O	S	0	1	0
			2149	1346	374	414	15			
1	E	279	Total	C	N	O	S	0	0	0
			2190	1372	383	420	15			
1	F	273	Total	C	N	O	S	0	0	0
			2140	1341	372	412	15			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	SER	-	expression tag	UNP P0ACQ0
B	1	SER	-	expression tag	UNP P0ACQ0
C	1	SER	-	expression tag	UNP P0ACQ0
D	1	SER	-	expression tag	UNP P0ACQ0
E	1	SER	-	expression tag	UNP P0ACQ0
F	1	SER	-	expression tag	UNP P0ACQ0

- Molecule 2 is beta-D-ribopyranose (CCD ID: RIP) (formula: $C_5H_{10}O_5$) (labeled as "Ligand of Interest" by depositor).

RIP

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 10	C 5	O 5	0	0
2	B	1	Total 10	C 5	O 5	0	0
2	C	1	Total 10	C 5	O 5	0	0
2	D	1	Total 10	C 5	O 5	0	0
2	E	1	Total 10	C 5	O 5	0	0
2	F	1	Total 10	C 5	O 5	0	0

- Molecule 3 is water.

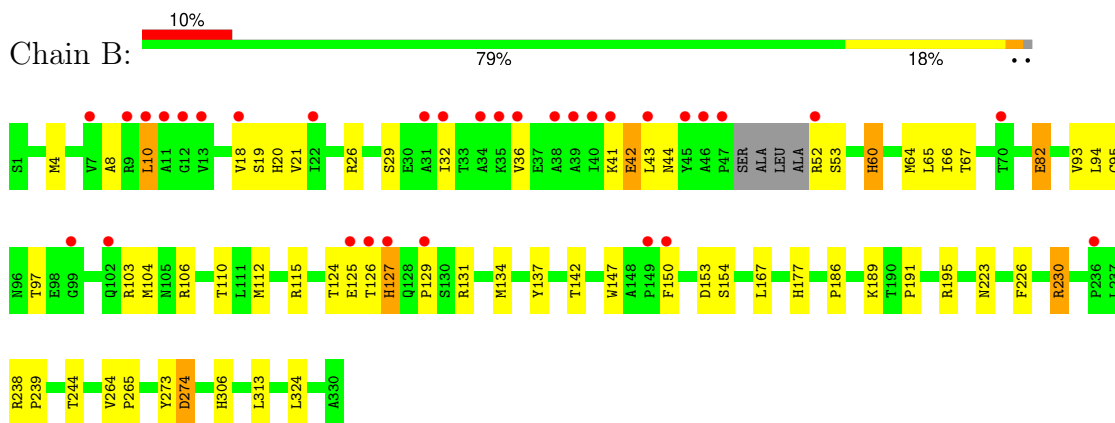| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	82	Total 82	O 82	0	0
3	B	74	Total 74	O 74	0	0
3	C	103	Total 103	O 103	0	0
3	D	44	Total 44	O 44	0	0
3	E	69	Total 69	O 69	0	0
3	F	49	Total 49	O 49	0	0

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.
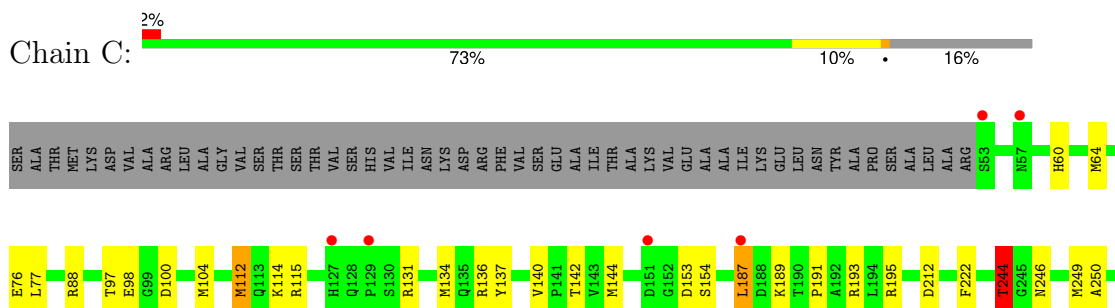
- Molecule 1: Ribose operon repressor
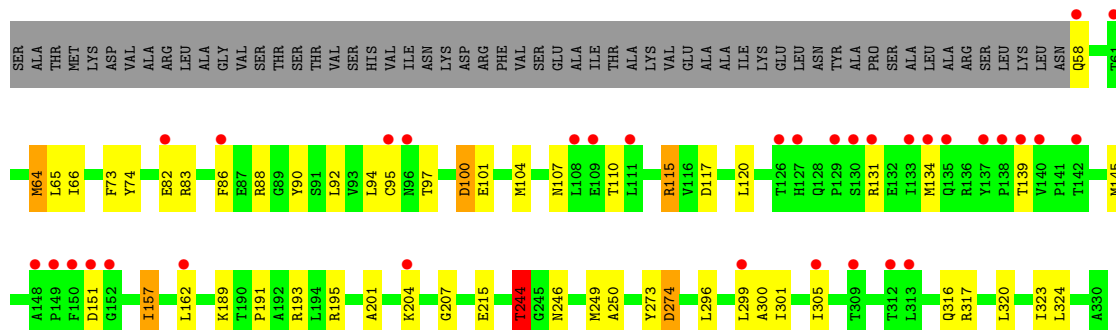
Chain A:

- Molecule 1: Ribose operon repressor
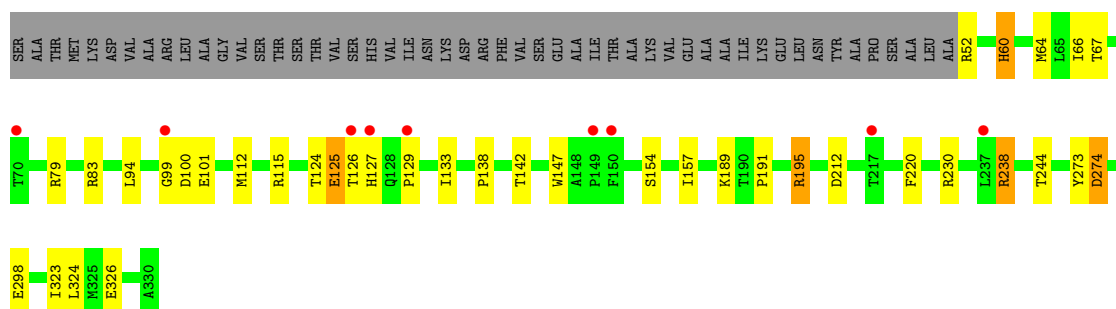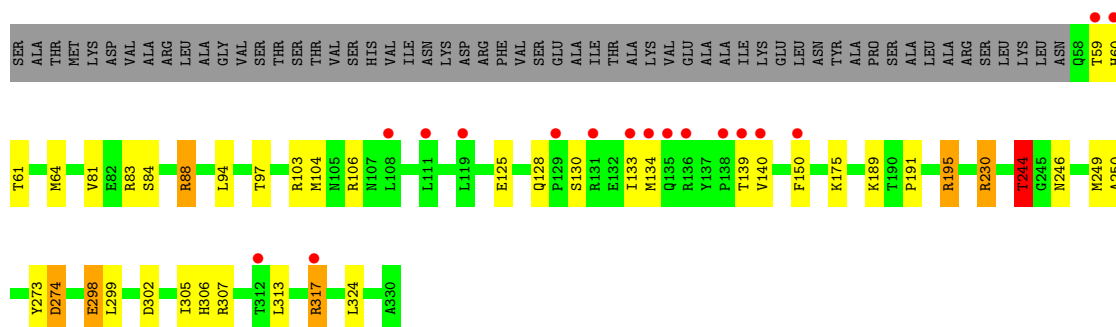
Chain B:

- Molecule 1: Ribose operon repressor

Chain C:

Y273 D274 K293 D302 R317 L324 A330

• Molecule 1: Ribose operon repressor

Chain D:

10%

66% 15% • 17%

SER ALA THR MET LYS ASP VAL ALA ARG LEU ALA GLY VAL SER THR SER THR VAL SER HIS VAL ILE ASN LYS ASP ARG PHE VAL SER GLU ALA ILE THR ALA LYS VAL GLU ALA ALA ILE LYS GLU LEU ASN TYR ALA PRO SER GLU LEU ALA ARG SER LEU LYS LEU ASN Q58 T61

M64 L65 I66 F73 Y74 E82 R83 F86 E87 R88 G89 Y90 S91 L92 V93 L94 C95 N96 T97 D100 E101 M104 N107 L108 E109 T110 L111 V116 D117 L120 T126 H127 Q128 P129 S130 R131 E132 I133 M134 Q135 R136 Y137 P138 T139 V140 P141 T142 M145

A148 P149 F150 D151 G152 I157 L162 K189 T190 P191 A192 R193 L194 R195 A201 K204 G207 E215 T244 G245 N246 M249 A250 Y273 D274 L296 L299 A300 I301 I305 T309 T312 L313 Q316 R317 L320 I323 L324 A330

• Molecule 1: Ribose operon repressor

Chain E:

3%

73% 10% • 15%

SER ALA THR MET LYS ASP VAL ALA ARG LEU ALA GLY VAL SER THR SER THR VAL SER HIS VAL ILE ASN LYS ASP ARG PHE VAL SER GLU ALA ILE THR ALA LYS VAL GLU ALA ALA ILE LYS GLU LEU ASN TYR ALA PRO SER ALA LEU ALA R52 H60 M64 L65 I66 T67

T70 R79 R83 L94 Q99 D100 E101 M112 R115 T124 E125 T126 H127 Q128 P129 I133 P138 T142 W147 A148 P149 F150 S154 I157 K189 T190 P191 R195 D212 T217 F220 R230 L237 R238 T244 Y273 D274

E298 I323 L324 M325 E326 A330

• Molecule 1: Ribose operon repressor

Chain F:

5%

70% 10% • 17%

SER ALA THR MET LYS ASP VAL ALA ARG LEU ALA GLY VAL SER THR SER THR VAL SER HIS VAL ILE ASN LYS ASP ARG PHE VAL SER GLU ALA ILE THR ALA LYS VAL GLU ALA ALA ILE LYS GLU LEU ASN TYR ALA PRO SER ALA LEU ARG SER LEU LYS LEU ASN Q58 T59 H60

T61 M64 V81 E82 R83 S84 R88 L94 T97 R103 M104 N105 R106 N107 L108 L111 L119 E125 Q128 P129 S130 R131 E132 I133 M134 Q135 R136 Y137 P138 T139 V140 F150 K175 K189 T190 P191 R195 R230 T244 G245 N246 M249 A250

Y273 D274 E298 L299 D302 I305 H306 R307 T312 L313 R317 L324 A330

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	177.46Å 87.35Å 130.94Å 90.00° 100.38° 90.00°	Depositor
Resolution (Å)	33.82 – 2.07 33.82 – 2.07	Depositor EDS
% Data completeness (in resolution range)	61.4 (33.82-2.07) 61.6 (33.82-2.07)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.59 (at 2.06Å)	Xtriage
Refinement program	REFMAC 5.8	Depositor
R, R_{free}	0.191 , 0.234 0.201 , 0.240	Depositor DCC
R_{free} test set	6023 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	26.2	Xtriage
Anisotropy	0.180	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 51.4	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13879	wwPDB-VP
Average B, all atoms (Å^2)	45.0	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 39.86 % 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 2.9824e-04. 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: RIP

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	0.68	3/2230 (0.1%)	0.93	6/3024 (0.2%)
1	B	0.66	0/2582	0.93	2/3500 (0.1%)
1	C	0.71	2/2230 (0.1%)	0.92	4/3024 (0.1%)
1	D	0.67	2/2189 (0.1%)	0.90	2/2970 (0.1%)
1	E	0.67	2/2230 (0.1%)	0.92	2/3024 (0.1%)
1	F	0.64	1/2180 (0.0%)	0.89	1/2958 (0.0%)
All	All	0.67	10/13641 (0.1%)	0.92	17/18500 (0.1%)

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	A	0	8
1	B	0	5
1	C	0	4
1	D	0	6
1	E	0	7
1	F	0	5
All	All	0	35

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	112	MET	SD-CE	-12.00	1.49	1.79
1	D	157	ILE	CG1-CD1	-9.51	1.14	1.51
1	A	64	MET	SD-CE	-8.34	1.58	1.79
1	F	305	ILE	CG1-CD1	-7.14	1.24	1.51
1	E	112	MET	SD-CE	6.15	1.95	1.79

The worst 5 of 17 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	100	ASP	CA-CB-CG	7.42	120.02	112.60
1	A	57	ASN	CA-CB-CG	-6.72	105.88	112.60
1	A	102	GLN	N-CA-C	-6.22	97.56	110.80
1	B	127	HIS	CA-CB-CG	5.85	119.65	113.80
1	B	244	THR	N-CA-C	-5.81	99.05	108.52

There are no chirality outliers.

5 of 35 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	115	ARG	Sidechain
1	A	131	ARG	Sidechain
1	A	52	ARG	Sidechain
1	A	79	ARG	Sidechain
1	A	83	ARG	Sidechain

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2190	0	2178	30	0
1	B	2539	0	2542	43	0
1	C	2190	0	2177	15	0
1	D	2149	0	2126	35	0
1	E	2190	0	2178	35	0
1	F	2140	0	2119	31	0
2	A	10	0	10	0	0
2	B	10	0	10	0	0
2	C	10	0	10	0	0
2	D	10	0	10	2	0
2	E	10	0	10	7	0
2	F	10	0	10	5	0
3	A	82	0	0	0	0
3	B	74	0	0	2	0
3	C	103	0	0	1	0
3	D	44	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	69	0	0	3	0
3	F	49	0	0	0	0
All	All	13879	0	13380	182	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 7.

