



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 12:01 AM UTC

PDB ID : 7E7V / pdb\_00007e7v  
Title : Crystal structure of RSL mutant in complex with sugar Ligand  
Authors : Li, L.; Chen, G.S.  
Deposited on : 2021-02-28  
Resolution : 1.61 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

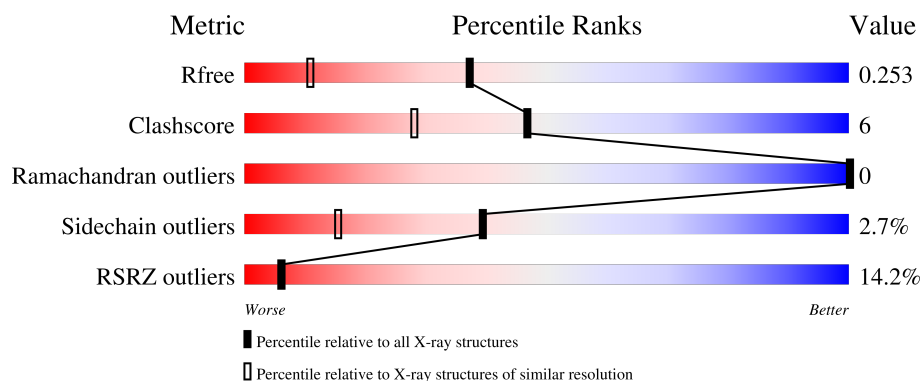
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.61 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	6728 (1.64-1.60)
Clashscore	190562	7023 (1.64-1.60)
Ramachandran outliers	187476	6898 (1.64-1.60)
Sidechain outliers	187428	6896 (1.64-1.60)
RSRZ outliers	180081	6727 (1.64-1.60)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	272	<div> <div>8%</div> <div>91%</div> <div>8%</div> </div>
1	B	272	<div> <div>13%</div> <div>87%</div> <div>11%</div> </div>
1	C	272	<div> <div>21%</div> <div>82%</div> <div>14%</div> </div>

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	GOL	B	304	-	-	X	-

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6979 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 Fucose-binding lectin protein, Fucose-binding lectin protein, Fucose-binding lectin protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	271	Total	C	N	O	S	0	0	0
			2041	1285	340	410	6			
1	B	270	Total	C	N	O	S	0	0	0
			2031	1279	339	407	6			
1	C	267	Total	C	N	O	S	0	0	0
			2015	1270	336	403	6			

There are 54 discrepancies between the modelled and reference sequences:

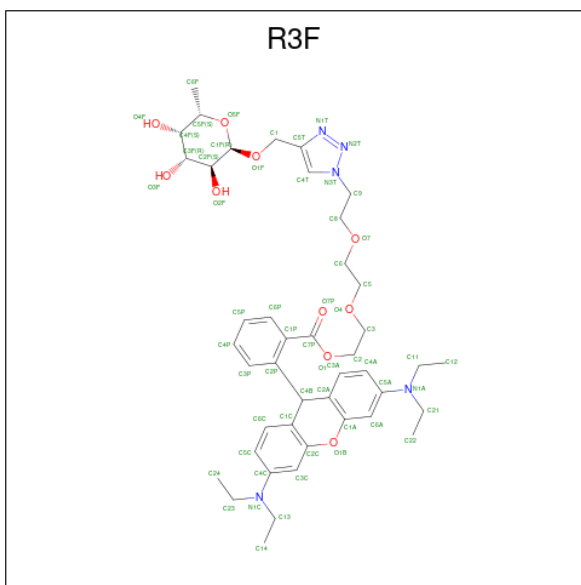
Chain	Residue	Modelled	Actual	Comment	Reference
A	17	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
A	88	SER	-	linker	UNP A0A0S4TLR1
A	89	SER	-	linker	UNP A0A0S4TLR1
A	90	THR	-	linker	UNP A0A0S4TLR1
A	91	VAL	-	linker	UNP A0A0S4TLR1
A	92	PRO	-	linker	UNP A0A0S4TLR1
A	93	GLY	-	linker	UNP A0A0S4TLR1
A	94	ASP	-	linker	UNP A0A0S4TLR1
A	108	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
A	153	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
A	179	SER	-	linker	UNP A0A0S4TLR1
A	180	SER	-	linker	UNP A0A0S4TLR1
A	181	THR	-	linker	UNP A0A0S4TLR1
A	182	VAL	-	linker	UNP A0A0S4TLR1
A	183	PRO	-	linker	UNP A0A0S4TLR1
A	184	GLY	-	linker	UNP A0A0S4TLR1
A	185	ASP	-	linker	UNP A0A0S4TLR1
A	244	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
B	17	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
B	88	SER	-	linker	UNP A0A0S4TLR1
B	89	SER	-	linker	UNP A0A0S4TLR1
B	90	THR	-	linker	UNP A0A0S4TLR1

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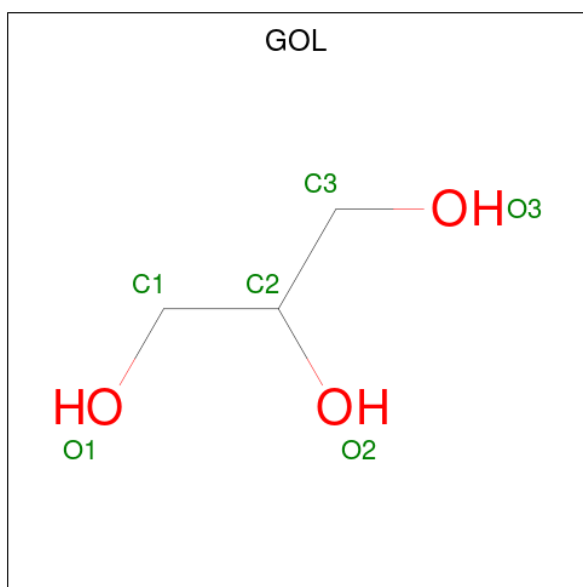
Chain	Residue	Modelled	Actual	Comment	Reference
B	91	VAL	-	linker	UNP A0A0S4TLR1
B	92	PRO	-	linker	UNP A0A0S4TLR1
B	93	GLY	-	linker	UNP A0A0S4TLR1
B	94	ASP	-	linker	UNP A0A0S4TLR1
B	108	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
B	153	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
B	179	SER	-	linker	UNP A0A0S4TLR1
B	180	SER	-	linker	UNP A0A0S4TLR1
B	181	THR	-	linker	UNP A0A0S4TLR1
B	182	VAL	-	linker	UNP A0A0S4TLR1
B	183	PRO	-	linker	UNP A0A0S4TLR1
B	184	GLY	-	linker	UNP A0A0S4TLR1
B	185	ASP	-	linker	UNP A0A0S4TLR1
B	244	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
C	17	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
C	88	SER	-	linker	UNP A0A0S4TLR1
C	89	SER	-	linker	UNP A0A0S4TLR1
C	90	THR	-	linker	UNP A0A0S4TLR1
C	91	VAL	-	linker	UNP A0A0S4TLR1
C	92	PRO	-	linker	UNP A0A0S4TLR1
C	93	GLY	-	linker	UNP A0A0S4TLR1
C	94	ASP	-	linker	UNP A0A0S4TLR1
C	108	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
C	153	ALA	ARG	engineered mutation	UNP A0A0S4TLR1
C	179	SER	-	linker	UNP A0A0S4TLR1
C	180	SER	-	linker	UNP A0A0S4TLR1
C	181	THR	-	linker	UNP A0A0S4TLR1
C	182	VAL	-	linker	UNP A0A0S4TLR1
C	183	PRO	-	linker	UNP A0A0S4TLR1
C	184	GLY	-	linker	UNP A0A0S4TLR1
C	185	ASP	-	linker	UNP A0A0S4TLR1
C	244	ALA	ARG	engineered mutation	UNP A0A0S4TLR1

- Molecule 2 is 2-[2-[2-[4-[[[(2R,3S,4R,5S,6S)-6-methyl-3,4,5-tris(oxidanyl)oxan-2-yl]oxymethyl]-1,2,3-triazol-1-yl]ethoxy]ethoxy]ethyl 2-[3,6-bis(diethylamino)-9H-xanthen-9-yl]benzoate (CCD ID: R3F) (formula: C<sub>43</sub>H<sub>57</sub>N<sub>5</sub>O<sub>10</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 58	C 43	N 5	O 10	0	0
2	A	1	Total 58	C 43	N 5	O 10	0	0
2	B	1	Total 58	C 43	N 5	O 10	0	0
2	B	1	Total 58	C 43	N 5	O 10	0	0
2	C	1	Total 58	C 43	N 5	O 10	0	0
2	C	1	Total 58	C 43	N 5	O 10	0	0

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula:  $\text{C}_3\text{H}_8\text{O}_3$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	C	1	Total	C	O	0	0
			6	3	3		
3	C	1	Total	C	O	0	0
			6	3	3		
3	C	1	Total	C	O	0	0
			6	3	3		

- Molecule 4 is water.

