



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 3, 2024 – 06:16 am GMT

PDB ID : 5L5Y  
Title : Yeast 20S proteasome with human beta5c (1-138) and human beta6 (97-111; 118-133) in complex with carfilzomib  
Authors : Groll, M.; Huber, E.M.  
Deposited on : 2016-05-28  
Resolution : 2.70 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 : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
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) : 2.36

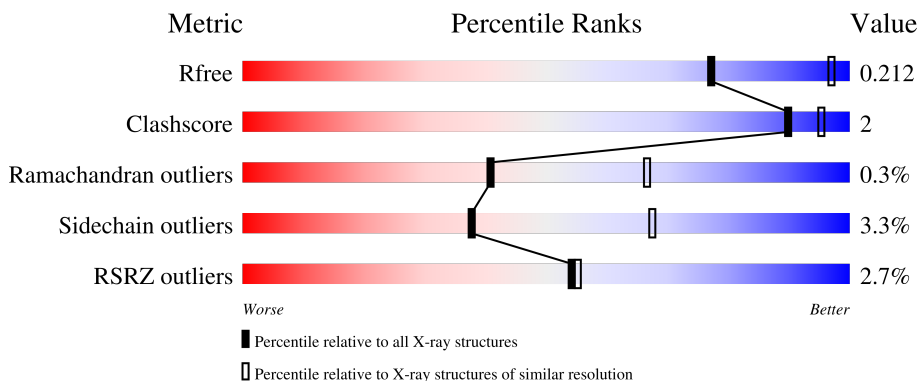
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	250	 3% 98% 5% 5%
1	O	250	 4% 98% 5% 5%
2	B	258	 3% 88% 5% 5%
2	P	258	 5% 90% 5% 5%
3	C	254	 7% 87% 7% 6%

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Mol	Chain	Length	Quality of chain
3	Q	254	8% 87% 7% • 6%
4	D	260	% 87% • 10%
4	R	260	3% 87% • 10%
5	E	234	2% 95% • •
5	S	234	3% 95% • •
6	F	288	3% 83% • 16%
6	T	288	3% 82% • 16%
7	G	252	3% 91% 5% •
7	U	252	2% 90% 5% •
8	H	232	2% 91% 6% •
8	V	232	2% 91% 6% •
9	I	205	94% 6%
9	W	205	% 94% 6%
10	J	198	2% 91% 6% • •
10	X	198	2% 91% 6% • •
11	K	211	% 82% 14% • •
11	Y	211	83% 13% • •
12	L	222	2% 91% 9% •
12	Z	222	3% 91% 8% •
13	M	246	90% • 5%
13	a	246	92% • 5%
14	N	196	% 92% 6% •
14	b	196	% 96% •

## 2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 50136 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 Proteasome subunit alpha type-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	250	Total	C	N	O	S	0	0	0
			1915	1219	315	377	4			
1	O	250	Total	C	N	O	S	0	0	0
			1915	1219	315	377	4			

- Molecule 2 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	244	Total	C	N	O	S	0	0	0
			1904	1201	321	379	3			
2	P	244	Total	C	N	O	S	0	0	0
			1904	1201	321	379	3			

- Molecule 3 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	240	Total	C	N	O	S	0	0	0
			1881	1176	329	372	4			
3	Q	240	Total	C	N	O	S	0	0	0
			1881	1176	329	372	4			

- Molecule 4 is a protein called Proteasome subunit alpha type-5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	235	Total	C	N	O	S	0	0	0
			1813	1136	304	366	7			
4	R	235	Total	C	N	O	S	0	0	0
			1813	1136	304	366	7			

- Molecule 5 is a protein called Proteasome subunit alpha type-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	231	Total	C	N	O	S	0	0	0
			1773	1114	307	348	4			
5	S	231	Total	C	N	O	S	0	0	0
			1773	1114	307	348	4			

- Molecule 6 is a protein called Probable proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	243	Total	C	N	O	S	0	0	0
			1892	1203	329	356	4			
6	T	243	Total	C	N	O	S	0	0	0
			1892	1203	329	356	4			

- Molecule 7 is a protein called Proteasome subunit alpha type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	241	Total	C	N	O	S	0	0	0
			1907	1214	320	365	8			
7	U	241	Total	C	N	O	S	0	0	0
			1907	1214	320	365	8			

- Molecule 8 is a protein called Proteasome subunit beta type-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	226	Total	C	N	O	S	0	0	0
			1719	1082	298	332	7			
8	V	226	Total	C	N	O	S	0	0	0
			1719	1082	298	332	7			

- Molecule 9 is a protein called Proteasome subunit beta type-3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	I	204	Total	C	N	O	S	0	0	0
			1581	1010	258	305	8			
9	W	204	Total	C	N	O	S	0	0	0
			1581	1010	258	305	8			

- Molecule 10 is a protein called Proteasome subunit beta type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	195	Total	C	N	O	S	0	0	0
			1561	992	264	299	6			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	X	195	1561	992	264	299	6	0	0	0

- Molecule 11 is a protein called Proteasome subunit beta type-5, Proteasome subunit beta type-5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	211	1632	1036	282	306	8	0	0	0
11	Y	211	1632	1036	282	306	8	0	0	0

- Molecule 12 is a protein called Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	222	1764	1119	305	336	4	0	0	0
12	Z	222	1764	1119	305	336	4	0	0	0

- Molecule 13 is a protein called Proteasome subunit beta type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	233	1824	1154	312	351	7	0	0	0
13	a	233	1835	1160	316	352	7	0	1	0

- Molecule 14 is a protein called Proteasome subunit beta type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	196	1512	955	250	300	7	0	0	0
14	b	196	1512	955	250	300	7	0	0	0

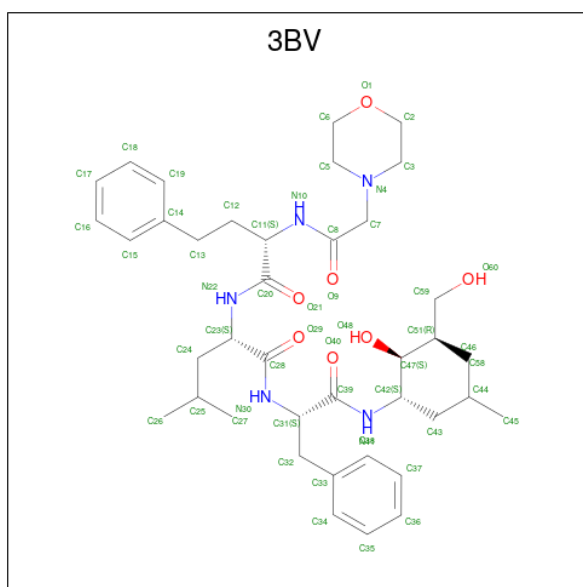
- Molecule 15 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	G	1	Total Mg 1 1	0	0
15	I	2	Total Mg 2 2	0	0
15	J	1	Total Mg 1 1	0	0
15	K	2	Total Mg 2 2	0	0
15	L	1	Total Mg 1 1	0	0
15	N	1	Total Mg 1 1	0	0
15	Z	1	Total Mg 1 1	0	0
15	b	1	Total Mg 1 1	0	0

- Molecule 16 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
16	G	1	Total Cl 1 1	0	0
16	N	1	Total Cl 1 1	0	0
16	U	1	Total Cl 1 1	0	0
16	b	1	Total Cl 1 1	0	0

- Molecule 17 is N-{(2S)-2-[(morpholin-4-ylacetyl)amino]-4-phenylbutanoyl}-L-leucyl-N-[(2R,3S,4S)-1,3-dihydroxy-2,6-dimethylheptan-4-yl]-L-phenylalaninamide (three-letter code: 3BV) (formula: C<sub>40</sub>H<sub>61</sub>N<sub>5</sub>O<sub>7</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
17	H	1	Total	C	N	O	0	0
			52	40	5	7		
17	K	1	Total	C	N	O	0	0
			52	40	5	7		
17	N	1	Total	C	N	O	0	0
			52	40	5	7		
17	V	1	Total	C	N	O	0	0
			52	40	5	7		
17	Y	1	Total	C	N	O	0	0
			52	40	5	7		
17	b	1	Total	C	N	O	0	0
			52	40	5	7		

- Molecule 18 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: C<sub>6</sub>H<sub>13</sub>NO<sub>4</sub>S).





Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	N	O	S			
18	H	1	Total	12	6	1	4	1	0	0
18	K	1	Total	12	6	1	4	1	0	0
18	V	1	Total	12	6	1	4	1	0	0
18	X	1	Total	12	6	1	4	1	0	0

- Molecule 19 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
19	A	14	Total	14	0	0
19	B	14	Total	14	0	0
19	C	8	Total	8	0	0
19	D	11	Total	11	0	0
19	E	5	Total	5	0	0
19	F	8	Total	8	0	0
19	G	15	Total	15	0	0
19	H	26	Total	26	0	0

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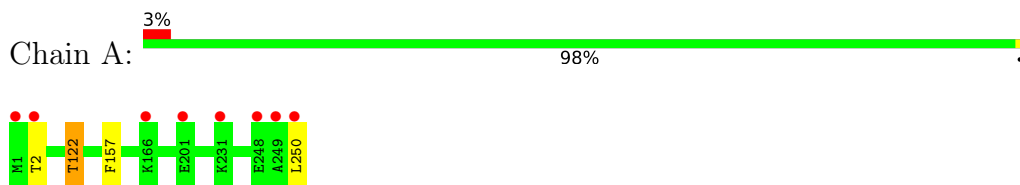
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	I	13	Total O 13 13	0	0
19	J	11	Total O 11 11	0	0
19	K	9	Total O 9 9	0	0
19	L	16	Total O 16 16	0	0
19	M	29	Total O 29 29	0	0
19	N	20	Total O 20 20	0	0
19	O	17	Total O 17 17	0	0
19	P	11	Total O 11 11	0	0
19	Q	9	Total O 9 9	0	0
19	R	4	Total O 4 4	0	0
19	S	10	Total O 10 10	0	0
19	T	12	Total O 12 12	0	0
19	U	15	Total O 15 15	0	0
19	V	25	Total O 25 25	0	0
19	W	17	Total O 17 17	0	0
19	X	13	Total O 13 13	0	0
19	Y	9	Total O 9 9	0	0
19	Z	13	Total O 13 13	0	0
19	a	28	Total O 28 28	0	0
19	b	13	Total O 13 13	0	0

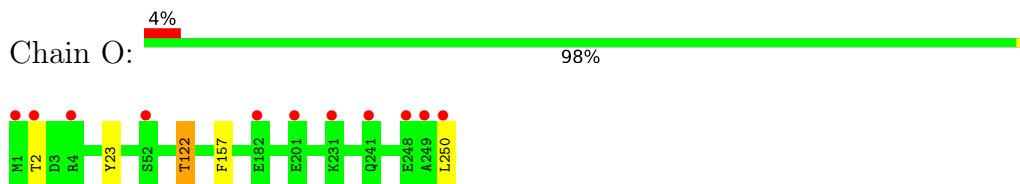
### 3 Residue-property plots i

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.

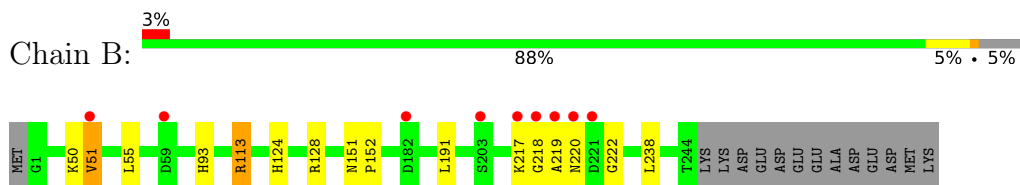
- Molecule 1: Proteasome subunit alpha type-2



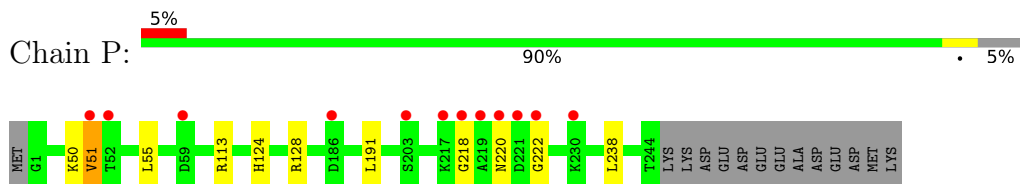
- Molecule 1: Proteasome subunit alpha type-2



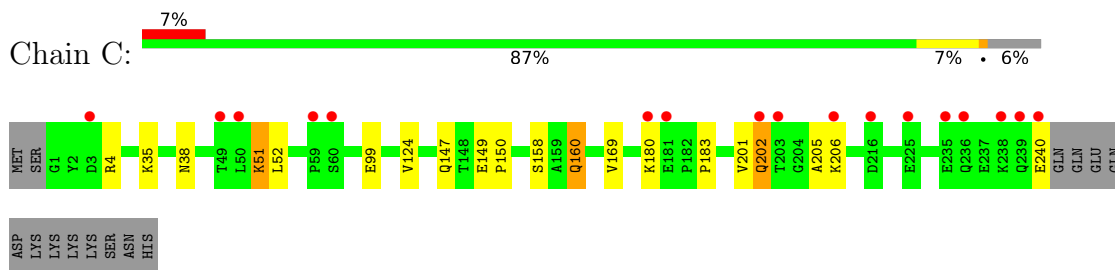
- Molecule 2: Proteasome subunit alpha type-3



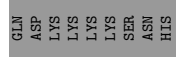
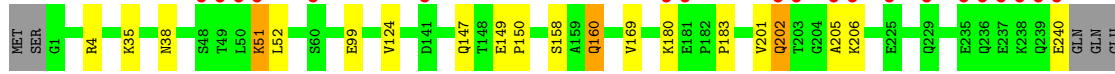
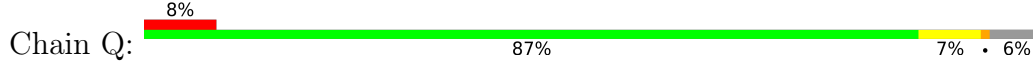
- Molecule 2: Proteasome subunit alpha type-3



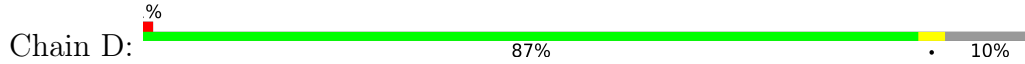
- Molecule 3: Proteasome subunit alpha type-4



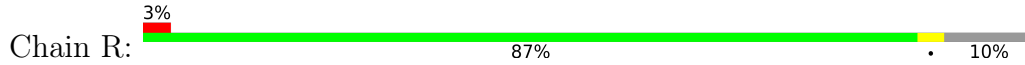
• Molecule 3: Proteasome subunit alpha type-4



• Molecule 4: Proteasome subunit alpha type-5



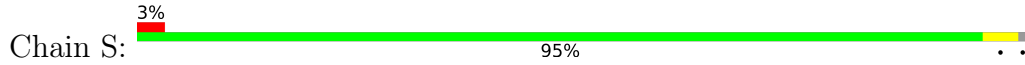
• Molecule 4: Proteasome subunit alpha type-5



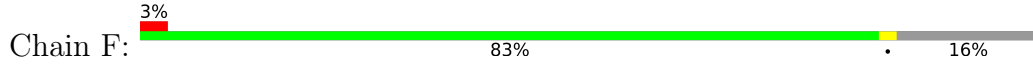
• Molecule 5: Proteasome subunit alpha type-6



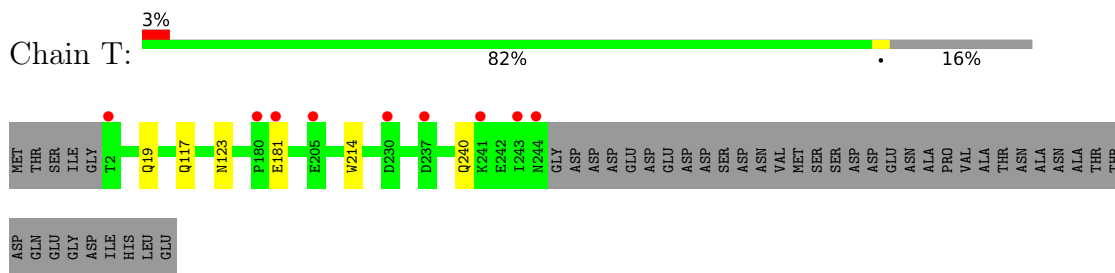
• Molecule 5: Proteasome subunit alpha type-6



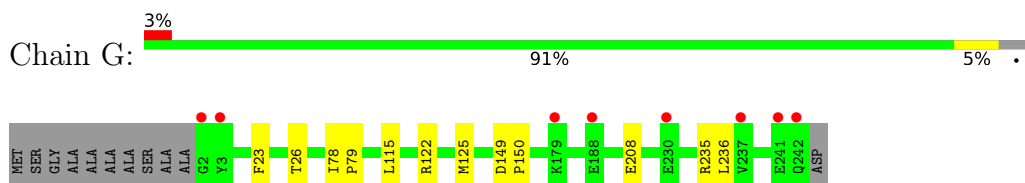
• Molecule 6: Probable proteasome subunit alpha type-7