The worst 5 of 182 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:124:THR:O	1:E:126:THR:N	1.85	1.07
1:F:307:ARG:HH21	1:F:313:LEU:HD23	1.16	1.04
1:A:130:SER:O	1:A:133:ILE:HD13	1.55	1.04
1:E:195:ARG:HH22	2:E:401:RIP:H3	1.35	0.91
1:F:195:ARG:HH22	2:F:401:RIP:H3	1.38	0.89

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	277/330 (84%)	268 (97%)	4 (1%)	5 (2%)	7	2
1	B	322/330 (98%)	309 (96%)	10 (3%)	3 (1%)	14	7
1	C	277/330 (84%)	271 (98%)	5 (2%)	1 (0%)	30	23
1	D	272/330 (82%)	265 (97%)	6 (2%)	1 (0%)	30	23
1	E	277/330 (84%)	267 (96%)	7 (2%)	3 (1%)	12	4
1	F	271/330 (82%)	266 (98%)	4 (2%)	1 (0%)	30	23
All	All	1696/1980 (86%)	1646 (97%)	36 (2%)	14 (1%)	16	8

5 of 14 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	100	ASP
1	A	103	ARG
1	B	42	GLU
1	E	125	GLU
1	E	129	PRO

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	240/280 (86%)	230 (96%)	10 (4%)	25	19
1	B	278/280 (99%)	270 (97%)	8 (3%)	37	32
1	C	240/280 (86%)	231 (96%)	9 (4%)	28	22
1	D	235/280 (84%)	228 (97%)	7 (3%)	36	31
1	E	240/280 (86%)	234 (98%)	6 (2%)	42	38
1	F	234/280 (84%)	225 (96%)	9 (4%)	28	22
All	All	1467/1680 (87%)	1418 (97%)	49 (3%)	33	27

5 of 49 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	139	THR
1	E	66	ILE
1	D	151	ASP
1	D	323	ILE
1	E	298	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 23 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	158	GLN
1	F	105	ASN

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Mol	Chain	Res	Type
1	E	319	GLN
1	F	177	HIS
1	B	316	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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

6 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	RIP	B	401	-	10,10,10	0.16	0	14,14,14	0.63	0
2	RIP	F	401	-	10,10,10	0.28	0	14,14,14	0.77	0
2	RIP	E	401	-	10,10,10	0.59	0	14,14,14	1.34	2 (14%)
2	RIP	A	401	-	10,10,10	0.33	0	14,14,14	0.86	0
2	RIP	C	401	-	10,10,10	0.24	0	14,14,14	0.48	0
2	RIP	D	401	-	10,10,10	0.39	0	14,14,14	0.65	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
2	RIP	B	401	-	-	-	0/1/1/1
2	RIP	F	401	-	-	-	0/1/1/1
2	RIP	E	401	-	-	-	0/1/1/1
2	RIP	A	401	-	-	-	0/1/1/1
2	RIP	C	401	-	-	-	0/1/1/1
2	RIP	D	401	-	-	-	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	401	RIP	C5-C4-C3	2.91	113.88	109.64
2	E	401	RIP	O1-C1-C2	2.14	115.18	108.98

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	401	RIP	5	0
2	E	401	RIP	7	0
2	D	401	RIP	2	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 RIP B 401