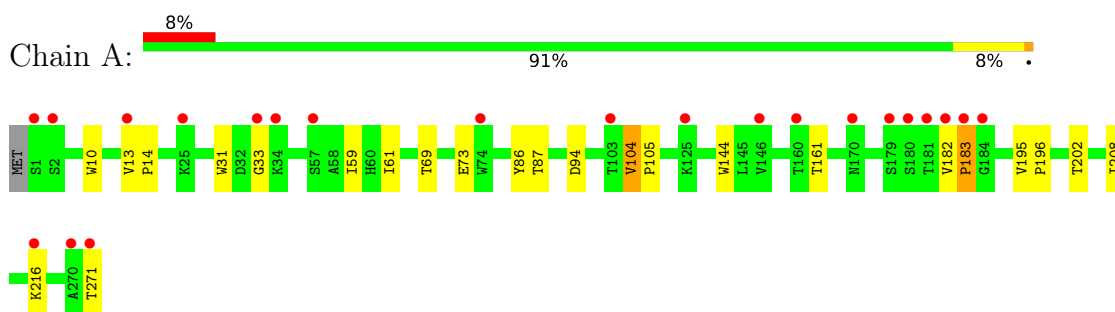
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	180	Total 180	O 180	0	0
4	B	164	Total 164	O 164	0	0
4	C	128	Total 128	O 128	0	0



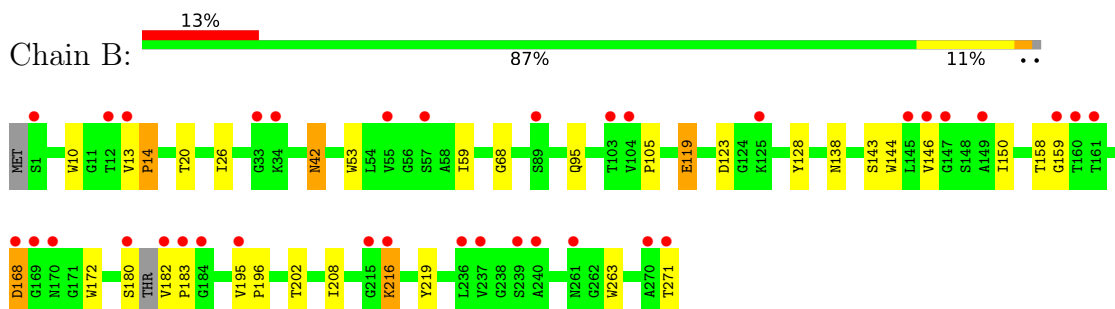
### 3 Residue-property plots

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.

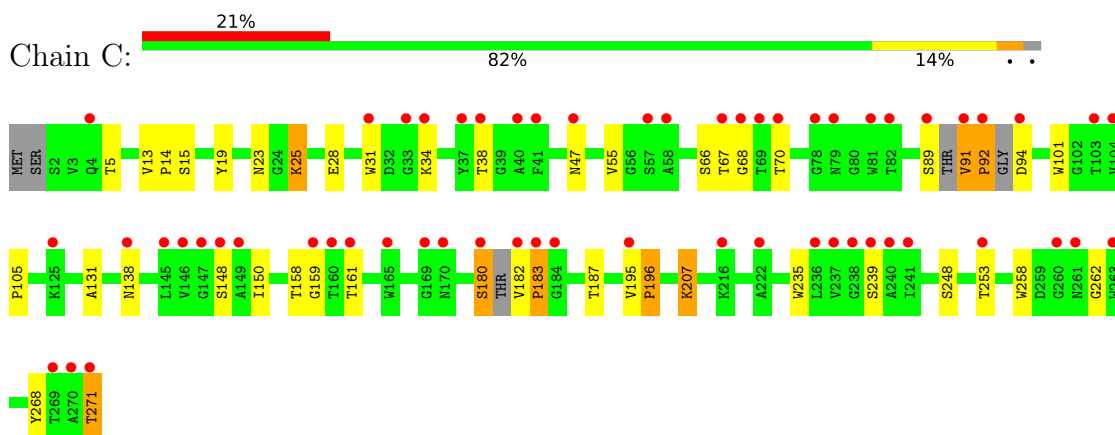
- Molecule 1: Fucose-binding lectin protein,Fucose-binding lectin protein,Fucose-binding lectin protein



- Molecule 1: Fucose-binding lectin protein,Fucose-binding lectin protein,Fucose-binding lectin protein



- Molecule 1: Fucose-binding lectin protein,Fucose-binding lectin protein,Fucose-binding lectin protein



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	43.49Å 161.52Å 54.14Å 90.00° 91.53° 90.00°	Depositor
Resolution (Å)	80.76 – 1.61 80.76 – 1.61	Depositor EDS
% Data completeness (in resolution range)	97.5 (80.76-1.61) 97.6 (80.76-1.61)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.01 (at 1.61Å)	Xtriage
Refinement program	REFMAC 5.8.0238	Depositor
R, $R_{free}$	0.218 , 0.248 0.226 , 0.253	Depositor DCC
$R_{free}$ test set	4739 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	16.4	Xtriage
Anisotropy	0.123	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.37 , 39.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	0.022 for h,-k,-l	Xtriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	6979	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	23.0	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 23.68 % 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 4.4486e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality ⓘ

### 5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, R3F

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	1.13	1/2108 (0.0%)	1.28	5/2906 (0.2%)
1	B	1.15	3/2097 (0.1%)	1.30	5/2888 (0.2%)
1	C	1.14	2/2078 (0.1%)	1.30	7/2859 (0.2%)
All	All	1.14	6/6283 (0.1%)	1.29	17/8653 (0.2%)

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	C	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	61	ILE	C-O	5.94	1.30	1.24
1	C	23	ASN	C-O	5.70	1.31	1.23
1	B	263	TRP	C-O	5.48	1.30	1.24
1	C	28	GLU	C-O	5.34	1.30	1.24
1	B	219	TYR	C-O	5.16	1.30	1.23
1	B	119	GLU	C-O	5.06	1.29	1.23

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	168	ASP	CB-CA-C	8.41	124.65	111.02
1	B	168	ASP	N-CA-C	-7.36	102.85	112.41
1	C	67	THR	CA-CB-OG1	-6.94	99.19	109.60
1	C	92	PRO	N-CA-CB	6.72	110.39	103.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	104	VAL	O-C-N	-6.35	116.36	120.42
1	B	68	GLY	CA-C-O	-6.23	114.63	121.05
1	B	168	ASP	CA-CB-CG	6.17	118.77	112.60
1	C	183	PRO	N-CA-C	6.04	120.69	111.15
1	C	38	THR	CA-CB-OG1	-5.89	100.76	109.60
1	B	158	THR	CA-CB-OG1	-5.79	100.91	109.60
1	C	158	THR	CA-CB-OG1	-5.73	101.00	109.60
1	C	271	THR	CA-CB-OG1	-5.31	101.64	109.60
1	A	87	THR	CA-CB-OG1	-5.22	101.77	109.60
1	A	104	VAL	CA-C-O	5.19	122.17	118.69
1	A	183	PRO	N-CA-C	5.14	119.27	111.15
1	A	271	THR	CA-CB-OG1	-5.13	101.90	109.60
1	C	55	VAL	O-C-N	5.08	128.86	122.66

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	68	GLY	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	2041	0	1872	13	0
1	B	2031	0	1858	22	0
1	C	2015	0	1838	23	0
2	A	116	0	0	7	0
2	B	116	0	0	3	0
2	C	116	0	0	2	0
3	A	24	0	32	0	0
3	B	24	0	32	5	0
3	C	24	0	32	0	0
4	A	180	0	0	1	0
4	B	164	0	0	2	0
4	C	128	0	0	5	0
All	All	6979	0	5664	69	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 6.

All (69) 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:248:SER:OG	1:C:253:THR:HG22	1.78	0.82
1:C:207:LYS:HD2	4:C:480:HOH:O	1.86	0.74
1:B:172:TRP:HE1	3:B:304:GOL:C3	2.02	0.72
1:C:92:PRO:O	1:C:94:ASP:N	2.25	0.70
1:A:182:VAL:HB	1:A:183:PRO:HD2	1.74	0.69
2:A:302:R3F:N2T	2:A:302:R3F:O7	2.31	0.63
2:C:301:R3F:O7P	2:C:301:R3F:C3	2.44	0.63
1:B:159:GLY:O	1:B:183:PRO:HB3	2.01	0.61
1:B:172:TRP:HE1	3:B:304:GOL:H32	1.65	0.61
2:A:301:R3F:N2T	2:A:301:R3F:O7	2.37	0.58
1:B:180:SER:O	1:B:182:VAL:N	2.38	0.57
1:C:253:THR:HG1	1:C:268:TYR:HE2	1.53	0.57
2:B:301:R3F:O2F	2:B:301:R3F:O7P	2.25	0.53
1:C:207:LYS:CD	4:C:480:HOH:O	2.49	0.53
2:A:302:R3F:N2T	2:A:302:R3F:C6	2.72	0.53
1:C:180:SER:C	1:C:182:VAL:N	2.67	0.52
1:A:144:TRP:CE2	1:A:196:PRO:HG3	2.44	0.52
1:C:159:GLY:O	1:C:183:PRO:HB3	2.10	0.52
2:B:301:R3F:O7	2:B:301:R3F:C4T	2.59	0.51
2:A:302:R3F:C3A	2:A:302:R3F:O7P	2.58	0.51
1:B:10:TRP:CG	1:B:59:ILE:HD13	2.47	0.49
1:B:172:TRP:NE1	3:B:304:GOL:H32	2.26	0.49
1:A:104:VAL:N	1:A:105:PRO:HA	2.28	0.48
1:C:70:THR:HG23	4:C:470:HOH:O	2.13	0.48
1:B:146:VAL:O	1:B:146:VAL:HG23	2.14	0.48
1:C:25:LYS:HE3	4:C:512:HOH:O	2.12	0.48
1:C:5:THR:HA	1:C:19:TYR:O	2.14	0.47
2:A:302:R3F:C3	2:A:302:R3F:N1T	2.77	0.47
1:B:168:ASP:HB2	4:B:499:HOH:O	2.14	0.47
1:B:172:TRP:NE1	3:B:304:GOL:C3	2.75	0.47
1:C:14:PRO:HG3	1:C:235:TRP:CE2	2.50	0.47
1:C:89:SER:O	1:C:91:VAL:HG11	2.15	0.47
1:C:138:ASN:ND2	1:C:187:THR:H	2.14	0.45
1:B:202:THR:O	1:B:208:ILE:HA	2.15	0.45
1:B:119:GLU:OE1	3:B:304:GOL:O3	2.32	0.45
1:B:216:LYS:HA	1:B:216:LYS:HD2	1.68	0.45
1:A:195:VAL:N	1:A:196:PRO:HA	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:73:GLU:HB2	1:A:86:TYR:HB3	1.99	0.44
1:B:42:ASN:OD1	4:B:401:HOH:O	2.21	0.44
1:C:13:VAL:N	1:C:14:PRO:HA	2.32	0.44
1:A:144:TRP:CD2	1:A:196:PRO:HG3	2.52	0.44
2:A:302:R3F:N1T	2:A:302:R3F:O4	2.51	0.44
1:A:10:TRP:CG	1:A:59:ILE:HD13	2.53	0.44
1:C:253:THR:OG1	1:C:268:TYR:HE2	2.01	0.43
1:C:89:SER:C	1:C:91:VAL:HG11	2.44	0.43
1:B:144:TRP:CE2	1:B:196:PRO:HG3	2.53	0.43
1:C:15:SER:HA	1:C:31:TRP:O	2.18	0.43
1:A:31:TRP:CE2	1:A:33:GLY:HA2	2.55	0.42
1:B:13:VAL:N	1:B:14:PRO:HA	2.33	0.42
1:C:101:TRP:CG	1:C:150:ILE:HD13	2.54	0.42
1:C:47:ASN:HB3	1:C:66:SER:HB2	2.00	0.42
1:A:31:TRP:NE1	1:A:33:GLY:HA2	2.34	0.42
2:A:302:R3F:O7P	2:A:302:R3F:C2A	2.68	0.42
1:B:143:SER:HB2	1:B:150:ILE:HD11	2.01	0.42
1:B:95:GLN:OE1	1:B:138:ASN:HA	2.20	0.41
1:B:195:VAL:N	1:B:196:PRO:HA	2.34	0.41
2:B:301:R3F:C4T	2:B:301:R3F:C3	2.98	0.41
1:B:53:TRP:CZ2	1:B:105:PRO:HG3	2.56	0.41
1:A:94:ASP:OD1	4:A:401:HOH:O	2.22	0.41
1:C:195:VAL:N	1:C:196:PRO:HA	2.36	0.41
1:A:69:THR:OG1	1:C:131:ALA:HB2	2.21	0.40
1:C:258:TRP:CZ3	1:C:262:GLY:HA2	2.56	0.40
1:B:20:THR:O	1:B:26:ILE:HA	2.21	0.40
1:B:159:GLY:O	1:B:183:PRO:CB	2.67	0.40
2:C:302:R3F:C5	2:C:302:R3F:C4T	3.00	0.40
1:A:13:VAL:N	1:A:14:PRO:HA	2.37	0.40
1:A:202:THR:O	1:A:208:ILE:HA	2.21	0.40
1:C:207:LYS:CG	4:C:480:HOH:O	2.69	0.40
1:B:123:ASP:OD2	1:B:128:TYR:OH	2.30	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	269/272 (99%)	260 (97%)	9 (3%)	0	100	100
1	B	266/272 (98%)	259 (97%)	7 (3%)	0	100	100
1	C	259/272 (95%)	254 (98%)	5 (2%)	0	100	100
All	All	794/816 (97%)	773 (97%)	21 (3%)	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	A	210/211 (100%)	208 (99%)	2 (1%)	68	50
1	B	208/211 (99%)	204 (98%)	4 (2%)	50	26
1	C	206/211 (98%)	195 (95%)	11 (5%)	20	4
All	All	624/633 (99%)	607 (97%)	17 (3%)	39	15