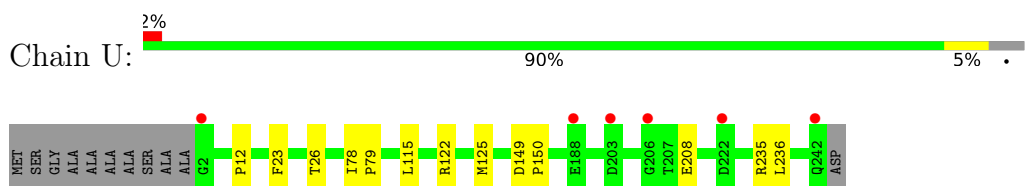
• Molecule 6: Probable proteasome subunit alpha type-7



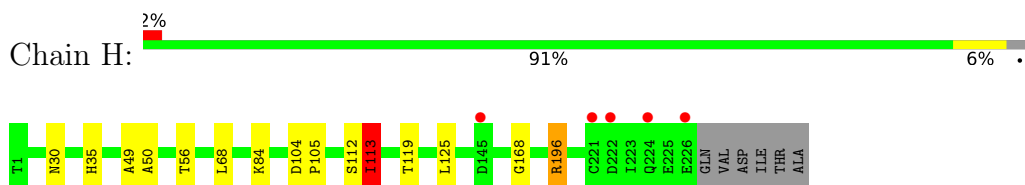
• Molecule 7: Proteasome subunit alpha type-1



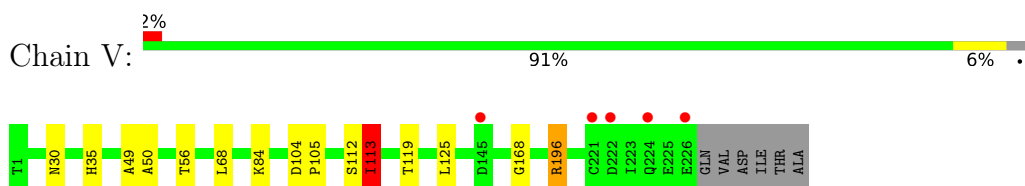
• Molecule 7: Proteasome subunit alpha type-1



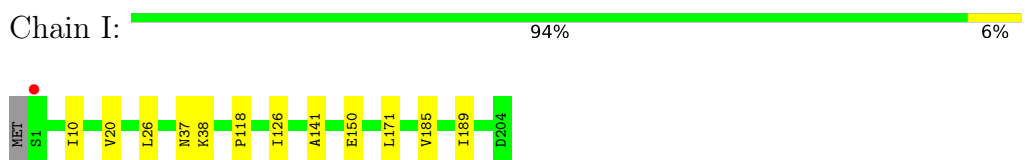
• Molecule 8: Proteasome subunit beta type-2



• Molecule 8: Proteasome subunit beta type-2



• Molecule 9: Proteasome subunit beta type-3

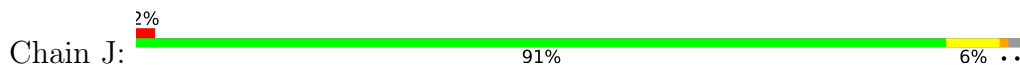


• Molecule 9: Proteasome subunit beta type-3

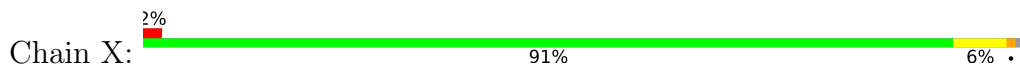




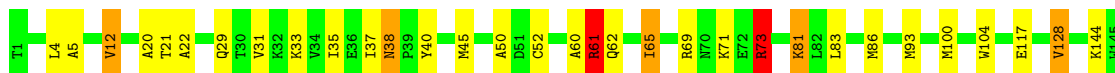
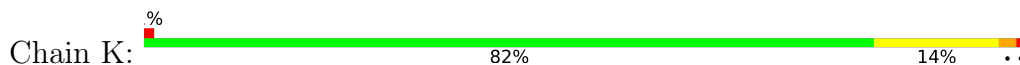
- Molecule 10: Proteasome subunit beta type-4



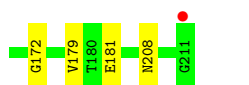
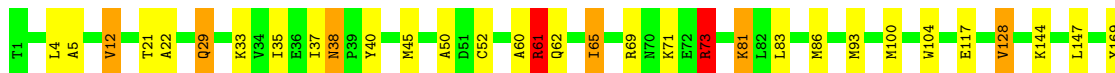
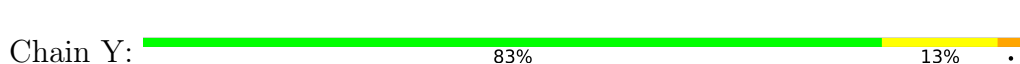
- Molecule 10: Proteasome subunit beta type-4



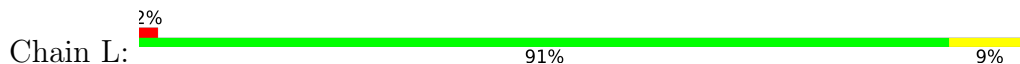
- Molecule 11: Proteasome subunit beta type-5, Proteasome subunit beta type-5



- Molecule 11: Proteasome subunit beta type-5, Proteasome subunit beta type-5



- Molecule 12: Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6



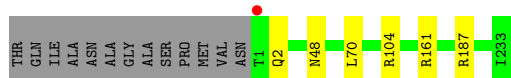
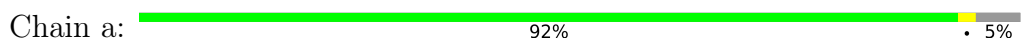
- Molecule 12: Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6, Proteasome subunit beta type-1, Proteasome subunit beta type-6



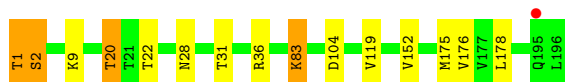
- Molecule 13: Proteasome subunit beta type-7



- Molecule 13: Proteasome subunit beta type-7



- Molecule 14: Proteasome subunit beta type-1



- Molecule 14: Proteasome subunit beta type-1



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	135.97Å 299.89Å 145.57Å 90.00° 112.57° 90.00°	Depositor
Resolution (Å)	15.00 – 2.70 15.00 – 2.70	Depositor EDS
% Data completeness (in resolution range)	97.3 (15.00-2.70) 97.4 (15.00-2.70)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.51 (at 2.69Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, $R_{free}$	0.186 , 0.207 0.190 , 0.212	Depositor DCC
$R_{free}$ test set	14205 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	55.0	Xtrriage
Anisotropy	0.091	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 34.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	50136	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	61.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.01% of the height of the origin peak. No significant pseudotranslation is detected.*

<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 i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: CL, 3BV, MES, MG

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	0.27	0/1952	0.46	0/2642
1	O	0.27	0/1952	0.46	0/2642
2	B	0.27	0/1934	0.49	0/2618
2	P	0.27	0/1934	0.49	0/2618
3	C	0.27	0/1910	0.50	0/2586
3	Q	0.27	0/1910	0.50	0/2586
4	D	0.27	0/1837	0.47	0/2475
4	R	0.26	0/1837	0.46	0/2475
5	E	0.27	0/1800	0.46	0/2433
5	S	0.27	0/1800	0.46	0/2433
6	F	0.27	0/1932	0.45	0/2609
6	T	0.27	0/1932	0.45	0/2609
7	G	0.27	0/1945	0.46	0/2634
7	U	0.27	0/1945	0.46	0/2634
8	H	0.26	0/1750	0.51	1/2373 (0.0%)
8	V	0.26	0/1750	0.51	1/2373 (0.0%)
9	I	0.27	0/1611	0.52	0/2174
9	W	0.27	0/1611	0.52	0/2174
10	J	0.27	0/1589	0.74	3/2142 (0.1%)
10	X	0.27	0/1589	0.75	3/2142 (0.1%)
11	K	0.39	1/1668 (0.1%)	0.94	6/2253 (0.3%)
11	Y	0.42	1/1668 (0.1%)	0.94	6/2253 (0.3%)
12	L	0.29	0/1802	0.54	1/2430 (0.0%)
12	Z	0.29	0/1802	0.54	0/2430
13	M	0.27	0/1855	0.52	0/2514
13	a	0.26	0/1866	0.52	0/2528
14	N	0.29	0/1541	0.52	1/2087 (0.0%)
14	b	0.27	0/1541	0.52	1/2087 (0.0%)
All	All	0.28	2/50263 (0.0%)	0.55	23/67954 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	Y	73	ARG	CZ-NH2	-11.49	1.18	1.33
11	K	73	ARG	CZ-NH2	-10.96	1.18	1.33