Bond lengths

Bond angles

Torsions

Rings

Ligand RIP F 401

Bond lengths

Bond angles

Torsions

Rings

Ligand RIP E 401

Bond lengths

Bond angles

Torsions

Rings

Ligand RIP A 401

Bond lengths

Bond angles

Torsions

Rings

Ligand RIP C 401

Bond lengths

Bond angles

Torsions

Rings

Ligand RIP D 401
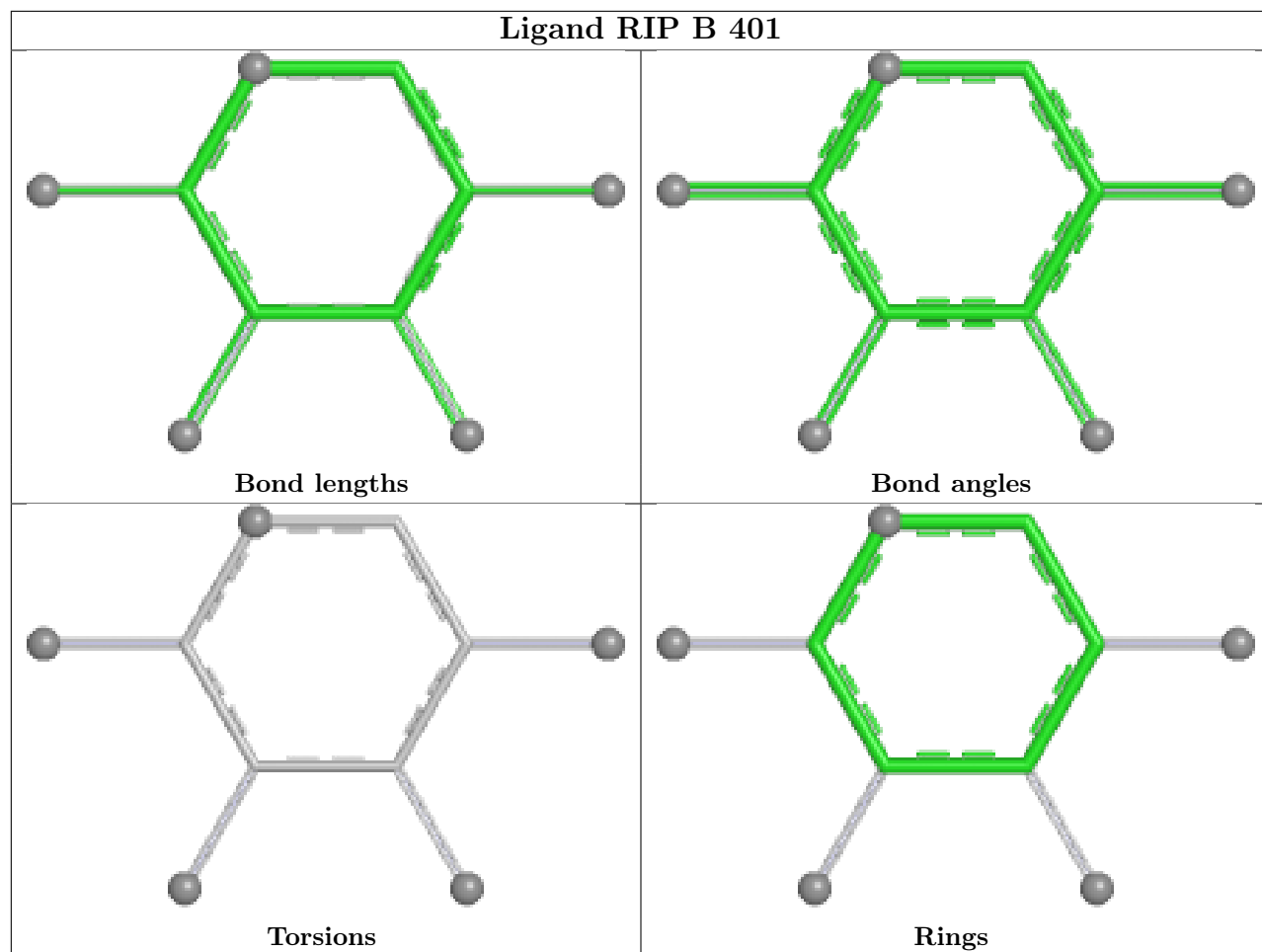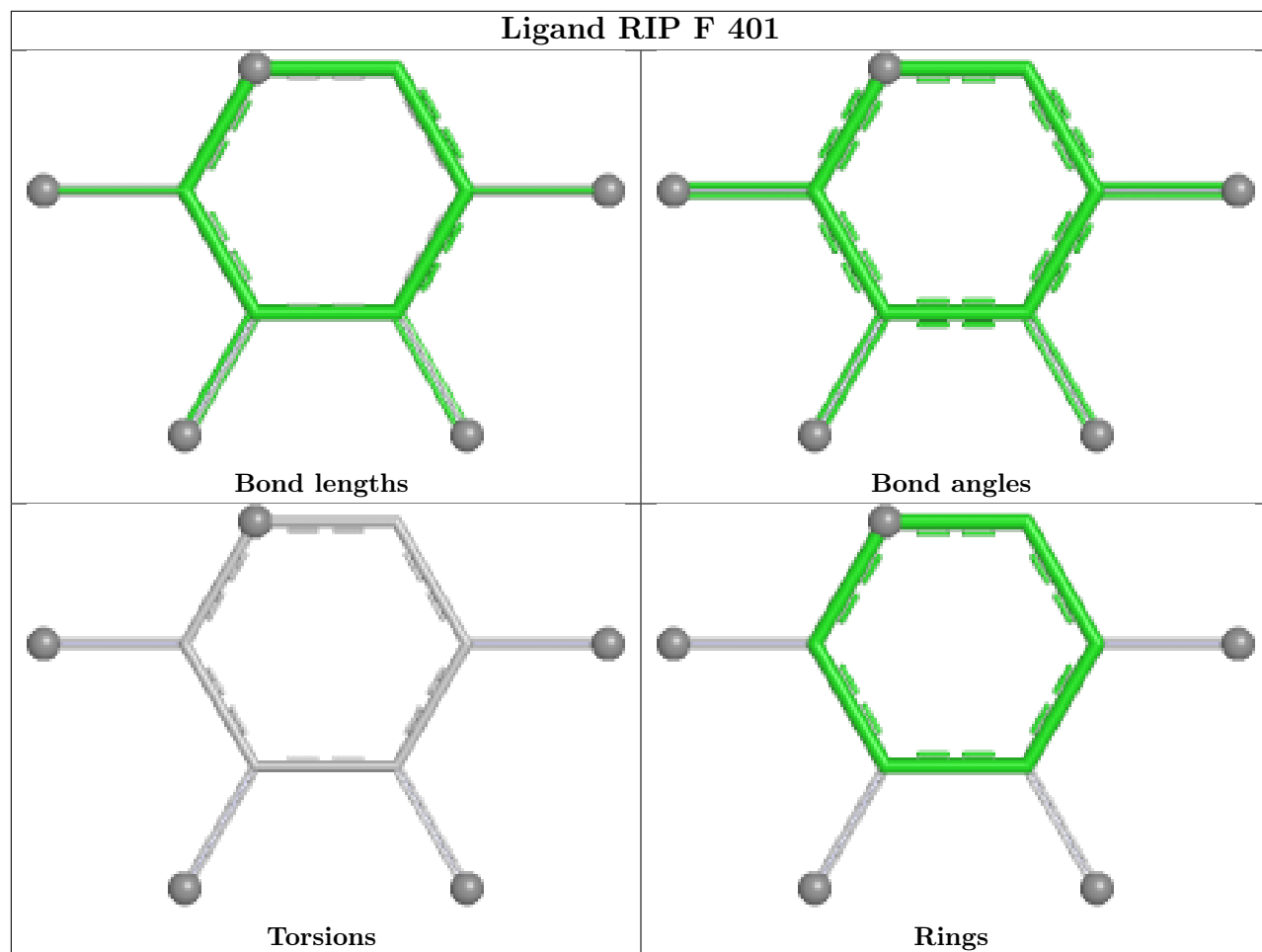