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	161	THR
1	A	216	LYS
1	B	14	PRO
1	B	42	ASN
1	B	216	LYS
1	B	271	THR
1	C	25	LYS
1	C	34	LYS
1	C	91	VAL
1	C	105	PRO
1	C	148	SER

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Mol	Chain	Res	Type
1	C	161	THR
1	C	180	SER
1	C	196	PRO
1	C	207	LYS
1	C	239	SER
1	C	271	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	22	ASN
1	A	113	ASN
1	A	224	ASN
1	B	23	ASN
1	C	138	ASN
1	C	170	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

18 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
3	GOL	C	306	-	5,5,5	0.09	0	5,5,5	0.26	0
3	GOL	B	303	-	5,5,5	0.18	0	5,5,5	0.38	0
3	GOL	A	303	-	5,5,5	0.15	0	5,5,5	0.38	0
3	GOL	C	304	-	5,5,5	0.12	0	5,5,5	0.38	0
3	GOL	B	306	-	5,5,5	0.15	0	5,5,5	0.27	0
3	GOL	A	304	-	5,5,5	0.13	0	5,5,5	0.43	0
2	R3F	B	301	-	63,63,63	1.83	10 (15%)	86,87,87	1.98	17 (19%)
2	R3F	C	302	-	63,63,63	1.73	8 (12%)	86,87,87	2.20	17 (19%)
3	GOL	A	306	-	5,5,5	0.11	0	5,5,5	0.32	0
3	GOL	C	305	-	5,5,5	0.13	0	5,5,5	0.40	0
3	GOL	C	303	-	5,5,5	0.24	0	5,5,5	0.55	0
2	R3F	A	302	-	63,63,63	1.85	9 (14%)	86,87,87	2.42	25 (29%)
3	GOL	B	304	-	5,5,5	0.31	0	5,5,5	0.68	0
2	R3F	A	301	-	63,63,63	1.86	8 (12%)	86,87,87	2.21	19 (22%)
2	R3F	B	302	-	63,63,63	1.70	7 (11%)	86,87,87	1.97	18 (20%)
3	GOL	B	305	-	5,5,5	0.15	0	5,5,5	0.21	0
3	GOL	A	305	-	5,5,5	0.16	0	5,5,5	0.37	0
2	R3F	C	301	-	63,63,63	1.68	8 (12%)	86,87,87	2.39	25 (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	GOL	C	306	-	-	0/4/4/4	-
3	GOL	B	303	-	-	0/4/4/4	-
3	GOL	A	303	-	-	0/4/4/4	-
3	GOL	C	304	-	-	1/4/4/4	-
3	GOL	B	306	-	-	0/4/4/4	-
3	GOL	A	304	-	-	0/4/4/4	-
2	R3F	B	301	-	-	21/45/73/73	0/6/6/6
2	R3F	C	302	-	-	14/45/73/73	0/6/6/6
3	GOL	A	306	-	-	0/4/4/4	-
3	GOL	C	305	-	-	4/4/4/4	-
3	GOL	C	303	-	-	2/4/4/4	-
2	R3F	A	302	-	-	23/45/73/73	0/6/6/6
3	GOL	B	304	-	-	2/4/4/4	-
2	R3F	A	301	-	-	20/45/73/73	0/6/6/6

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	R3F	B	302	-	-	14/45/73/73	0/6/6/6
3	GOL	B	305	-	-	1/4/4/4	-
3	GOL	A	305	-	-	0/4/4/4	-
2	R3F	C	301	-	-	13/45/73/73	0/6/6/6

All (50) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	301	R3F	C1C-C4B	-6.18	1.42	1.52
2	B	302	R3F	C1C-C4B	-6.10	1.42	1.52
2	A	302	R3F	C2A-C4B	-6.04	1.42	1.52
2	A	301	R3F	C2A-C4B	-6.03	1.42	1.52
2	B	301	R3F	C1C-C4B	-6.03	1.42	1.52
2	C	302	R3F	C2A-C4B	-5.96	1.42	1.52
2	B	302	R3F	O1-C7P	5.88	1.47	1.33
2	C	301	R3F	N1T-N2T	5.79	1.41	1.32
2	B	301	R3F	N1T-N2T	5.78	1.41	1.32
2	B	301	R3F	C2A-C4B	-5.77	1.42	1.52
2	A	302	R3F	O1-C7P	5.64	1.47	1.33
2	C	301	R3F	C2A-C4B	-5.59	1.43	1.52
2	C	302	R3F	O1-C7P	5.57	1.47	1.33
2	C	302	R3F	C1C-C4B	-5.56	1.43	1.52
2	A	301	R3F	O1-C7P	5.54	1.47	1.33
2	C	302	R3F	N1T-N2T	5.40	1.40	1.32
2	A	302	R3F	C1C-C4B	-5.37	1.43	1.52
2	B	302	R3F	C2A-C4B	-5.24	1.43	1.52
2	A	301	R3F	N1T-N2T	5.23	1.40	1.32
2	C	301	R3F	C1C-C4B	-4.79	1.44	1.52
2	B	301	R3F	O1-C7P	4.65	1.44	1.33
2	A	302	R3F	N1T-N2T	4.41	1.39	1.32
2	A	302	R3F	C4T-C5T	4.39	1.43	1.36
2	A	301	R3F	C4T-C5T	4.39	1.43	1.36
2	A	301	R3F	N3T-N2T	4.24	1.41	1.34
2	C	301	R3F	O1-C7P	4.12	1.43	1.33
2	A	302	R3F	O1F-C1F	3.82	1.46	1.40
2	B	302	R3F	C1P-C2P	3.81	1.44	1.40
2	A	302	R3F	N3T-N2T	3.78	1.40	1.34
2	B	302	R3F	N1T-N2T	3.47	1.37	1.32
2	C	301	R3F	C4T-C5T	3.32	1.42	1.36
2	B	301	R3F	N3T-N2T	3.32	1.40	1.34
2	C	302	R3F	N3T-N2T	3.28	1.40	1.34
2	A	302	R3F	C1P-C2P	3.27	1.44	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	301	R3F	O1F-C1F	3.05	1.45	1.40
2	C	301	R3F	N3T-N2T	2.88	1.39	1.34
2	A	302	R3F	C1P-C7P	2.69	1.55	1.50
2	B	301	R3F	O3F-C3F	2.61	1.49	1.43
2	B	301	R3F	C1A-C2A	2.59	1.44	1.39
2	C	302	R3F	C4T-C5T	2.57	1.40	1.36
2	B	302	R3F	C4C-N1C	2.42	1.45	1.38
2	A	301	R3F	O1F-C1F	2.34	1.44	1.40
2	B	301	R3F	C1-C5T	2.25	1.53	1.49
2	C	302	R3F	C1P-C2P	2.25	1.42	1.40
2	B	301	R3F	C5T-N1T	2.21	1.39	1.36
2	C	301	R3F	O1F-C1F	2.17	1.43	1.40
2	B	302	R3F	C5C-C4C	2.13	1.43	1.39
2	C	302	R3F	C6C-C1C	2.05	1.42	1.39
2	A	301	R3F	C2P-C4B	-2.05	1.50	1.53
2	C	301	R3F	C4C-N1C	2.03	1.44	1.38