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	Y	73	ARG	NE-CZ-NH1	20.60	130.60	120.30
11	K	73	ARG	NE-CZ-NH1	19.99	130.30	120.30
11	K	61	ARG	NE-CZ-NH2	-19.50	110.55	120.30
10	X	23	ARG	NE-CZ-NH2	-19.14	110.73	120.30
11	Y	61	ARG	NE-CZ-NH1	-18.29	111.16	120.30
10	J	23	ARG	NE-CZ-NH1	-18.09	111.25	120.30
11	K	61	ARG	NE-CZ-NH1	17.41	129.00	120.30
10	J	23	ARG	NE-CZ-NH2	16.84	128.72	120.30
10	X	23	ARG	NE-CZ-NH1	16.73	128.67	120.30
11	Y	61	ARG	NE-CZ-NH2	16.72	128.66	120.30
11	Y	73	ARG	NE-CZ-NH2	-10.58	115.01	120.30
11	K	73	ARG	NE-CZ-NH2	-10.37	115.12	120.30
11	Y	61	ARG	CD-NE-CZ	8.45	135.42	123.60
11	K	61	ARG	CD-NE-CZ	8.29	135.20	123.60
11	Y	73	ARG	CG-CD-NE	8.28	129.19	111.80
10	J	23	ARG	CD-NE-CZ	7.41	133.97	123.60
10	X	23	ARG	CD-NE-CZ	7.16	133.62	123.60
11	K	73	ARG	CG-CD-NE	7.05	126.61	111.80
8	V	113	ILE	CG1-CB-CG2	-6.70	96.67	111.40
8	H	113	ILE	CG1-CB-CG2	-6.61	96.86	111.40
14	b	1	THR	N-CA-C	6.56	128.70	111.00
14	N	1	THR	N-CA-C	6.30	128.02	111.00
12	L	56	GLY	N-CA-C	-5.01	100.57	113.10

There are no chirality outliers.

There are no planarity outliers.

## 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	1915	0	1929	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	O	1915	0	1929	2	0
2	B	1904	0	1904	7	0
2	P	1904	0	1904	4	0
3	C	1881	0	1895	9	0
3	Q	1881	0	1895	8	0
4	D	1813	0	1797	3	0
4	R	1813	0	1797	2	0
5	E	1773	0	1775	1	0
5	S	1773	0	1775	2	0
6	F	1892	0	1883	0	0
6	T	1892	0	1883	1	0
7	G	1907	0	1901	3	0
7	U	1907	0	1901	4	0
8	H	1719	0	1716	12	0
8	V	1719	0	1716	11	0
9	I	1581	0	1574	8	0
9	W	1581	0	1574	8	0
10	J	1561	0	1569	9	0
10	X	1561	0	1569	9	0
11	K	1632	0	1591	25	0
11	Y	1632	0	1591	26	0
12	L	1764	0	1716	7	0
12	Z	1764	0	1716	8	0
13	M	1824	0	1832	4	0
13	a	1835	0	1844	0	0
14	N	1512	0	1478	8	0
14	b	1512	0	1478	0	0
15	G	1	0	0	0	0
15	I	2	0	0	0	0
15	J	1	0	0	0	0
15	K	2	0	0	0	0
15	L	1	0	0	0	0
15	N	1	0	0	0	0
15	Z	1	0	0	0	0
15	b	1	0	0	0	0
16	G	1	0	0	0	0
16	N	1	0	0	0	0
16	U	1	0	0	0	0
16	b	1	0	0	0	0
17	H	52	0	59	2	0
17	K	52	0	59	3	0
17	N	52	0	59	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
17	V	52	0	59	2	0
17	Y	52	0	59	4	0
17	b	52	0	59	0	0
18	H	12	0	13	0	0
18	K	12	0	13	0	0
18	V	12	0	13	0	0
18	X	12	0	13	1	0
19	A	14	0	0	0	0
19	B	14	0	0	2	0
19	C	8	0	0	0	0
19	D	11	0	0	0	0
19	E	5	0	0	0	0
19	F	8	0	0	0	0
19	G	15	0	0	0	0
19	H	26	0	0	0	0
19	I	13	0	0	0	0
19	J	11	0	0	0	0
19	K	9	0	0	0	0
19	L	16	0	0	0	0
19	M	29	0	0	1	0
19	N	20	0	0	1	0
19	O	17	0	0	0	0
19	P	11	0	0	0	0
19	Q	9	0	0	0	0
19	R	4	0	0	0	0
19	S	10	0	0	0	0
19	T	12	0	0	0	0
19	U	15	0	0	0	0
19	V	25	0	0	0	0
19	W	17	0	0	0	0
19	X	13	0	0	0	0
19	Y	9	0	0	0	0
19	Z	13	0	0	0	0
19	a	28	0	0	0	0
19	b	13	0	0	0	0
All	All	50136	0	49538	159	0