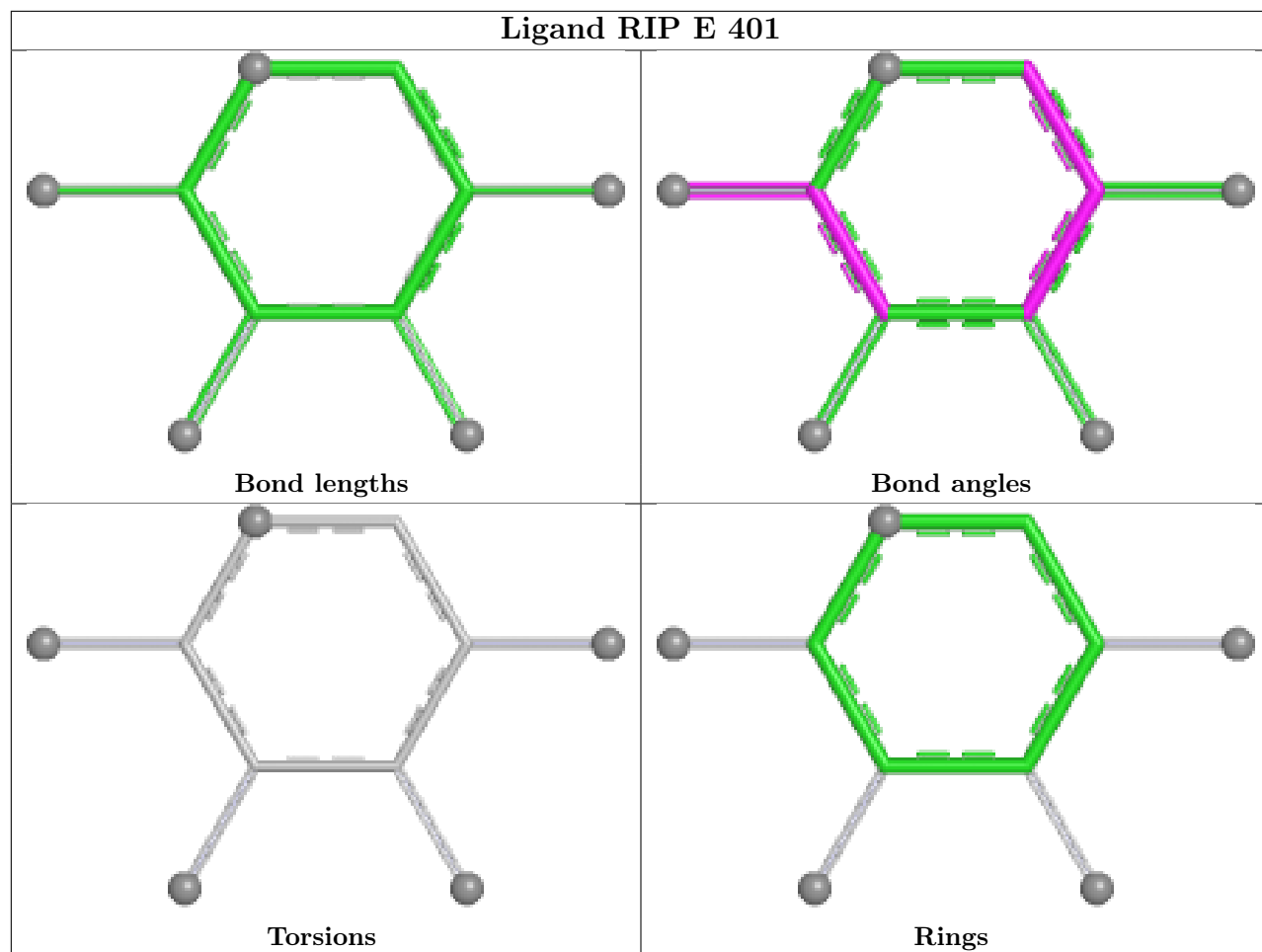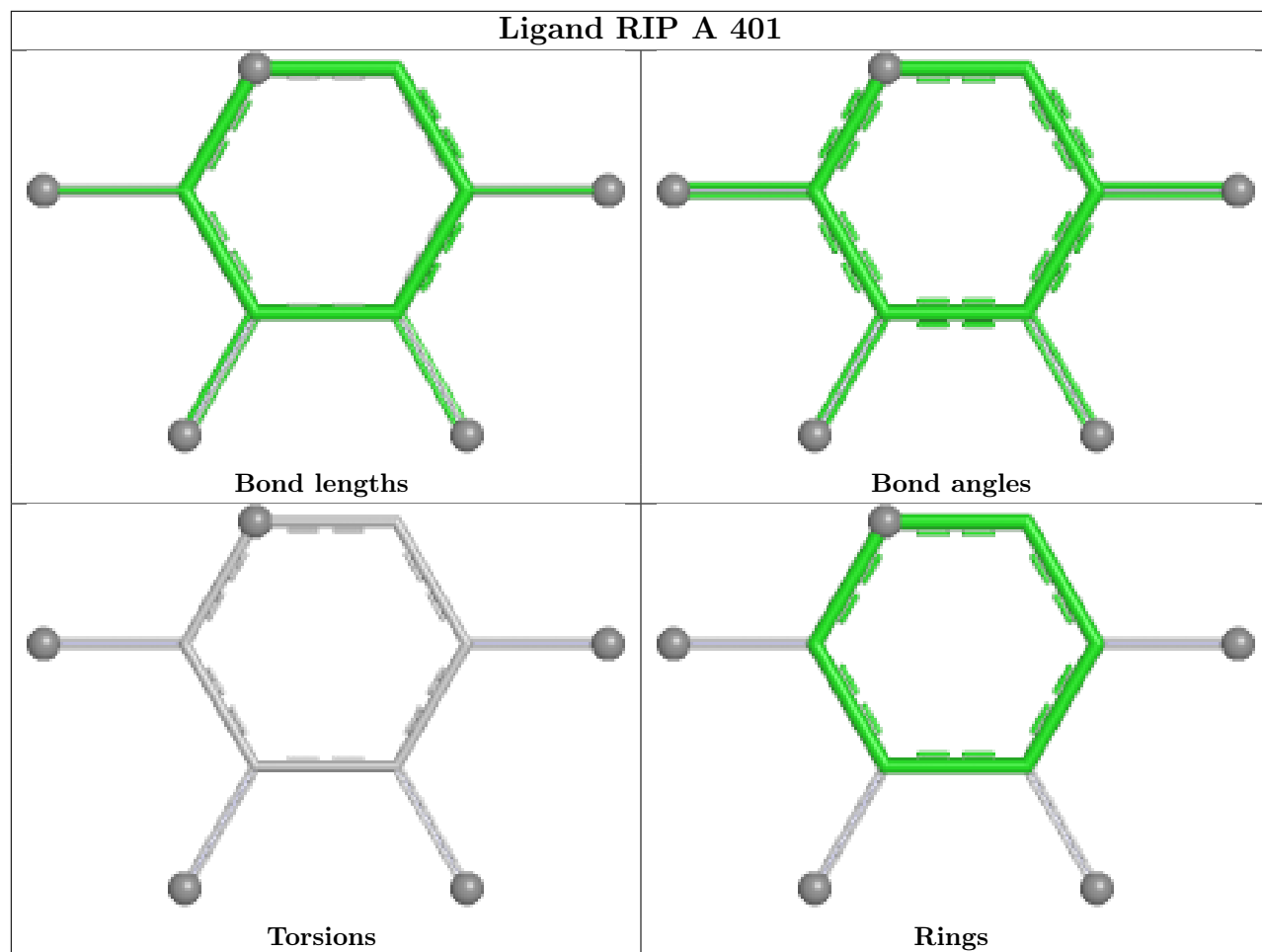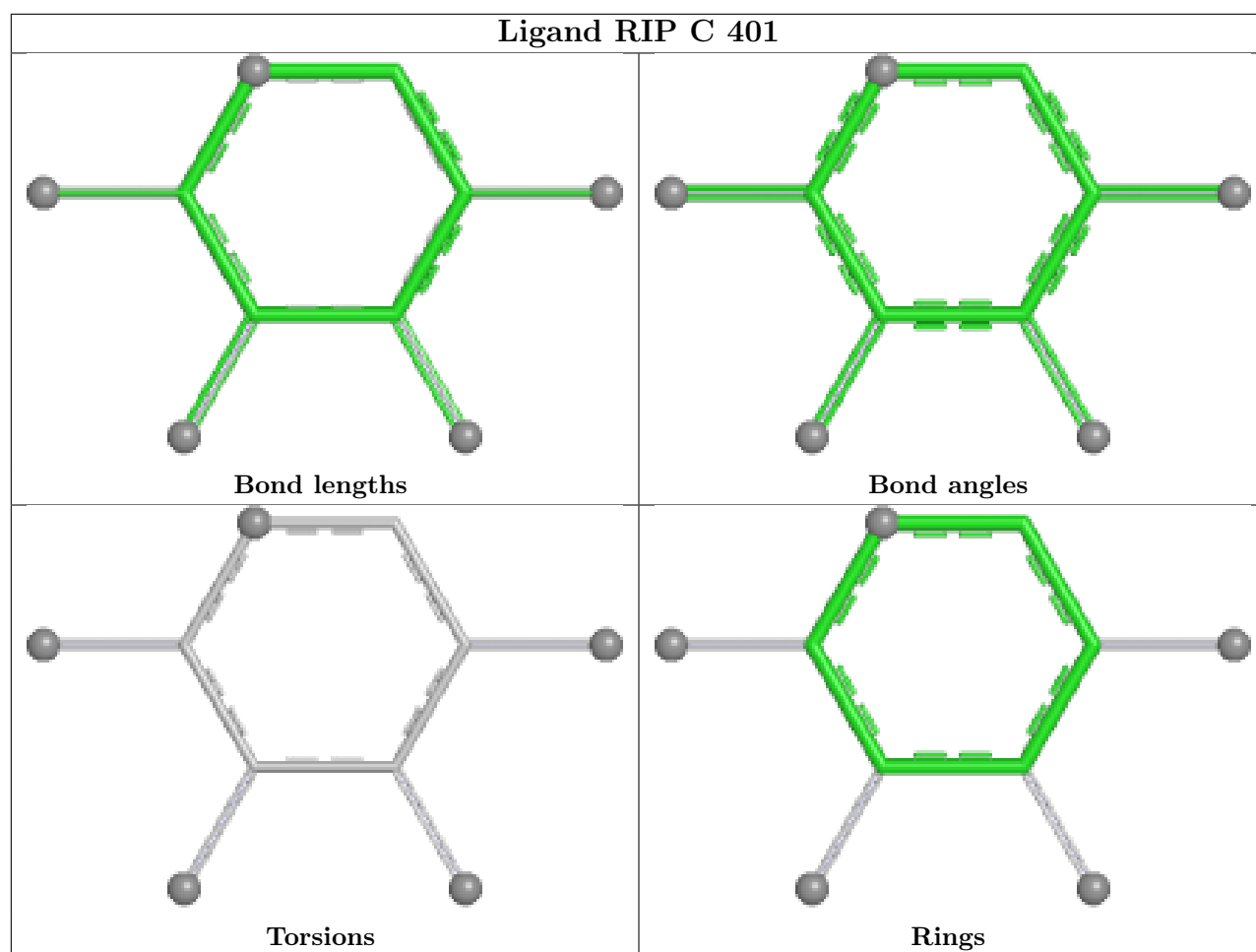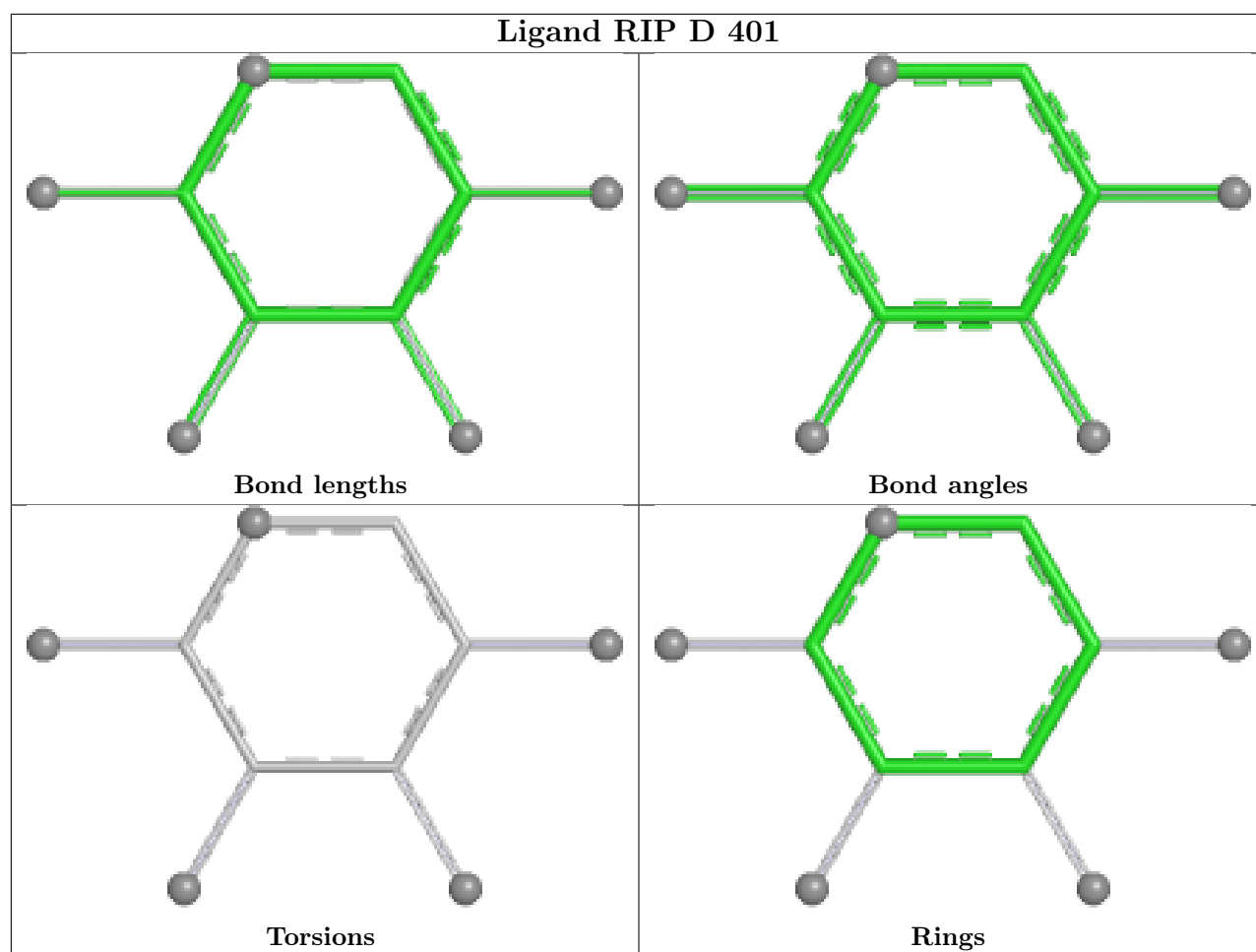
5.7 Other polymers ⓘ