All (121) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	301	R3F	C2A-C4B-C1C	9.01	119.40	105.86
2	C	302	R3F	C2A-C4B-C1C	7.98	117.85	105.86
2	A	302	R3F	C2A-C4B-C1C	7.94	117.80	105.86
2	C	302	R3F	O1-C7P-C1P	7.58	127.12	112.24
2	C	301	R3F	C5T-N1T-N2T	-7.50	100.91	109.01
2	A	301	R3F	N3T-N2T-N1T	7.41	113.69	107.02
2	A	301	R3F	C5T-N1T-N2T	-7.31	101.11	109.01
2	C	301	R3F	C2A-C4B-C1C	7.31	116.84	105.86
2	C	301	R3F	N3T-N2T-N1T	7.28	113.57	107.02
2	C	302	R3F	C5T-N1T-N2T	-7.03	101.42	109.01
2	B	302	R3F	O1-C7P-C1P	6.90	125.78	112.24
2	B	302	R3F	C2A-C4B-C1C	6.87	116.18	105.86
2	A	302	R3F	N3T-N2T-N1T	6.82	113.15	107.02
2	B	301	R3F	C2A-C4B-C1C	6.82	116.11	105.86
2	C	302	R3F	N3T-N2T-N1T	6.36	112.74	107.02
2	A	302	R3F	C5T-N1T-N2T	-6.20	102.32	109.01
2	C	301	R3F	C1P-C2P-C4B	6.05	130.46	122.01
2	C	301	R3F	C4T-N3T-N2T	-5.70	105.20	110.75
2	C	301	R3F	O1-C7P-C1P	5.53	123.10	112.24
2	A	301	R3F	C4T-N3T-N2T	-5.46	105.44	110.75
2	A	302	R3F	O1-C7P-C1P	5.42	122.87	112.24
2	B	301	R3F	C4T-N3T-N2T	-5.40	105.50	110.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	302	R3F	O1-C7P-O7P	-5.33	113.00	123.67
2	C	302	R3F	C4T-N3T-N2T	-5.33	105.57	110.75
2	A	302	R3F	C1F-O5F-C5F	-5.18	104.80	113.63
2	A	301	R3F	O1-C7P-C1P	5.17	122.39	112.24
2	B	301	R3F	C1-C5T-C4T	-5.08	121.46	130.22
2	B	301	R3F	C5T-N1T-N2T	-5.02	103.58	109.01
2	C	301	R3F	C2-O1-C7P	-5.00	106.09	116.41
2	C	301	R3F	C1-C5T-C4T	-4.98	121.62	130.22
2	A	302	R3F	O1F-C1F-C2F	-4.96	100.74	108.27
2	B	301	R3F	C1-C5T-N1T	4.87	129.56	121.49
2	A	302	R3F	C4T-N3T-N2T	-4.84	106.04	110.75
2	C	302	R3F	C9-N3T-C4T	4.74	137.69	128.83
2	B	301	R3F	N3T-N2T-N1T	4.65	111.21	107.02
2	A	302	R3F	C9-N3T-C4T	4.59	137.40	128.83
2	A	302	R3F	O1F-C1-C5T	-4.42	100.13	110.27
2	A	302	R3F	C2-O1-C7P	4.23	125.13	116.41
2	A	301	R3F	C4T-C5T-N1T	4.17	113.19	108.12
2	C	302	R3F	C1-C5T-C4T	-4.10	123.14	130.22
2	B	302	R3F	N3T-N2T-N1T	3.95	110.57	107.02
2	B	302	R3F	C2-O1-C7P	3.93	124.52	116.41
2	A	301	R3F	C1P-C2P-C4B	-3.93	116.53	122.01
2	B	301	R3F	O1-C7P-C1P	3.90	119.89	112.24
2	B	301	R3F	O1-C7P-O7P	-3.87	115.92	123.67
2	A	301	R3F	C3C-C4C-N1C	-3.86	117.17	121.33
2	B	301	R3F	C5T-C4T-N3T	3.85	110.72	105.33
2	B	302	R3F	C2P-C1P-C7P	3.84	127.68	122.12
2	C	302	R3F	C2P-C4B-C1C	3.83	126.59	114.30
2	A	302	R3F	C3C-C4C-N1C	-3.80	117.23	121.33
2	B	302	R3F	C5T-N1T-N2T	-3.75	104.95	109.01
2	B	302	R3F	C9-N3T-C4T	3.63	135.62	128.83
2	C	302	R3F	C4T-C5T-N1T	3.62	112.52	108.12
2	C	302	R3F	O1-C7P-O7P	-3.57	116.53	123.67
2	B	302	R3F	C4T-N3T-N2T	-3.52	107.33	110.75
2	B	302	R3F	C6P-C1P-C7P	-3.51	111.55	118.66
2	C	301	R3F	C3P-C2P-C4B	-3.50	113.78	121.45
2	A	301	R3F	C1-C5T-C4T	-3.38	124.39	130.22
2	C	301	R3F	O1-C7P-O7P	-3.36	116.94	123.67
2	A	301	R3F	O1-C7P-O7P	-3.36	116.94	123.67
2	A	301	R3F	C2C-C1C-C4B	-3.33	118.24	121.53
2	A	302	R3F	O5F-C1F-C2F	3.26	117.08	110.37
2	A	302	R3F	C1-C5T-C4T	-3.25	124.61	130.22
2	B	301	R3F	C3A-C2A-C4B	-3.18	121.11	126.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	301	R3F	C4T-C5T-N1T	3.13	111.92	108.12
2	B	301	R3F	C2-O1-C7P	3.08	122.76	116.41
2	A	302	R3F	C3A-C2A-C4B	-3.08	121.28	126.16
2	C	301	R3F	C6P-C1P-C7P	-3.06	112.47	118.66
2	C	301	R3F	C9-N3T-C4T	3.04	134.51	128.83
2	A	301	R3F	C9-N3T-C4T	3.03	134.48	128.83
2	C	301	R3F	C1-C5T-N1T	2.99	126.45	121.49
2	B	302	R3F	C5C-C4C-N1C	2.97	125.52	121.39
2	B	301	R3F	C3C-C4C-N1C	-2.97	118.12	121.33
2	A	302	R3F	C4T-C5T-N1T	2.93	111.68	108.12
2	B	301	R3F	O2F-C2F-C3F	-2.92	103.48	110.38
2	A	302	R3F	C2P-C4B-C1C	2.86	123.48	114.30
2	B	302	R3F	C2P-C4B-C1C	2.84	123.41	114.30
2	B	302	R3F	O1-C7P-O7P	-2.84	117.99	123.67
2	C	302	R3F	C3A-C2A-C4B	-2.81	121.70	126.16
2	B	302	R3F	C2F-C3F-C4F	-2.80	105.91	110.83
2	A	302	R3F	C21-N1A-C11	2.64	121.31	116.31
2	A	301	R3F	C21-N1A-C11	2.60	121.23	116.31
2	B	301	R3F	C6C-C1C-C4B	-2.59	122.05	126.16
2	C	302	R3F	C2C-C1C-C4B	-2.59	118.97	121.53
2	C	301	R3F	C3P-C2P-C1P	-2.58	115.75	118.78
2	C	301	R3F	C3A-C2A-C4B	-2.56	122.10	126.16
2	A	302	R3F	C4A-C5A-N1A	-2.56	117.84	121.39
2	B	302	R3F	C1P-C2P-C4B	2.55	125.57	122.01
2	B	302	R3F	C3C-C4C-N1C	-2.51	118.62	121.33
2	A	302	R3F	O3F-C3F-C4F	2.46	116.19	110.38
2	C	301	R3F	C2P-C1P-C7P	2.46	125.68	122.12
2	C	302	R3F	O1F-C1-C5T	-2.45	104.66	110.27
2	A	301	R3F	C1A-C2A-C4B	-2.44	119.12	121.53
2	C	301	R3F	O1-C2-C3	2.38	115.57	108.61
2	B	301	R3F	C2P-C4B-C1C	2.37	121.92	114.30
2	B	301	R3F	C2P-C4B-C2A	2.34	121.81	114.30
2	B	301	R3F	C23-N1C-C13	2.34	120.73	116.31
2	B	302	R3F	O1-C2-C3	2.34	115.45	108.61
2	C	301	R3F	C2P-C4B-C2A	2.34	121.80	114.30
2	C	302	R3F	O5F-C5F-C6F	2.32	111.88	106.74
2	A	302	R3F	O5F-C5F-C4F	2.31	113.71	109.55
2	C	302	R3F	C3C-C4C-N1C	-2.30	118.84	121.33
2	C	301	R3F	O1F-C1-C5T	-2.30	105.00	110.27
2	A	301	R3F	C2-O1-C7P	2.27	121.10	116.41
2	C	301	R3F	C6F-C5F-C4F	2.26	117.21	113.08
2	A	302	R3F	C2C-C1C-C4B	-2.22	119.34	121.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	302	R3F	O1B-C1A-C6A	2.20	118.96	115.43
2	B	302	R3F	C1-C5T-C4T	-2.17	126.47	130.22
2	A	301	R3F	C2P-C4B-C1C	2.16	121.24	114.30
2	C	301	R3F	C2P-C4B-C1C	2.15	121.20	114.30
2	A	302	R3F	C5C-C4C-N1C	2.15	124.37	121.39
2	C	301	R3F	O1F-C1F-C2F	-2.13	105.04	108.27
2	C	301	R3F	C5T-C4T-N3T	2.13	108.31	105.33
2	A	302	R3F	C9-N3T-N2T	-2.12	116.53	120.78
2	C	302	R3F	C5C-C4C-N1C	2.12	124.33	121.39
2	C	301	R3F	O3F-C3F-C4F	2.09	115.31	110.38
2	B	302	R3F	C3A-C4A-C5A	2.08	122.94	120.30
2	A	301	R3F	C8-C9-N3T	2.07	115.92	111.61
2	A	301	R3F	O3F-C3F-C4F	2.04	115.19	110.38
2	A	301	R3F	C5C-C4C-N1C	2.04	124.22	121.39
2	C	302	R3F	C9-N3T-N2T	-2.01	116.74	120.78

There are no chirality outliers.