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

All (159) 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)
8:V:113:ILE:HG13	8:V:119:THR:HG22	1.55	0.88
11:Y:33:LYS:HE2	17:Y:301:3BV:H47	1.58	0.84
11:K:33:LYS:HE2	17:K:301:3BV:H47	1.58	0.83
11:Y:73:ARG:HH21	11:Y:73:ARG:CB	1.98	0.77
4:D:89:VAL:HG12	11:K:61:ARG:HD2	1.67	0.76
4:R:89:VAL:HG12	11:Y:61:ARG:HD3	1.68	0.75
8:H:113:ILE:HG13	8:H:119:THR:HG22	1.72	0.70
3:C:99:GLU:HG3	11:K:81:LYS:HE2	1.76	0.66
11:Y:104:TRP:CE2	11:Y:181:GLU:HB3	2.38	0.59
11:K:38:ASN:OD1	11:K:40:TYR:N	2.29	0.59
10:J:25:ILE:O	10:X:139:TYR:OH	2.21	0.59
8:H:35:HIS:HB3	8:H:56:THR:HG21	1.85	0.59
8:H:50:ALA:HB3	9:I:126:ILE:HD12	1.84	0.59
10:J:139:TYR:OH	10:X:25:ILE:O	2.21	0.58
14:N:20:THR:CG2	14:N:28:ASN:HB3	2.33	0.58
8:V:35:HIS:HB3	8:V:56:THR:HG21	1.85	0.58
11:K:104:TRP:CE2	11:K:181:GLU:HB3	2.37	0.58
12:L:31:THR:HG23	12:L:36:ASN:HD21	1.68	0.57
14:N:152:VAL:HA	14:N:175:MET:HE1	1.87	0.57
11:Y:38:ASN:OD1	11:Y:40:TYR:N	2.29	0.57
12:Z:31:THR:HG23	12:Z:36:ASN:HD21	1.69	0.56
8:V:50:ALA:HB3	9:W:126:ILE:HD12	1.86	0.56
11:K:208:ASN:O	9:W:38:LYS:NZ	2.38	0.56
8:V:49:ALA:HA	17:V:301:3BV:H50	1.89	0.54
11:Y:22:ALA:HB1	17:Y:301:3BV:H4	1.88	0.54
9:I:38:LYS:NZ	11:Y:208:ASN:O	2.41	0.54
11:Y:73:ARG:HH21	11:Y:73:ARG:HB3	1.72	0.53
2:B:93:HIS:HB3	19:B:301:HOH:O	2.08	0.53
10:J:16:ALA:HB2	10:J:161:LEU:HD21	1.91	0.53
11:K:73:ARG:HB2	11:K:73:ARG:HH21	1.74	0.53
11:Y:45:MET:HG2	11:Y:52:CYS:HB3	1.89	0.53
10:J:126:VAL:HG12	10:J:128:LEU:HG	1.91	0.53
14:N:20:THR:HG22	14:N:31:THR:OG1	2.08	0.53
8:H:49:ALA:HA	17:H:301:3BV:H50	1.90	0.52
11:K:22:ALA:HB1	17:K:301:3BV:H4	1.91	0.52
10:X:16:ALA:HB2	10:X:161:LEU:HD21	1.90	0.52
8:H:196:ARG:NH2	9:I:150:GLU:O	2.43	0.52
3:Q:99:GLU:HG3	11:Y:81:LYS:HE2	1.91	0.51
7:G:23:PHE:O	7:G:26:THR:HB	2.10	0.51
9:I:26:LEU:HD21	9:I:185:VAL:HG23	1.92	0.51
11:K:73:ARG:HB2	11:K:73:ARG:NH2	2.25	0.51
7:U:23:PHE:O	7:U:26:THR:HB	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:X:126:VAL:HG12	10:X:128:LEU:HG	1.91	0.51
11:Y:5:ALA:HB3	11:Y:100:MET:HE2	1.93	0.51
3:Q:201:VAL:O	3:Q:202:GLN:CB	2.58	0.51
8:H:35:HIS:CB	8:H:56:THR:HG21	2.41	0.51
9:W:26:LEU:HD21	9:W:185:VAL:HG23	1.92	0.51
3:C:201:VAL:O	3:C:202:GLN:CB	2.58	0.51
8:V:35:HIS:CB	8:V:56:THR:HG21	2.41	0.50
11:K:5:ALA:HB3	11:K:100:MET:HE2	1.93	0.50
13:M:27:LEU:HD21	13:M:34:LEU:HD22	1.94	0.49
11:K:20:ALA:HB2	11:K:31:VAL:HG21	1.93	0.49
8:V:168:GLY:O	17:V:301:3BV:H57	2.13	0.49
8:H:113:ILE:CG1	8:H:119:THR:HG22	2.39	0.49
13:M:2:GLN:NE2	19:M:301:HOH:O	2.45	0.49
8:H:168:GLY:O	17:H:301:3BV:H57	2.12	0.49
11:Y:144:LYS:HB2	11:Y:147:LEU:HD13	1.95	0.48
11:K:144:LYS:HB2	11:K:147:LEU:HD13	1.96	0.48
11:K:37:ILE:HG23	11:K:60:ALA:HA	1.95	0.48
3:C:99:GLU:CG	11:K:81:LYS:HE2	2.44	0.48
12:L:52:MET:HG3	12:L:111:ILE:HG22	1.97	0.47
11:Y:37:ILE:HG23	11:Y:60:ALA:HA	1.96	0.47
10:J:1:MET:HG2	10:J:34:LYS:HE3	1.97	0.47
11:Y:73:ARG:NH2	11:Y:73:ARG:HB2	2.29	0.47
11:K:45:MET:HG2	11:K:52:CYS:HB3	1.96	0.47
14:N:1:THR:HG22	14:N:2:SER:N	2.30	0.47
11:K:61:ARG:O	11:K:65:ILE:HG13	2.15	0.47
17:N:201:3BV:O60	17:N:201:3BV:O48	2.18	0.47
14:N:20:THR:HB	17:N:201:3BV:H53	1.96	0.46
8:V:196:ARG:NH2	9:W:150:GLU:O	2.48	0.46
11:K:100:MET:SD	11:K:128:VAL:CG1	3.03	0.46
11:Y:65:ILE:O	11:Y:69:ARG:HG3	2.15	0.46
11:Y:100:MET:SD	11:Y:128:VAL:CG1	3.03	0.46
3:C:51:LYS:O	3:C:52:LEU:HB2	2.15	0.46
5:S:12:PHE:H	6:T:19:GLN:HE22	1.63	0.46
10:J:58:GLU:OE1	11:K:81:LYS:NZ	2.48	0.46
11:K:100:MET:SD	11:K:128:VAL:HG12	2.55	0.46
12:L:146:ILE:HG22	12:L:150:LEU:HD22	1.98	0.46
11:Y:100:MET:SD	11:Y:128:VAL:HG12	2.56	0.46
12:Z:146:ILE:HG22	12:Z:150:LEU:HD22	1.98	0.46
11:Y:61:ARG:O	11:Y:65:ILE:HG13	2.16	0.46
12:Z:52:MET:HG3	12:Z:111:ILE:HG22	1.98	0.46
12:L:8:ASN:HA	12:L:30:ILE:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:89:VAL:CG1	11:K:61:ARG:HD2	2.42	0.45
14:N:83:LYS:HG3	14:N:119:VAL:CG2	2.47	0.45
8:V:104:ASP:HB2	8:V:105:PRO:HD2	1.97	0.45
9:W:20:VAL:HG23	9:W:189:ILE:HB	1.98	0.45
14:N:176:VAL:HG12	14:N:178:LEU:HD13	1.98	0.45
3:Q:51:LYS:O	3:Q:52:LEU:HB2	2.16	0.45
11:Y:73:ARG:CB	11:Y:73:ARG:NH2	2.73	0.45
3:Q:160:GLN:HE21	3:Q:160:GLN:HA	1.82	0.45
10:X:1:MET:HG2	10:X:34:LYS:HE3	1.97	0.45
10:X:58:GLU:OE1	11:Y:81:LYS:NZ	2.50	0.45
12:Z:125:PHE:CD2	12:Z:131:TYR:HB3	2.52	0.45
3:C:160:GLN:HE21	3:C:160:GLN:HA	1.82	0.45
8:H:104:ASP:HB2	8:H:105:PRO:HD2	1.97	0.45
10:X:36:ARG:NH1	10:X:58:GLU:OE2	2.50	0.45
11:Y:169:TYR:O	17:Y:301:3BV:H57	2.18	0.44
10:J:36:ARG:NH1	10:J:58:GLU:OE2	2.50	0.44
3:Q:201:VAL:O	3:Q:202:GLN:HB3	2.17	0.44
9:W:10:ILE:HG21	9:W:141:ALA:HB3	2.00	0.44
3:C:35:LYS:HG2	3:C:158:SER:O	2.17	0.44
8:H:196:ARG:NH2	9:I:150:GLU:HG3	2.32	0.44
9:I:20:VAL:HG23	9:I:189:ILE:HB	1.98	0.44
2:B:50:LYS:O	2:B:51:VAL:C	2.56	0.44
10:X:3:ILE:HG23	10:X:18:SER:HB3	1.99	0.44
11:K:65:ILE:O	11:K:69:ARG:HG3	2.16	0.44
10:J:3:ILE:HG23	10:J:18:SER:HB3	1.99	0.44
9:I:10:ILE:HG21	9:I:141:ALA:HB3	1.99	0.44
12:L:125:PHE:CD2	12:L:131:TYR:HB3	2.53	0.44
2:P:50:LYS:O	2:P:51:VAL:C	2.56	0.44
12:Z:8:ASN:HA	12:Z:30:ILE:O	2.17	0.44
11:K:50:ALA:CB	12:L:128:VAL:HG23	2.47	0.43
10:X:1:MET:HB3	10:X:34:LYS:HE3	2.00	0.43
3:C:201:VAL:O	3:C:202:GLN:HB3	2.17	0.43
9:W:20:VAL:HG13	9:W:118:PRO:HB3	1.99	0.43
8:H:112:SER:HB3	8:H:125:LEU:HD13	2.00	0.43
1:O:122:THR:HG22	2:P:128:ARG:HH21	1.82	0.43
9:I:20:VAL:HG13	9:I:118:PRO:HB3	1.99	0.43
11:Y:73:ARG:HH21	11:Y:73:ARG:HB2	1.78	0.43
13:M:96:LEU:O	13:M:100:MET:HG2	2.19	0.43
1:O:23:TYR:CD1	7:U:12:PRO:HA	2.54	0.43
12:Z:132:GLN:HE21	12:Z:132:GLN:HB2	1.71	0.43
4:D:91:HIS:HB3	4:D:99:ILE:CG2	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:Q:35:LYS:HG2	3:Q:158:SER:O	2.19	0.43
8:V:112:SER:HB3	8:V:125:LEU:HD13	2.01	0.42
2:B:113:ARG:NE	19:B:301:HOH:O	2.35	0.42
11:K:169:TYR:O	17:K:301:3BV:H57	2.18	0.42
13:M:165:ILE:HB	13:M:166:PRO:HD3	2.01	0.42
18:X:201:MES:O1S	17:Y:301:3BV:O60	2.36	0.42
7:G:149:ASP:HB2	7:G:150:PRO:CD	2.50	0.42
8:V:196:ARG:NH2	9:W:150:GLU:HG3	2.34	0.42
10:J:1:MET:HB3	10:J:34:LYS:HE3	2.00	0.42
7:U:149:ASP:HB2	7:U:150:PRO:CD	2.50	0.42
11:Y:29:GLN:HG2	11:Y:172:GLY:CA	2.50	0.42
7:G:78:ILE:N	7:G:79:PRO:CD	2.83	0.42
5:S:77:ALA:N	5:S:78:PRO:CD	2.83	0.41
11:Y:50:ALA:CB	12:Z:128:VAL:HG23	2.50	0.41
3:C:149:GLU:HB2	3:C:150:PRO:HD2	2.02	0.41
11:K:61:ARG:O	11:K:65:ILE:CG1	2.69	0.41
2:B:124:HIS:HB3	3:C:124:VAL:HG12	2.02	0.41
14:N:1:THR:CG2	14:N:2:SER:N	2.84	0.41
4:R:91:HIS:HB3	4:R:99:ILE:CG2	2.49	0.41
8:V:84:LYS:HE2	8:V:119:THR:HG23	2.03	0.41
5:E:77:ALA:N	5:E:78:PRO:CD	2.84	0.41
12:Z:17:GLY:HA3	12:Z:20:PHE:CE1	2.56	0.41
17:N:201:3BV:O60	19:N:301:HOH:O	1.97	0.41
3:Q:149:GLU:HB2	3:Q:150:PRO:HD2	2.02	0.41
7:U:78:ILE:N	7:U:79:PRO:CD	2.83	0.41
2:P:124:HIS:HB3	3:Q:124:VAL:HG12	2.03	0.41
2:B:217:LYS:C	2:B:219:ALA:H	2.24	0.41
8:H:84:LYS:HE2	8:H:119:THR:HG23	2.03	0.41
2:P:50:LYS:HD3	2:P:50:LYS:HA	1.89	0.41
11:Y:61:ARG:O	11:Y:65:ILE:CG1	2.69	0.41
12:L:17:GLY:HA3	12:L:20:PHE:CE1	2.56	0.41
11:K:12:VAL:HG13	11:K:179:VAL:HB	2.03	0.40
11:Y:12:VAL:HG13	11:Y:179:VAL:HB	2.03	0.40
1:A:122:THR:HG22	2:B:128:ARG:HH21	1.86	0.40
2:B:151:ASN:HB2	2:B:152:PRO:CD	2.51	0.40

There are no symmetry-related clashes.