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	279/330 (84%)	-0.02	13 (4%)	37	39	14, 31, 101, 134	0
1	B	326/330 (98%)	0.27	32 (9%)	14	15	15, 37, 97, 150	0
1	C	278/330 (84%)	-0.19	6 (2%)	62	63	9, 28, 77, 124	1 (0%)
1	D	273/330 (82%)	0.52	34 (12%)	9	9	10, 52, 115, 140	1 (0%)
1	E	279/330 (84%)	-0.05	9 (3%)	50	52	15, 32, 79, 123	0
1	F	273/330 (82%)	0.35	17 (6%)	28	28	16, 46, 108, 123	0
All	All	1708/1980 (86%)	0.15	111 (6%)	26	27	9, 36, 104, 150	2 (0%)

The worst 5 of 111 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	13	VAL	5.1
1	B	129	PRO	4.6
1	C	129	PRO	4.6
1	E	150	PHE	4.4
1	F	139	THR	4.4

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 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
2	RIP	F	401	10/10	0.92	0.09	29,36,57,57	0
2	RIP	E	401	10/10	0.94	0.07	17,22,32,35	0
2	RIP	D	401	10/10	0.94	0.08	21,41,50,58	0
2	RIP	C	401	10/10	0.97	0.05	13,17,19,21	0
2	RIP	A	401	10/10	0.98	0.05	13,22,33,34	0
2	RIP	B	401	10/10	0.98	0.04	14,17,23,24	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 RIP F 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)
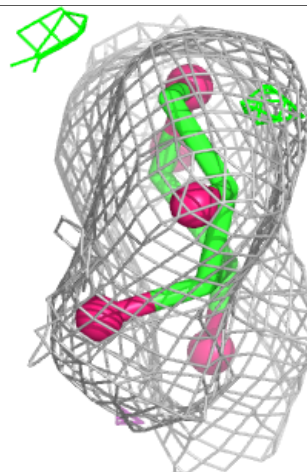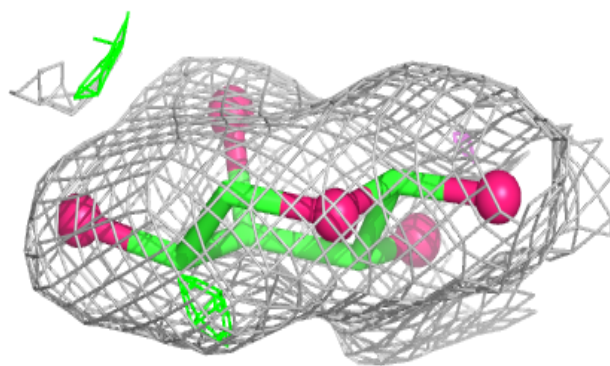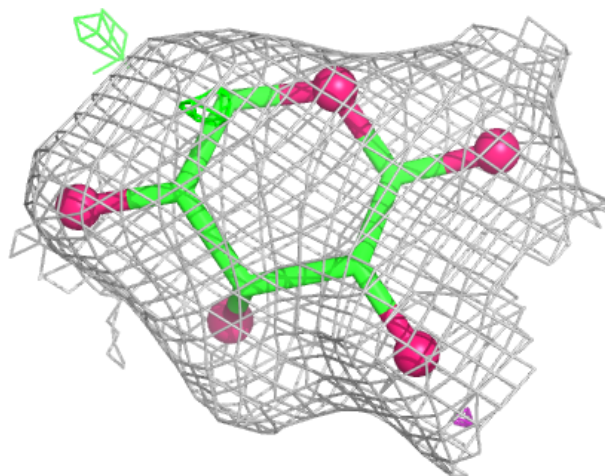
Electron density around RIP E 401:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
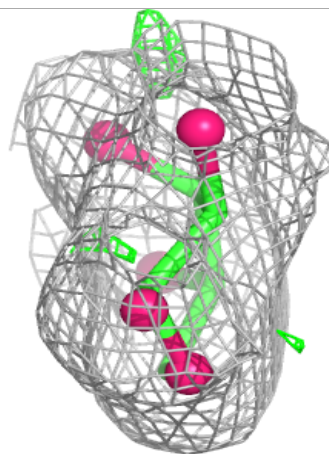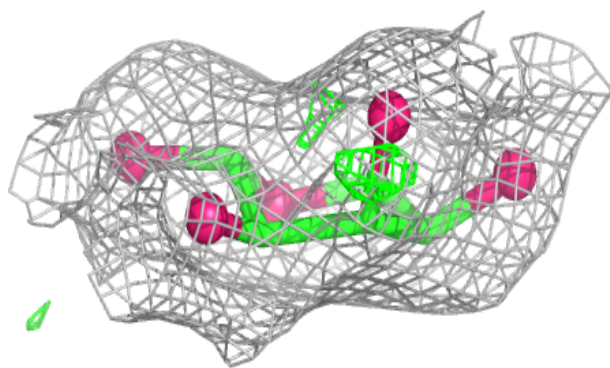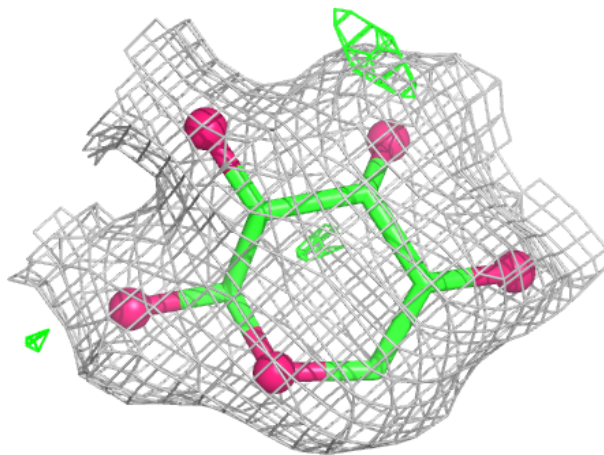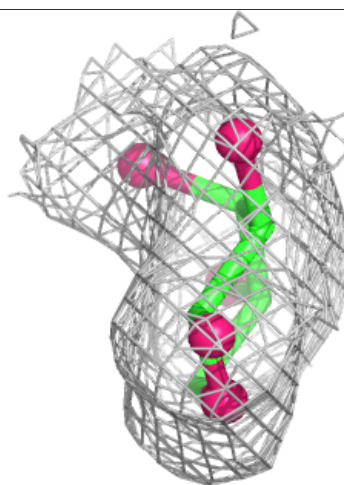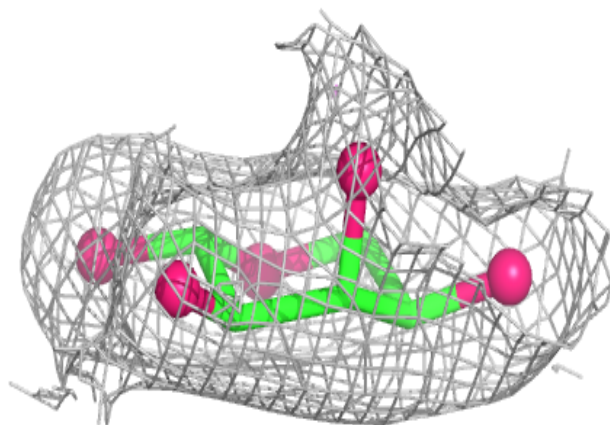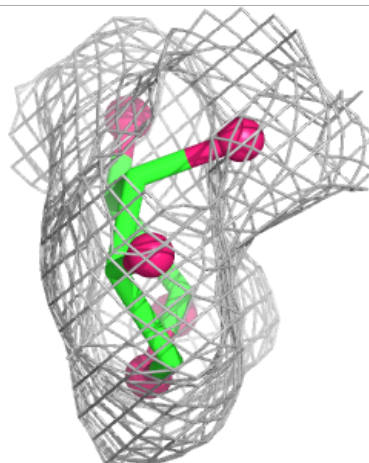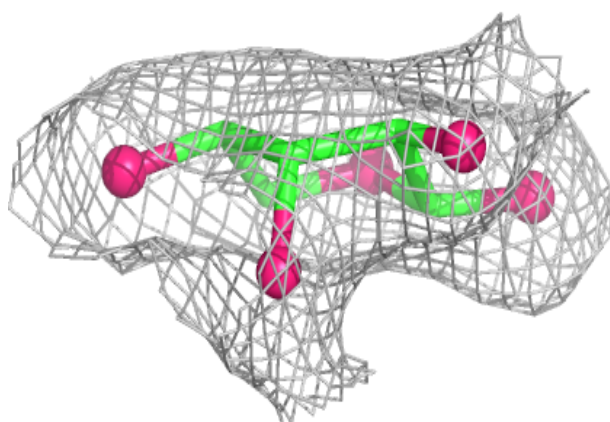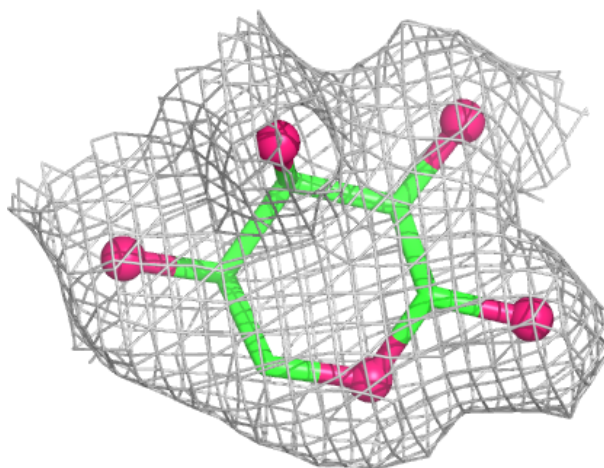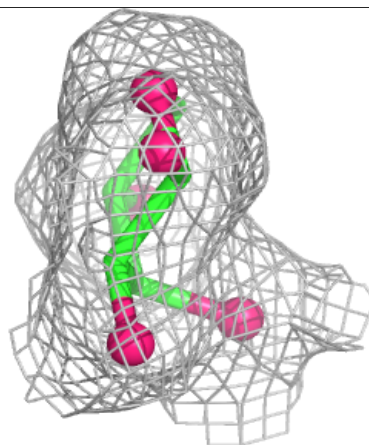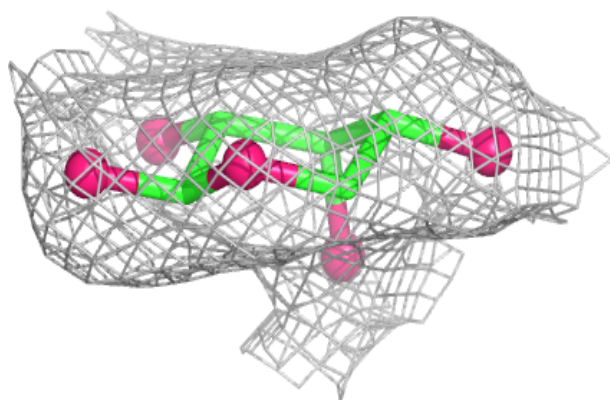
Electron density around RIP D 401:

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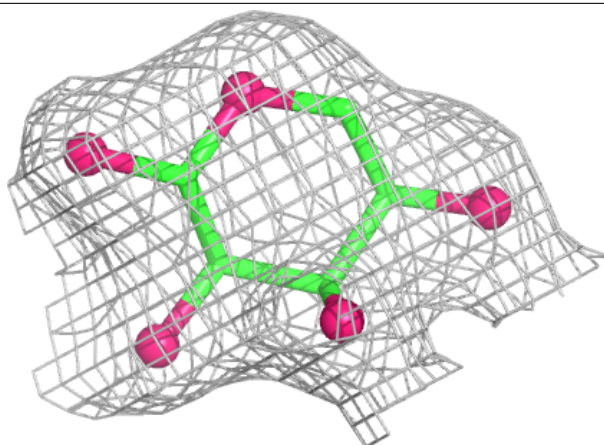and green (positive)
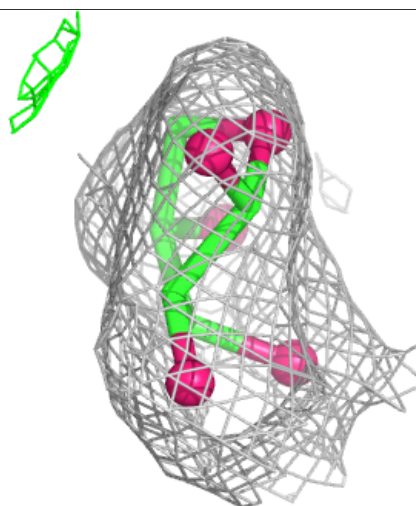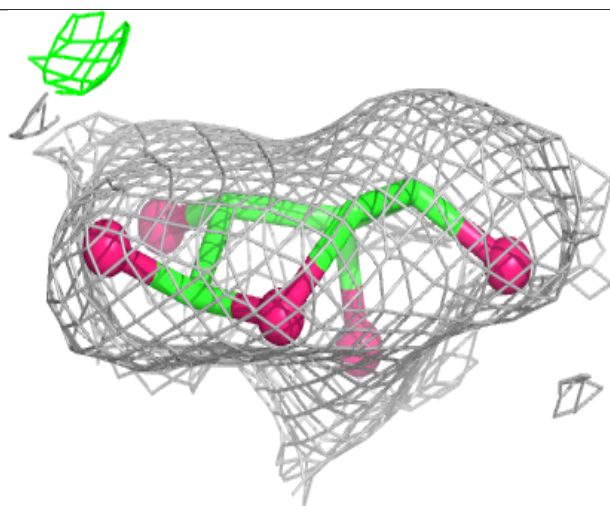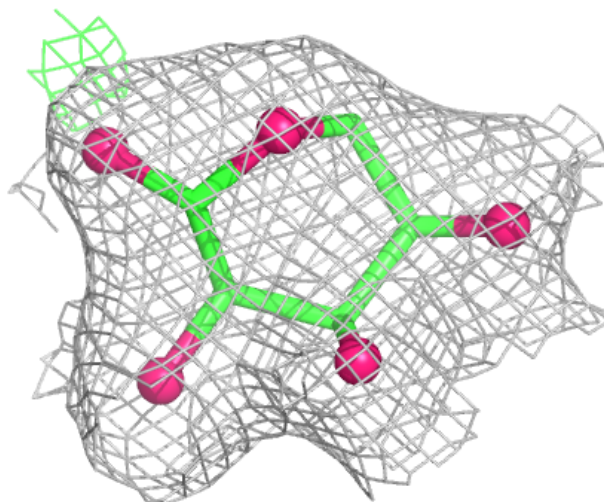
Electron density around RIP C 401:

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

Electron density around RIP A 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 RIP B 401:

$2mF_o$-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.