All (115) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	R3F	C6C-C1C-C4B-C2A
2	A	301	R3F	C3A-C2A-C4B-C1C
2	A	301	R3F	C3-C2-O1-C7P
2	A	302	R3F	C6C-C1C-C4B-C2A
2	A	302	R3F	C3A-C2A-C4B-C1C
2	A	302	R3F	C3-C2-O1-C7P
2	A	302	R3F	O7-C8-C9-N3T
2	B	301	R3F	C6C-C1C-C4B-C2A
2	B	301	R3F	C3A-C2A-C4B-C1C
2	B	301	R3F	C5T-C1-O1F-C1F
2	B	302	R3F	C6C-C1C-C4B-C2A
2	B	302	R3F	C3A-C2A-C4B-C1C
2	B	302	R3F	C3-C2-O1-C7P
2	C	301	R3F	C6C-C1C-C4B-C2A
2	C	301	R3F	C3A-C2A-C4B-C1C
2	C	302	R3F	C6C-C1C-C4B-C2A
2	C	302	R3F	C3A-C2A-C4B-C1C
3	B	304	GOL	C1-C2-C3-O3
3	B	304	GOL	O2-C2-C3-O3
3	C	305	GOL	O1-C1-C2-C3
3	C	305	GOL	C1-C2-C3-O3
3	C	305	GOL	O2-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
2	B	302	R3F	C1P-C7P-O1-C2
2	B	301	R3F	C3C-C4C-N1C-C23
2	A	302	R3F	C1P-C7P-O1-C2
2	A	302	R3F	O7P-C7P-O1-C2
2	B	302	R3F	O7P-C7P-O1-C2
2	B	301	R3F	C5C-C4C-N1C-C13
2	B	301	R3F	C5C-C4C-N1C-C23
2	B	301	R3F	C3C-C4C-N1C-C13
2	C	302	R3F	C1P-C7P-O1-C2
2	C	302	R3F	C6-C5-O4-C3
2	C	302	R3F	O7P-C7P-O1-C2
2	A	301	R3F	C1P-C7P-O1-C2
2	A	301	R3F	C5C-C4C-N1C-C23
2	A	301	R3F	C3C-C4C-N1C-C13
2	A	302	R3F	C3C-C4C-N1C-C23
2	A	301	R3F	C5C-C4C-N1C-C13
2	A	301	R3F	C3C-C4C-N1C-C23
2	A	302	R3F	C5C-C4C-N1C-C13
2	A	302	R3F	C5C-C4C-N1C-C23
2	A	301	R3F	O7P-C7P-O1-C2
2	A	302	R3F	C3C-C4C-N1C-C13
2	A	301	R3F	C22-C21-N1A-C11
2	A	302	R3F	C12-C11-N1A-C5A
2	B	302	R3F	O4-C5-C6-O7
2	A	301	R3F	O7-C8-C9-N3T
2	A	302	R3F	C4A-C5A-N1A-C21
2	A	302	R3F	C6A-C5A-N1A-C11
2	A	302	R3F	C6A-C5A-N1A-C21
2	A	302	R3F	C12-C11-N1A-C21
2	A	302	R3F	O4-C5-C6-O7
2	A	302	R3F	C24-C23-N1C-C4C
2	A	302	R3F	C4A-C5A-N1A-C11
2	A	302	R3F	C24-C23-N1C-C13
3	C	303	GOL	O1-C1-C2-C3
2	A	301	R3F	C22-C21-N1A-C5A
2	C	301	R3F	C3-C2-O1-C7P
2	C	301	R3F	C1P-C7P-O1-C2
2	B	301	R3F	C12-C11-N1A-C5A
2	C	301	R3F	O4-C5-C6-O7
2	A	302	R3F	C8-C9-N3T-C4T
3	B	305	GOL	C1-C2-C3-O3
2	B	301	R3F	C12-C11-N1A-C21

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Mol	Chain	Res	Type	Atoms
2	B	301	R3F	O1-C2-C3-O4
2	B	302	R3F	C14-C13-N1C-C4C
2	B	302	R3F	C14-C13-N1C-C23
2	C	302	R3F	C24-C23-N1C-C4C
2	B	301	R3F	O4-C5-C6-O7
2	B	301	R3F	C6-C5-O4-C3
3	C	305	GOL	O1-C1-C2-O2
2	B	301	R3F	C2-C3-O4-C5
2	C	301	R3F	C2-C3-O4-C5
3	C	304	GOL	C1-C2-C3-O3
2	B	302	R3F	O7-C8-C9-N3T
2	C	302	R3F	C9-C8-O7-C6
2	C	301	R3F	C22-C21-N1A-C5A
2	C	302	R3F	C5-C6-O7-C8
2	C	301	R3F	C9-C8-O7-C6
2	A	301	R3F	C6C-C1C-C4B-C2P
2	A	301	R3F	C3A-C2A-C4B-C2P
2	A	302	R3F	C6C-C1C-C4B-C2P
2	A	302	R3F	C3A-C2A-C4B-C2P
2	B	301	R3F	C6C-C1C-C4B-C2P
2	B	301	R3F	C3A-C2A-C4B-C2P
2	B	302	R3F	C6C-C1C-C4B-C2P
2	B	302	R3F	C3A-C2A-C4B-C2P
2	C	301	R3F	C6C-C1C-C4B-C2P
2	C	301	R3F	C3A-C2A-C4B-C2P
2	C	302	R3F	C6C-C1C-C4B-C2P
2	C	302	R3F	C3A-C2A-C4B-C2P
2	B	301	R3F	C8-C9-N3T-N2T
2	A	301	R3F	C8-C9-N3T-C4T
2	A	301	R3F	C8-C9-N3T-N2T
2	A	302	R3F	C8-C9-N3T-N2T
2	C	301	R3F	C22-C21-N1A-C11
2	A	301	R3F	C1P-C2P-C4B-C1C
2	B	301	R3F	C1P-C2P-C4B-C1C
2	C	301	R3F	C1P-C2P-C4B-C2A
2	C	302	R3F	C1P-C2P-C4B-C1C
2	C	302	R3F	C2-C3-O4-C5
2	B	301	R3F	C8-C9-N3T-C4T
2	A	301	R3F	C5T-C1-O1F-C1F
2	C	302	R3F	C5T-C1-O1F-C1F
3	C	303	GOL	O1-C1-C2-O2
2	B	301	R3F	C6A-C5A-N1A-C11

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Mol	Chain	Res	Type	Atoms
2	B	301	R3F	C3P-C2P-C4B-C1C
2	B	301	R3F	C3P-C2P-C4B-C2A
2	B	302	R3F	C3P-C2P-C4B-C1C
2	B	302	R3F	C3P-C2P-C4B-C2A
2	C	301	R3F	C3P-C2P-C4B-C2A
2	C	302	R3F	O4-C5-C6-O7
2	B	302	R3F	O1F-C1-C5T-N1T
2	A	301	R3F	C24-C23-N1C-C4C
2	A	301	R3F	C6P-C1P-C7P-O1

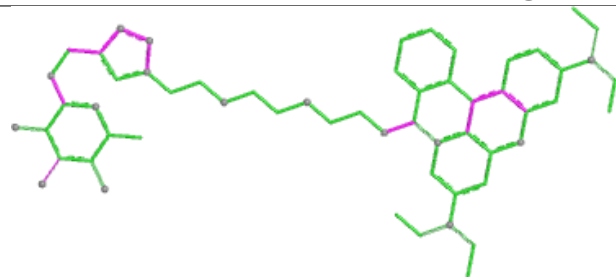
There are no ring outliers.

6 monomers are involved in 17 short contacts:

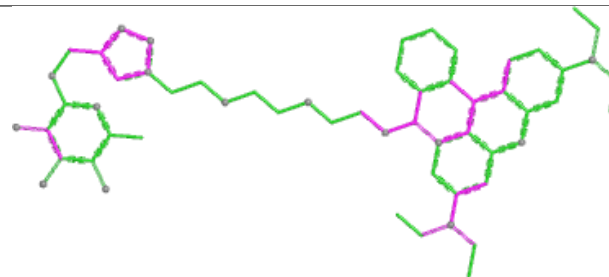
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	301	R3F	3	0
2	C	302	R3F	1	0
2	A	302	R3F	6	0
3	B	304	GOL	5	0
2	A	301	R3F	1	0
2	C	301	R3F	1	0