## 5.3 Torsion angles [\(i\)](#)

### 5.3.1 Protein backbone [\(i\)](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	248/250 (99%)	238 (96%)	9 (4%)	1 (0%)	34	60
1	O	248/250 (99%)	238 (96%)	9 (4%)	1 (0%)	34	60
2	B	242/258 (94%)	233 (96%)	5 (2%)	4 (2%)	9	23
2	P	242/258 (94%)	233 (96%)	5 (2%)	4 (2%)	9	23
3	C	238/254 (94%)	233 (98%)	2 (1%)	3 (1%)	12	30
3	Q	238/254 (94%)	233 (98%)	2 (1%)	3 (1%)	12	30
4	D	231/260 (89%)	227 (98%)	4 (2%)	0	100	100
4	R	231/260 (89%)	227 (98%)	4 (2%)	0	100	100
5	E	229/234 (98%)	223 (97%)	6 (3%)	0	100	100
5	S	229/234 (98%)	223 (97%)	6 (3%)	0	100	100
6	F	241/288 (84%)	239 (99%)	2 (1%)	0	100	100
6	T	241/288 (84%)	239 (99%)	2 (1%)	0	100	100
7	G	239/252 (95%)	237 (99%)	2 (1%)	0	100	100
7	U	239/252 (95%)	237 (99%)	2 (1%)	0	100	100
8	H	224/232 (97%)	219 (98%)	5 (2%)	0	100	100
8	V	224/232 (97%)	219 (98%)	5 (2%)	0	100	100
9	I	202/205 (98%)	196 (97%)	6 (3%)	0	100	100
9	W	202/205 (98%)	196 (97%)	6 (3%)	0	100	100
10	J	193/198 (98%)	190 (98%)	3 (2%)	0	100	100
10	X	193/198 (98%)	190 (98%)	3 (2%)	0	100	100
11	K	209/211 (99%)	203 (97%)	6 (3%)	0	100	100
11	Y	209/211 (99%)	203 (97%)	6 (3%)	0	100	100
12	L	220/222 (99%)	214 (97%)	6 (3%)	0	100	100
12	Z	220/222 (99%)	214 (97%)	6 (3%)	0	100	100
13	M	231/246 (94%)	222 (96%)	9 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	a	232/246 (94%)	224 (97%)	8 (3%)	0	100	100
14	N	194/196 (99%)	188 (97%)	6 (3%)	0	100	100
14	b	194/196 (99%)	188 (97%)	6 (3%)	0	100	100
All	All	6283/6612 (95%)	6126 (98%)	141 (2%)	16 (0%)	41	66

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	51	VAL
3	C	202	GLN
2	P	51	VAL
3	Q	202	GLN
1	A	2	THR
2	B	218	GLY
2	B	222	GLY
1	O	2	THR
2	P	218	GLY
2	P	222	GLY
3	C	205	ALA
3	Q	205	ALA
2	B	220	ASN
2	P	220	ASN
3	Q	183	PRO
3	C	183	PRO

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	209/209 (100%)	206 (99%)	3 (1%)	67	86
1	O	209/209 (100%)	206 (99%)	3 (1%)	67	86
2	B	203/216 (94%)	199 (98%)	4 (2%)	55	81
2	P	203/216 (94%)	199 (98%)	4 (2%)	55	81

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	212/226 (94%)	203 (96%)	9 (4%)	30	58
3	Q	212/226 (94%)	203 (96%)	9 (4%)	30	58
4	D	194/215 (90%)	186 (96%)	8 (4%)	30	59
4	R	194/215 (90%)	186 (96%)	8 (4%)	30	59
5	E	190/193 (98%)	184 (97%)	6 (3%)	39	68
5	S	190/193 (98%)	184 (97%)	6 (3%)	39	68
6	F	201/239 (84%)	196 (98%)	5 (2%)	47	76
6	T	201/239 (84%)	196 (98%)	5 (2%)	47	76
7	G	206/210 (98%)	200 (97%)	6 (3%)	42	71
7	U	206/210 (98%)	200 (97%)	6 (3%)	42	71
8	H	185/190 (97%)	181 (98%)	4 (2%)	52	79
8	V	185/190 (97%)	181 (98%)	4 (2%)	52	79
9	I	172/173 (99%)	170 (99%)	2 (1%)	71	88
9	W	172/173 (99%)	170 (99%)	2 (1%)	71	88
10	J	173/175 (99%)	170 (98%)	3 (2%)	60	84
10	X	173/175 (99%)	170 (98%)	3 (2%)	60	84
11	K	165/165 (100%)	148 (90%)	17 (10%)	7	16
11	Y	165/165 (100%)	148 (90%)	17 (10%)	7	16
12	L	186/186 (100%)	177 (95%)	9 (5%)	25	53
12	Z	186/186 (100%)	177 (95%)	9 (5%)	25	53
13	M	199/208 (96%)	193 (97%)	6 (3%)	41	70
13	a	200/208 (96%)	194 (97%)	6 (3%)	41	70
14	N	162/162 (100%)	155 (96%)	7 (4%)	29	57
14	b	162/162 (100%)	155 (96%)	7 (4%)	29	57
All	All	5315/5534 (96%)	5137 (97%)	178 (3%)	38	67

All (178) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	122	THR
1	A	157	PHE
1	A	250	LEU
2	B	55	LEU
2	B	113	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	191	LEU
2	B	238	LEU
3	C	4	ARG
3	C	38	ASN
3	C	51	LYS
3	C	147	GLN
3	C	160	GLN
3	C	169	VAL
3	C	180	LYS
3	C	206	LYS
3	C	240	GLU
4	D	99	ILE
4	D	125	LEU
4	D	143	ASP
4	D	176	LEU
4	D	193	LEU
4	D	235	LEU
4	D	236	LYS
4	D	242	GLU
5	E	9	THR
5	E	29	LYS
5	E	71	LEU
5	E	184	ASN
5	E	188	LEU
5	E	202	ASP
6	F	117	GLN
6	F	123	ASN
6	F	181	GLU
6	F	214	TRP
6	F	240	GLN
7	G	115	LEU
7	G	122	ARG
7	G	125	MET
7	G	208	GLU
7	G	235	ARG
7	G	236	LEU
8	H	30	ASN
8	H	68	LEU
8	H	113	ILE
8	H	196	ARG
9	I	37	ASN
9	I	171	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
10	J	3	ILE
10	J	23	ARG
10	J	99	GLN
11	K	4	LEU
11	K	12	VAL
11	K	21	THR
11	K	29	GLN
11	K	35	ILE
11	K	38	ASN
11	K	61	ARG
11	K	62	GLN
11	K	65	ILE
11	K	71	LYS
11	K	73	ARG
11	K	81	LYS
11	K	83	LEU
11	K	86	MET
11	K	93	MET
11	K	117	GLU
11	K	128	VAL
12	L	23	LEU
12	L	49	ASN
12	L	55	ASN
12	L	106	TYR
12	L	126	ASP
12	L	128	VAL
12	L	130	SER
12	L	132	GLN
12	L	150	LEU
13	M	2	GLN
13	M	48	ASN
13	M	70	LEU
13	M	104	ARG
13	M	161	ARG
13	M	187	ARG
14	N	2	SER
14	N	9	LYS
14	N	20	THR
14	N	22	THR
14	N	36	ARG
14	N	83	LYS
14	N	104	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	O	122	THR
1	O	157	PHE
1	O	250	LEU
2	P	55	LEU
2	P	113	ARG
2	P	191	LEU
2	P	238	LEU
3	Q	4	ARG
3	Q	38	ASN
3	Q	51	LYS
3	Q	147	GLN
3	Q	160	GLN
3	Q	169	VAL
3	Q	180	LYS
3	Q	206	LYS
3	Q	240	GLU
4	R	99	ILE
4	R	125	LEU
4	R	143	ASP
4	R	176	LEU
4	R	193	LEU
4	R	235	LEU
4	R	236	LYS
4	R	242	GLU
5	S	9	THR
5	S	29	LYS
5	S	71	LEU
5	S	184	ASN
5	S	188	LEU
5	S	202	ASP
6	T	117	GLN
6	T	123	ASN
6	T	181	GLU
6	T	214	TRP
6	T	240	GLN
7	U	115	LEU
7	U	122	ARG
7	U	125	MET
7	U	208	GLU
7	U	235	ARG
7	U	236	LEU
8	V	30	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
8	V	68	LEU
8	V	113	ILE
8	V	196	ARG
9	W	37	ASN
9	W	171	LEU
10	X	3	ILE
10	X	23	ARG
10	X	99	GLN
11	Y	4	LEU
11	Y	12	VAL
11	Y	21	THR
11	Y	29	GLN
11	Y	35	ILE
11	Y	38	ASN
11	Y	61	ARG
11	Y	62	GLN
11	Y	65	ILE
11	Y	71	LYS
11	Y	73	ARG
11	Y	81	LYS
11	Y	83	LEU
11	Y	86	MET
11	Y	93	MET
11	Y	117	GLU
11	Y	128	VAL
12	Z	23	LEU
12	Z	49	ASN
12	Z	55	ASN
12	Z	106	TYR
12	Z	126	ASP
12	Z	128	VAL
12	Z	130	SER
12	Z	132	GLN
12	Z	150	LEU
13	a	2	GLN
13	a	48	ASN
13	a	70	LEU
13	a	104	ARG
13	a	161	ARG
13	a	187	ARG
14	b	9	LYS
14	b	20	THR