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

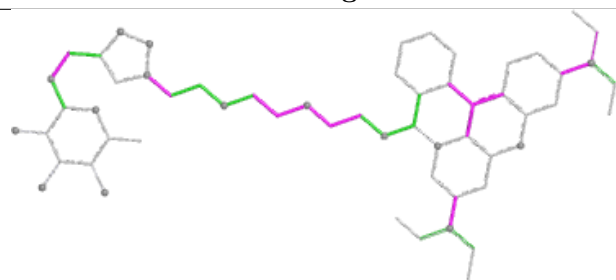
## Ligand R3F B 301



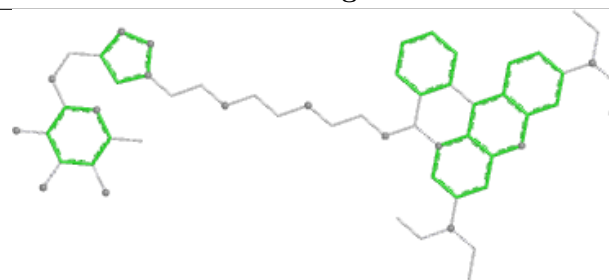
Bond lengths



Bond angles



Torsions



Rings

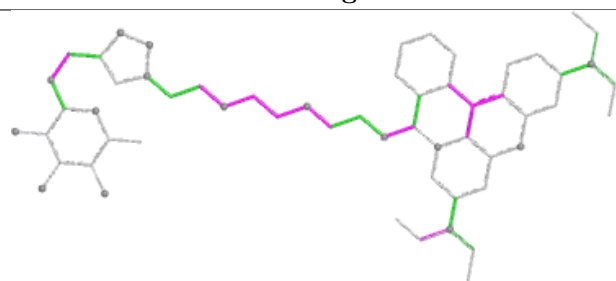
## Ligand R3F C 302



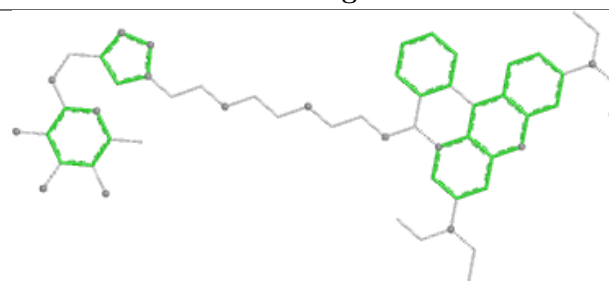
Bond lengths



Bond angles

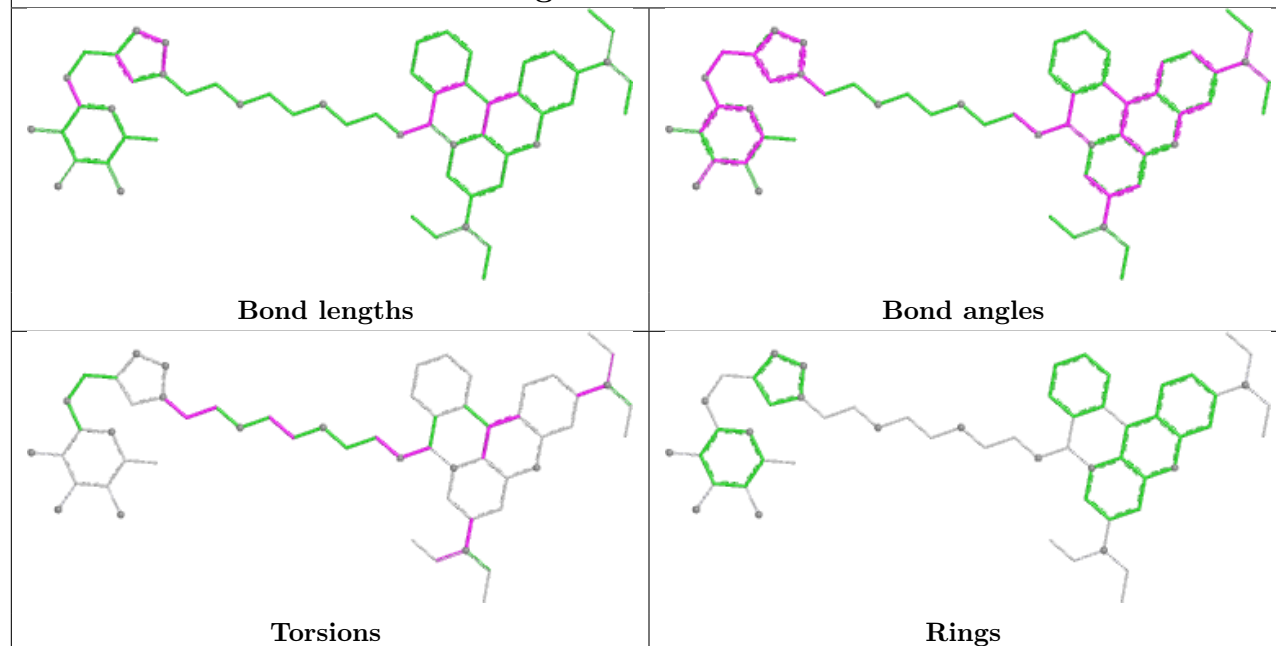


Torsions

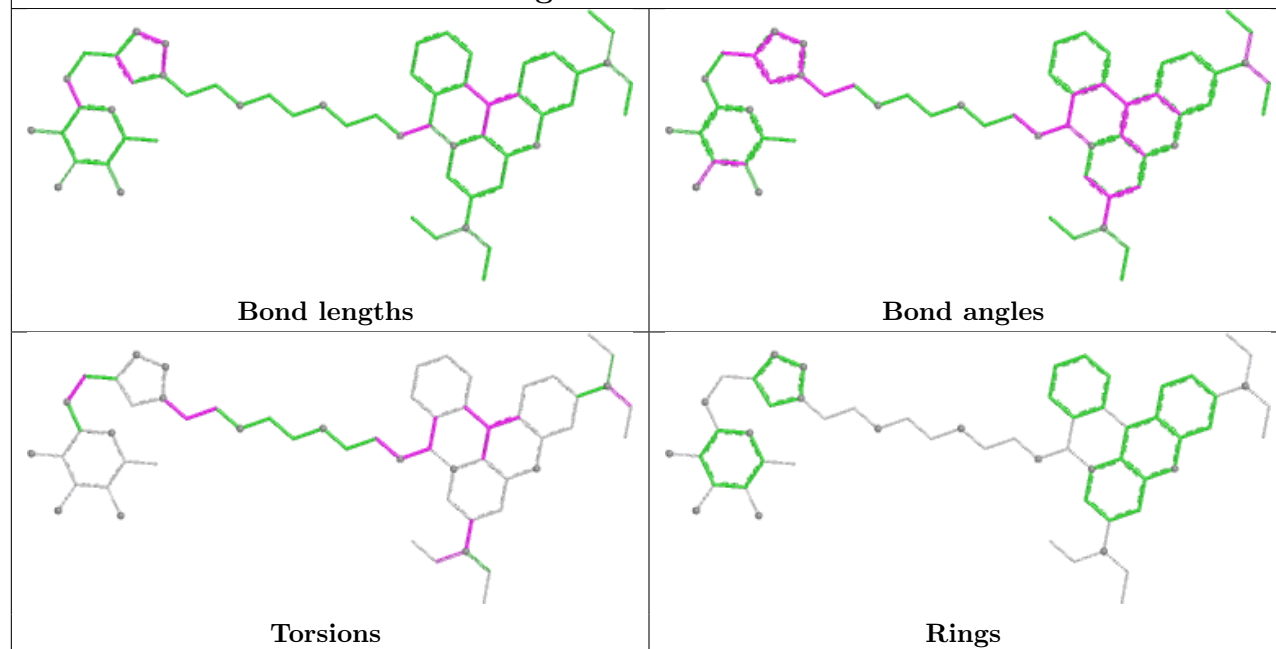


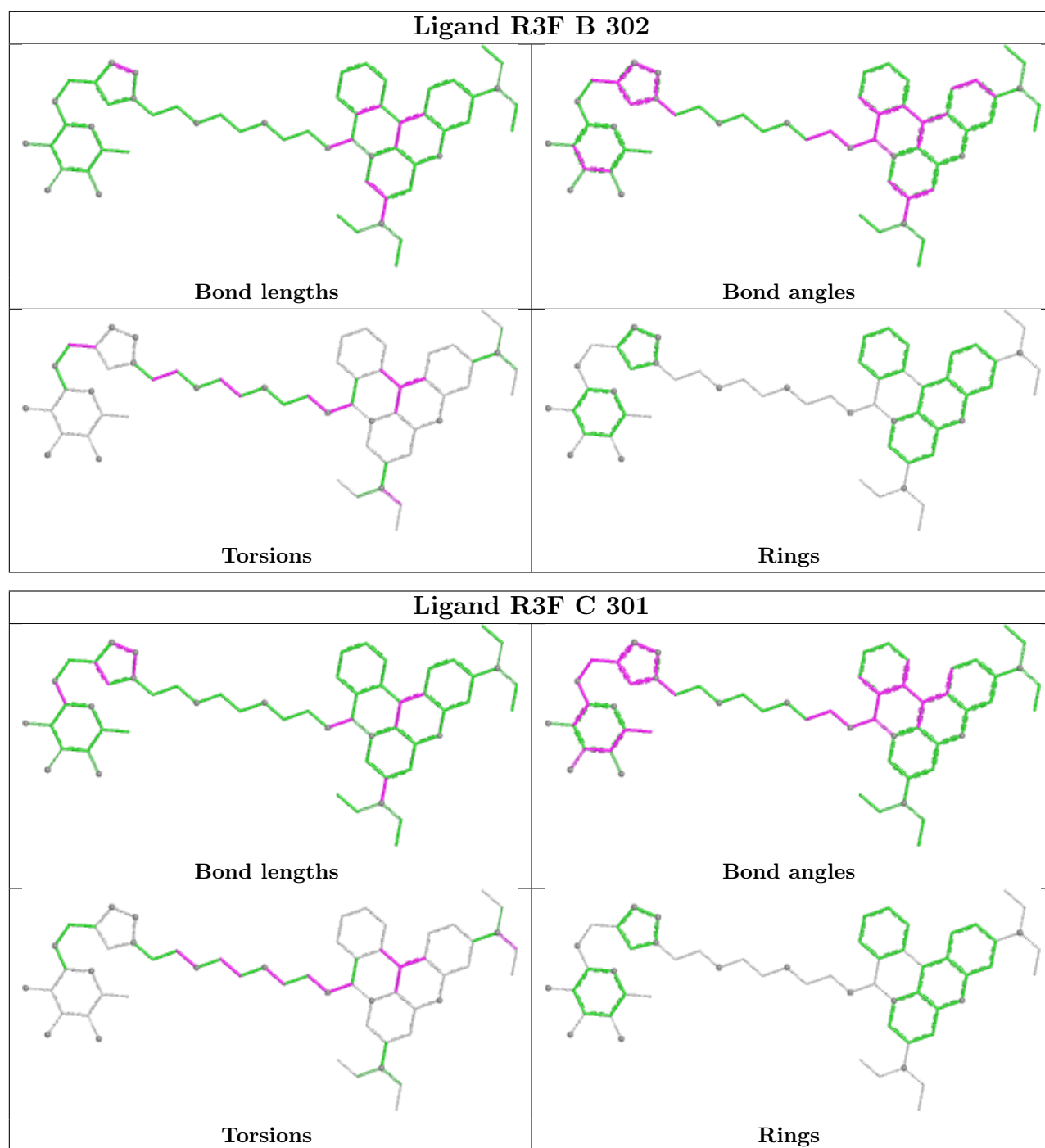
Rings

## Ligand R3F A 302



## Ligand R3F A 301





## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	271/272 (99%)	0.71	22 (8%) 18 19	9, 18, 32, 47	1 (0%)
1	B	270/272 (99%)	0.90	35 (12%) 7 7	11, 19, 38, 47	1 (0%)
1	C	267/272 (98%)	1.25	58 (21%) 2 2	10, 23, 40, 54	0
All	All	808/816 (99%)	0.95	115 (14%) 6 6	9, 20, 38, 54	2 (0%)

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	91	VAL	6.7
1	C	92	PRO	6.7
1	B	182	VAL	6.2
1	C	182	VAL	6.1
1	C	104	VAL	4.8
1	A	271	THR	4.4
1	C	68	GLY	4.4
1	C	271	THR	4.3
1	C	103	THR	4.3
1	A	182	VAL	4.2
1	B	159	GLY	4.1
1	C	89	SER	4.0
1	C	183	PRO	3.9
1	B	180	SER	3.9
1	C	34	LYS	3.8
1	C	180	SER	3.8
1	B	183	PRO	3.6
1	A	179	SER	3.6
1	A	183	PRO	3.5
1	C	160	THR	3.5
1	A	180	SER	3.5
1	B	160	THR	3.5
1	B	168	ASP	3.4

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Mol	Chain	Res	Type	RSRZ
1	B	34	LYS	3.4
1	C	146	VAL	3.4
1	B	149	ALA	3.3
1	C	184	GLY	3.3
1	B	146	VAL	3.3
1	C	270	ALA	3.3
1	B	184	GLY	3.2
1	C	237	VAL	3.2
1	C	159	GLY	3.1
1	C	69	THR	3.1
1	A	181	THR	3.0
1	B	13	VAL	3.0
1	C	148	SER	2.9
1	C	138	ASN	2.9
1	C	241	ILE	2.9
1	C	31	TRP	2.9
1	C	125	LYS	2.9
1	A	1	SER	2.9
1	B	271	THR	2.8
1	C	94	ASP	2.8
1	C	238	GLY	2.8
1	C	261	ASN	2.8
1	B	1	SER	2.8
1	B	216	LYS	2.8
1	A	25	LYS	2.7
1	B	147	GLY	2.7
1	B	125	LYS	2.6
1	C	165	TRP	2.6
1	C	40	ALA	2.6
1	C	260	GLY	2.6
1	C	263	TRP	2.6
1	C	169	GLY	2.5
1	C	67	THR	2.5
1	C	239	SER	2.5
1	A	146	VAL	2.5
1	B	270	ALA	2.5
1	B	33	GLY	2.5
1	B	161	THR	2.5
1	C	236	LEU	2.5
1	A	270	ALA	2.5
1	C	70	THR	2.5
1	C	161	THR	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	170	ASN	2.5
1	C	222	ALA	2.4
1	A	160	THR	2.4
1	B	103	THR	2.4
1	C	147	GLY	2.4
1	B	57	SER	2.4
1	C	47	ASN	2.4
1	C	195	VAL	2.4
1	B	12	THR	2.4
1	A	34	LYS	2.4
1	A	125	LYS	2.4
1	A	216	LYS	2.4
1	C	78	GLY	2.3
1	C	216	LYS	2.3
1	A	170	ASN	2.3
1	B	236	LEU	2.3
1	A	184	GLY	2.3
1	B	169	GLY	2.3
1	B	104	VAL	2.3
1	C	82	THR	2.2
1	B	145	LEU	2.2
1	C	145	LEU	2.2
1	A	33	GLY	2.2
1	B	170	ASN	2.2
1	A	57	SER	2.2
1	B	240	ALA	2.2
1	C	240	ALA	2.2
1	A	74	TRP	2.2
1	C	41	PHE	2.2
1	C	38	THR	2.2
1	A	2	SER	2.2
1	C	57	SER	2.2
1	B	237	VAL	2.1
1	B	239	SER	2.1
1	B	195	VAL	2.1
1	C	58	ALA	2.1
1	B	261	ASN	2.1
1	A	103	THR	2.1
1	C	269	THR	2.1
1	C	33	GLY	2.1
1	B	55	VAL	2.1
1	C	79	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	4	GLN	2.1
1	B	89	SER	2.1
1	C	37	TYR	2.1
1	B	215	GLY	2.0
1	A	13	VAL	2.0
1	C	253	THR	2.0
1	C	81	TRP	2.0
1	C	149	ALA	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
2	R3F	A	302	58/58	0.75	0.34	16,114,139,141	0
2	R3F	A	301	58/58	0.76	0.30	15,110,128,129	0
2	R3F	B	302	58/58	0.79	0.23	19,60,71,74	0
2	R3F	C	302	58/58	0.79	0.22	20,59,62,66	0
3	GOL	B	304	6/6	0.79	0.14	21,23,23,28	0
3	GOL	C	305	6/6	0.80	0.15	28,30,31,32	0
2	R3F	B	301	58/58	0.81	0.18	20,46,55,59	0
3	GOL	C	306	6/6	0.81	0.14	32,32,34,35	0
2	R3F	C	301	58/58	0.82	0.17	21,45,56,57	0
3	GOL	B	306	6/6	0.88	0.10	18,20,20,21	0
3	GOL	C	304	6/6	0.89	0.10	17,18,19,21	0
3	GOL	B	305	6/6	0.89	0.10	18,19,19,19	0
3	GOL	C	303	6/6	0.89	0.11	18,21,21,25	0
3	GOL	A	305	6/6	0.90	0.10	21,22,23,23	0
3	GOL	B	303	6/6	0.91	0.09	18,19,20,20	0

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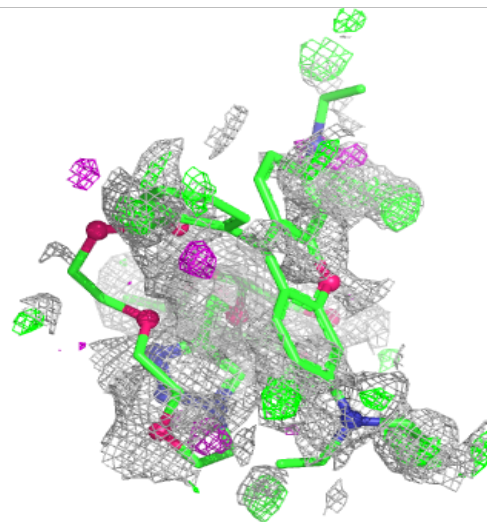
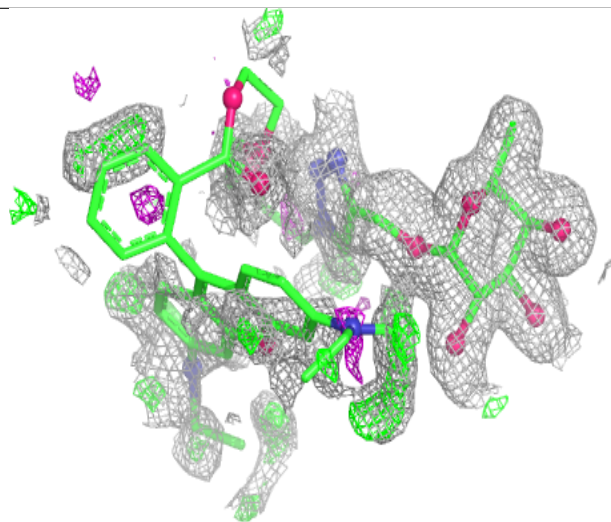
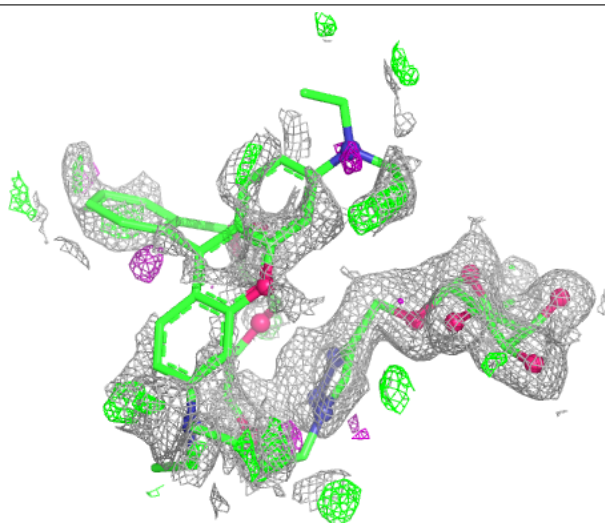
*Continued from previous page...*

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	GOL	A	306	6/6	0.92	0.09	18,18,20,21	0
3	GOL	A	304	6/6	0.94	0.07	12,12,13,14	0
3	GOL	A	303	6/6	0.95	0.07	14,14,15,15	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.

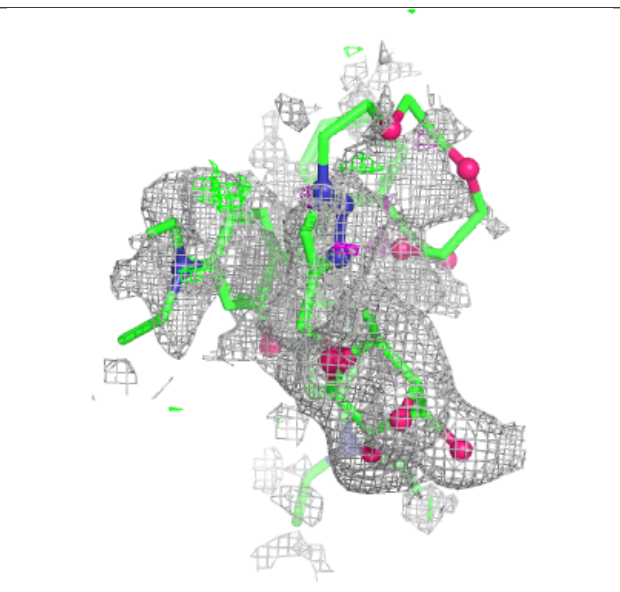
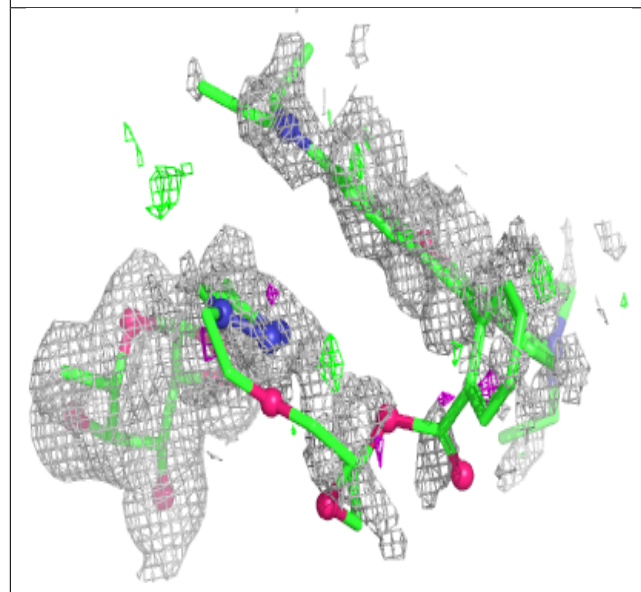
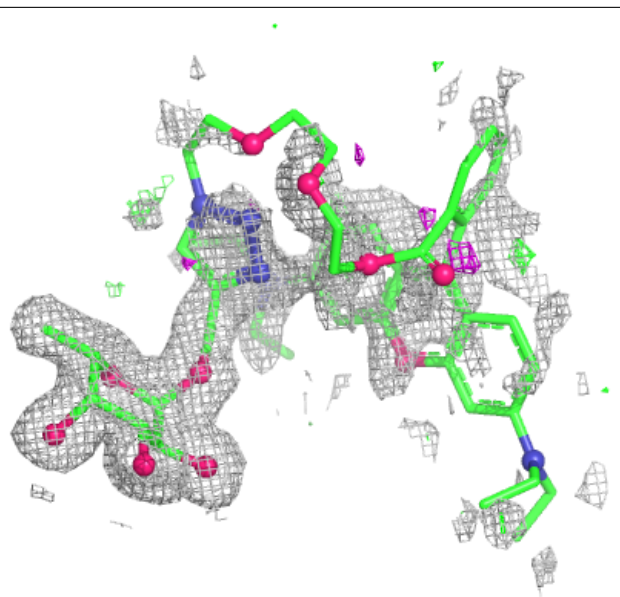
**Electron density around R3F A 302:**