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Mol	Chain	Res	Type
14	b	22	THR
14	b	36	ARG
14	b	39	ASP
14	b	83	LYS
14	b	104	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (93) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	20	GLN
2	B	58	GLN
2	B	95	GLN
2	B	119	GLN
2	B	123	GLN
3	C	17	GLN
3	C	147	GLN
3	C	160	GLN
4	D	15	GLN
4	D	91	HIS
4	D	146	GLN
4	D	210	GLN
4	D	225	ASN
5	E	68	HIS
5	E	92	ASN
5	E	99	ASN
5	E	116	GLN
5	E	118	ASN
5	E	120	GLN
5	E	184	ASN
6	F	19	GLN
6	F	86	ASN
6	F	117	GLN
6	F	123	ASN
6	F	191	GLN
7	G	83	ASN
7	G	114	ASN
7	G	117	GLN
7	G	121	GLN
7	G	166	GLN
9	I	37	ASN
10	J	55	GLN
11	K	85	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
11	K	175	ASN
11	K	207	ASN
12	L	3	ASN
12	L	49	ASN
12	L	70	ASN
12	L	79	HIS
12	L	132	GLN
12	L	158	ASN
13	M	48	ASN
13	M	102	GLN
13	M	179	ASN
13	M	194	ASN
13	M	213	GLN
14	N	161	GLN
1	O	94	HIS
2	P	20	GLN
2	P	58	GLN
2	P	95	GLN
2	P	119	GLN
2	P	123	GLN
3	Q	147	GLN
3	Q	160	GLN
4	R	91	HIS
4	R	146	GLN
4	R	225	ASN
5	S	68	HIS
5	S	92	ASN
5	S	99	ASN
5	S	116	GLN
5	S	118	ASN
5	S	120	GLN
5	S	184	ASN
6	T	19	GLN
6	T	86	ASN
6	T	117	GLN
6	T	123	ASN
6	T	191	GLN
7	U	83	ASN
7	U	114	ASN
7	U	117	GLN
7	U	121	GLN
7	U	166	GLN

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Mol	Chain	Res	Type
9	W	37	ASN
10	X	55	GLN
10	X	63	ASN
11	Y	85	ASN
11	Y	175	ASN
11	Y	207	ASN
12	Z	3	ASN
12	Z	49	ASN
12	Z	70	ASN
12	Z	79	HIS
12	Z	132	GLN
12	Z	158	ASN
13	a	48	ASN
13	a	102	GLN
13	a	179	ASN
13	a	194	ASN
13	a	213	GLN
14	b	161	GLN

### 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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 24 ligands modelled in this entry, 14 are monoatomic - leaving 10 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
17	3BV	b	201	14	54,54,54	1.53	4 (7%)	68,71,71	1.53	9 (13%)
17	3BV	Y	301	11	54,54,54	1.23	3 (5%)	68,71,71	1.74	14 (20%)
17	3BV	H	301	8	54,54,54	1.13	3 (5%)	68,71,71	1.55	9 (13%)
17	3BV	V	301	8	54,54,54	1.12	3 (5%)	68,71,71	1.56	9 (13%)
18	MES	H	302	-	12,12,12	2.21	1 (8%)	14,16,16	1.34	3 (21%)
17	3BV	K	301	11	54,54,54	1.24	3 (5%)	68,71,71	1.70	12 (17%)
18	MES	V	302	-	12,12,12	2.18	1 (8%)	14,16,16	1.42	3 (21%)
18	MES	K	304	-	12,12,12	2.31	1 (8%)	14,16,16	1.40	3 (21%)
18	MES	X	201	-	12,12,12	2.33	1 (8%)	14,16,16	1.32	2 (14%)
17	3BV	N	201	14	54,54,54	1.41	4 (7%)	68,71,71	1.43	10 (14%)

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
17	3BV	b	201	14	-	13/59/67/67	0/3/3/3
17	3BV	Y	301	11	-	12/59/67/67	0/3/3/3
17	3BV	H	301	8	-	11/59/67/67	0/3/3/3
17	3BV	V	301	8	-	11/59/67/67	0/3/3/3
18	MES	H	302	-	-	3/6/14/14	0/1/1/1
17	3BV	K	301	11	-	12/59/67/67	0/3/3/3
18	MES	V	302	-	-	2/6/14/14	0/1/1/1
18	MES	K	304	-	-	0/6/14/14	0/1/1/1
18	MES	X	201	-	-	0/6/14/14	0/1/1/1
17	3BV	N	201	14	-	16/59/67/67	0/3/3/3

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	X	201	MES	C8-S	-7.77	1.66	1.77
18	K	304	MES	C8-S	-7.71	1.66	1.77
18	H	302	MES	C8-S	-7.34	1.67	1.77
18	V	302	MES	C8-S	-7.25	1.67	1.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	b	201	3BV	C32-C33	-6.57	1.35	1.51
17	N	201	3BV	C32-C33	-6.23	1.36	1.51
17	b	201	3BV	C13-C14	-5.06	1.37	1.51
17	K	301	3BV	C51-C47	4.81	1.62	1.53
17	Y	301	3BV	C51-C47	4.75	1.62	1.53
17	N	201	3BV	C13-C14	-4.69	1.38	1.51
17	K	301	3BV	C32-C33	-4.60	1.40	1.51
17	H	301	3BV	C32-C33	-4.57	1.40	1.51
17	K	301	3BV	C13-C14	-4.53	1.38	1.51
17	Y	301	3BV	C32-C33	-4.52	1.40	1.51
17	V	301	3BV	C32-C33	-4.52	1.40	1.51
17	Y	301	3BV	C13-C14	-4.50	1.38	1.51
17	b	201	3BV	C51-C47	4.50	1.61	1.53
17	H	301	3BV	C51-C47	4.33	1.61	1.53
17	V	301	3BV	C51-C47	4.15	1.60	1.53
17	N	201	3BV	C51-C47	3.42	1.59	1.53
17	H	301	3BV	C13-C14	-3.25	1.42	1.51
17	V	301	3BV	C13-C14	-3.23	1.42	1.51
17	b	201	3BV	O48-C47	-2.41	1.37	1.43
17	N	201	3BV	O48-C47	-2.29	1.37	1.43