2mF<sub>o</sub>-DF<sub>c</sub> (at 0.7 rmsd) in gray  
mF<sub>o</sub>-DF<sub>c</sub> (at 3 rmsd) in purple (negative)  
and green (positive)



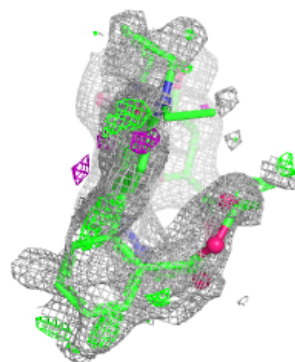
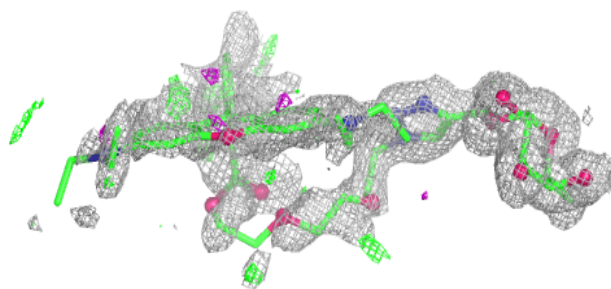
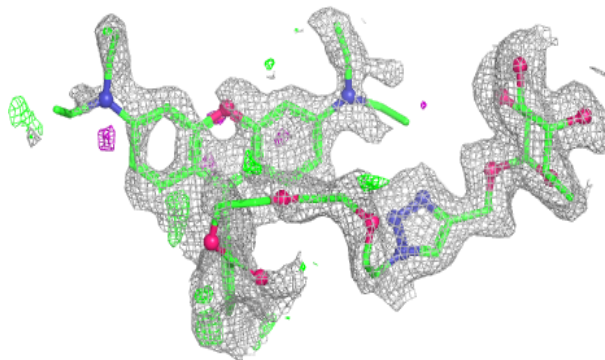
**Electron density around R3F A 301:**

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

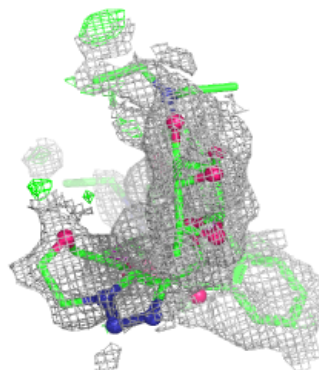
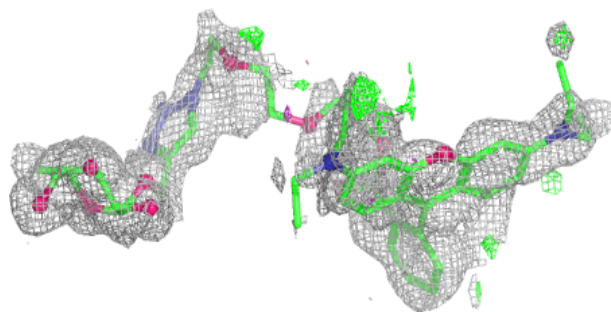
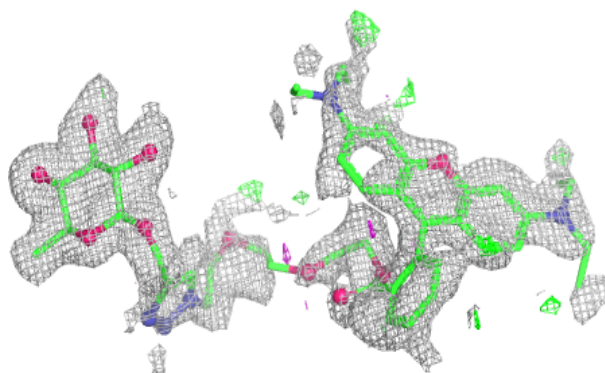


**Electron density around R3F B 302:**

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

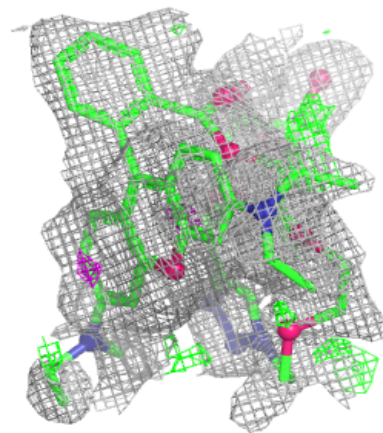
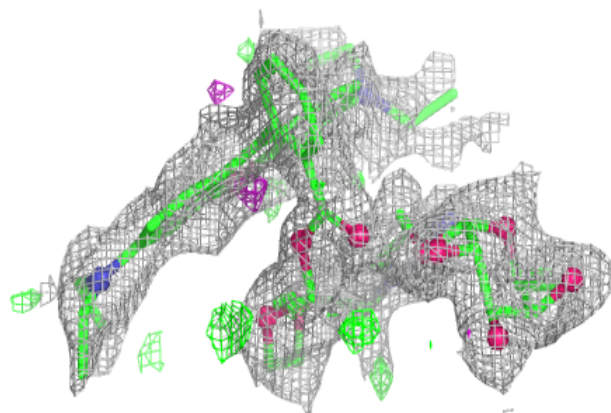
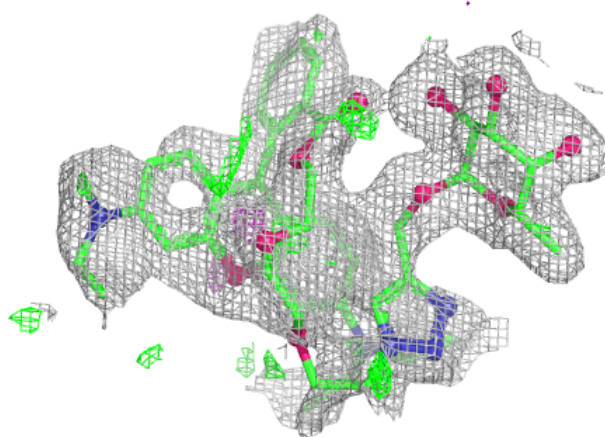
**Electron density around R3F C 302:**

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



**Electron density around R3F B 301:**

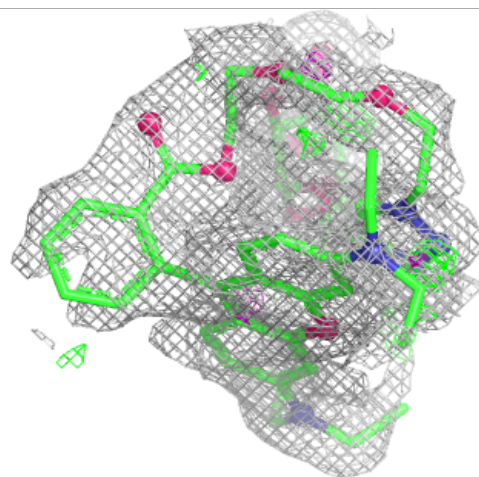
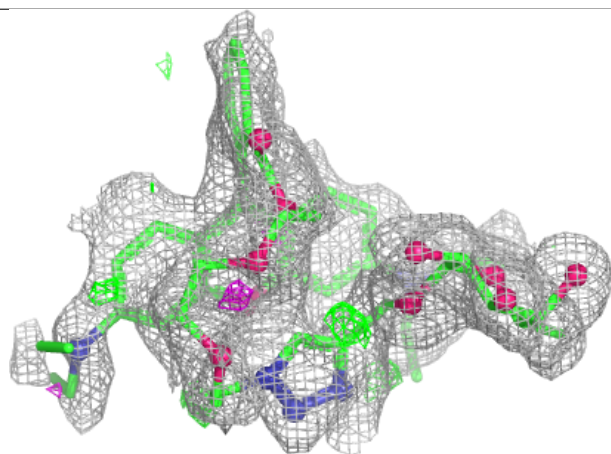
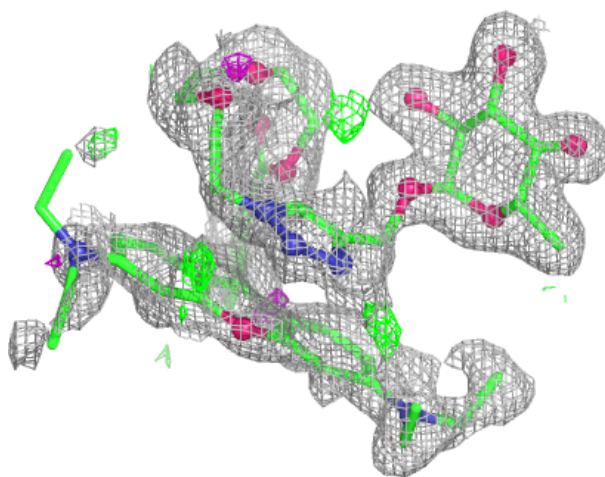
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





**Electron density around R3F C 301:**

$2mF_o-DF_c$  (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.