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	b	201	3BV	C43-C42-N41	-6.70	101.52	110.18
17	H	301	3BV	C43-C42-N41	-5.95	102.49	110.18
17	V	301	3BV	C43-C42-N41	-5.94	102.50	110.18
17	K	301	3BV	C43-C42-N41	-5.87	102.59	110.18
17	Y	301	3BV	C43-C42-N41	-5.85	102.61	110.18
17	V	301	3BV	C58-C51-C59	-5.59	102.53	109.88
17	H	301	3BV	C58-C51-C59	-5.42	102.75	109.88
17	Y	301	3BV	C13-C12-C11	-5.34	102.67	113.21
17	K	301	3BV	C13-C12-C11	-5.10	103.17	113.21
17	Y	301	3BV	C58-C51-C59	-4.92	103.41	109.88
17	N	201	3BV	C43-C42-N41	-4.83	103.94	110.18
17	K	301	3BV	C58-C51-C59	-4.82	103.54	109.88
17	N	201	3BV	C3-N4-C5	4.21	118.30	108.83
17	N	201	3BV	C58-C51-C59	-4.04	104.57	109.88
17	H	301	3BV	O1-C6-C5	-4.02	102.94	111.80
17	K	301	3BV	C33-C32-C31	-4.02	102.30	113.39
17	Y	301	3BV	C33-C32-C31	-3.98	102.39	113.39
17	V	301	3BV	O1-C6-C5	-3.97	103.04	111.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	b	201	3BV	C3-N4-C5	3.94	117.70	108.83
17	K	301	3BV	O1-C2-C3	-3.66	103.74	111.80
17	b	201	3BV	C58-C51-C59	-3.48	105.30	109.88
17	N	201	3BV	C44-C43-C42	3.41	122.63	115.84
17	b	201	3BV	C8-C7-N4	-3.38	105.50	113.36
18	V	302	MES	O1S-S-C8	3.31	110.91	106.92
17	H	301	3BV	C13-C12-C11	-3.27	106.75	113.21
17	V	301	3BV	C13-C12-C11	-3.22	106.85	113.21
18	H	302	MES	O2S-S-C8	3.21	110.78	106.92
17	Y	301	3BV	C13-C14-C15	-3.20	113.13	121.23
17	V	301	3BV	C25-C24-C23	-3.04	107.06	115.43
17	H	301	3BV	C25-C24-C23	-3.04	107.08	115.43
17	Y	301	3BV	O1-C6-C5	-3.00	105.18	111.80
17	Y	301	3BV	C25-C24-C23	-2.95	107.33	115.43
17	K	301	3BV	C25-C24-C23	-2.92	107.40	115.43
17	b	201	3BV	C12-C11-C20	-2.85	103.54	110.20
17	K	301	3BV	O1-C6-C5	-2.83	105.56	111.80
17	V	301	3BV	C33-C32-C31	-2.80	105.65	113.39
17	H	301	3BV	C33-C32-C31	-2.77	105.76	113.39
17	N	201	3BV	C8-C7-N4	-2.57	107.39	113.36
17	V	301	3BV	O60-C59-C51	-2.57	106.08	111.33
17	K	301	3BV	O60-C59-C51	-2.57	106.09	111.33
17	N	201	3BV	O1-C2-C3	-2.56	106.15	111.80
18	K	304	MES	O3S-S-C8	2.56	109.90	105.77
18	V	302	MES	O2S-S-C8	2.50	109.92	106.92
17	b	201	3BV	C44-C43-C42	2.48	120.78	115.84
17	H	301	3BV	O60-C59-C51	-2.48	106.26	111.33
17	Y	301	3BV	O1-C2-C3	-2.47	106.35	111.80
18	X	201	MES	O2S-S-C8	2.44	109.86	106.92
18	X	201	MES	O3S-S-C8	2.41	109.67	105.77
17	Y	301	3BV	C12-C11-N10	2.35	115.63	110.88
17	K	301	3BV	C12-C11-N10	2.35	115.62	110.88
17	Y	301	3BV	O60-C59-C51	-2.34	106.55	111.33
17	b	201	3BV	C33-C32-C31	-2.34	106.94	113.39
17	b	201	3BV	C24-C23-N22	-2.33	105.22	110.58
17	N	201	3BV	C12-C13-C14	-2.32	105.12	113.18
17	N	201	3BV	C12-C11-N10	-2.31	106.20	110.88
17	H	301	3BV	C3-N4-C5	2.23	113.85	108.83
18	K	304	MES	O2S-S-C8	2.22	109.58	106.92
17	V	301	3BV	C3-N4-C5	2.21	113.81	108.83
18	H	302	MES	O1S-S-C8	2.18	109.54	106.92
17	K	301	3BV	C6-C5-N4	-2.17	106.82	110.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	H	301	3BV	C20-C11-N10	-2.13	105.36	111.16
17	Y	301	3BV	C2-C3-N4	-2.12	106.88	110.10
18	V	302	MES	O3S-S-C8	2.12	109.19	105.77
17	b	201	3BV	C12-C13-C14	-2.12	105.82	113.18
17	V	301	3BV	C20-C11-N10	-2.11	105.41	111.16
17	K	301	3BV	C12-C13-C14	2.10	120.47	113.18
17	N	201	3BV	C25-C24-C23	-2.07	109.74	115.43
17	Y	301	3BV	C23-C28-N30	-2.02	112.27	116.70
18	K	304	MES	C6-C5-N4	2.02	113.16	110.10
17	Y	301	3BV	C12-C13-C14	2.01	120.17	113.18
18	H	302	MES	O3S-S-C8	2.01	109.02	105.77
17	Y	301	3BV	C13-C14-C19	2.01	126.31	121.23
17	K	301	3BV	C13-C14-C15	-2.01	116.15	121.23
17	N	201	3BV	C33-C32-C31	-2.01	107.85	113.39

There are no chirality outliers.

All (80) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	H	301	3BV	C47-C42-C43-C44
17	H	301	3BV	C42-C47-C51-C58
17	K	301	3BV	C20-C11-C12-C13
17	N	201	3BV	C42-C47-C51-C58
17	N	201	3BV	C42-C47-C51-C59
17	N	201	3BV	O48-C47-C51-C58
17	N	201	3BV	C47-C51-C59-O60
17	V	301	3BV	C47-C42-C43-C44
17	V	301	3BV	C42-C47-C51-C58
17	Y	301	3BV	C20-C11-C12-C13
17	b	201	3BV	C42-C47-C51-C58
17	b	201	3BV	C42-C47-C51-C59
17	b	201	3BV	C47-C51-C59-O60
17	K	301	3BV	N10-C11-C12-C13
17	Y	301	3BV	N10-C11-C12-C13
17	H	301	3BV	C20-C11-C12-C13
17	V	301	3BV	C20-C11-C12-C13
17	H	301	3BV	N10-C11-C12-C13
17	V	301	3BV	N10-C11-C12-C13
17	N	201	3BV	C42-C43-C44-C46
17	N	201	3BV	C42-C43-C44-C45
17	H	301	3BV	O48-C47-C51-C58
17	V	301	3BV	O48-C47-C51-C58

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Mol	Chain	Res	Type	Atoms
17	b	201	3BV	O48-C47-C51-C58
17	K	301	3BV	C42-C47-C51-C58
17	Y	301	3BV	C42-C47-C51-C58
17	K	301	3BV	N4-C7-C8-N10
17	N	201	3BV	N4-C7-C8-N10
17	Y	301	3BV	N4-C7-C8-N10
17	V	301	3BV	C42-C43-C44-C46
17	H	301	3BV	C42-C43-C44-C46
17	b	201	3BV	C42-C43-C44-C46
17	K	301	3BV	N4-C7-C8-O9
17	Y	301	3BV	N4-C7-C8-O9
17	N	201	3BV	N4-C7-C8-O9
17	K	301	3BV	O48-C47-C51-C58
17	N	201	3BV	O48-C47-C51-C59
17	Y	301	3BV	O48-C47-C51-C58
17	b	201	3BV	O48-C47-C51-C59
17	N	201	3BV	C11-C12-C13-C14
17	N	201	3BV	C8-C7-N4-C5
17	N	201	3BV	C8-C7-N4-C3
17	H	301	3BV	N41-C42-C43-C44
17	K	301	3BV	N41-C42-C43-C44
17	V	301	3BV	N41-C42-C43-C44
17	Y	301	3BV	N41-C42-C43-C44
17	b	201	3BV	N41-C42-C43-C44
17	H	301	3BV	C8-C7-N4-C3
17	V	301	3BV	C8-C7-N4-C3
17	b	201	3BV	C8-C7-N4-C5
17	K	301	3BV	C42-C43-C44-C46
17	Y	301	3BV	C42-C43-C44-C46
17	b	201	3BV	N4-C7-C8-O9
17	b	201	3BV	N4-C7-C8-N10
17	b	201	3BV	C42-C43-C44-C45
17	N	201	3BV	N10-C11-C20-O21
17	H	301	3BV	C12-C13-C14-C19
17	V	301	3BV	C12-C13-C14-C19
17	N	201	3BV	C58-C51-C59-O60
18	H	302	MES	C8-C7-N4-C3
18	H	302	MES	C8-C7-N4-C5
18	V	302	MES	C8-C7-N4-C5
17	H	301	3BV	C12-C13-C14-C15
17	V	301	3BV	C12-C13-C14-C15
17	K	301	3BV	N10-C11-C20-O21

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Mol	Chain	Res	Type	Atoms
17	N	201	3BV	N10-C11-C20-N22
17	Y	301	3BV	N10-C11-C20-O21
17	b	201	3BV	N30-C31-C39-O40
17	K	301	3BV	N10-C11-C20-N22
17	Y	301	3BV	N10-C11-C20-N22
17	b	201	3BV	N30-C31-C39-N41
17	H	301	3BV	N30-C31-C39-O40
17	V	301	3BV	N30-C31-C39-O40
18	H	302	MES	C7-C8-S-O1S
17	N	201	3BV	N30-C31-C39-O40
17	K	301	3BV	N41-C42-C47-C51
17	Y	301	3BV	N41-C42-C47-C51
17	K	301	3BV	C12-C11-C20-O21
17	Y	301	3BV	C12-C13-C14-C15
18	V	302	MES	C8-C7-N4-C3

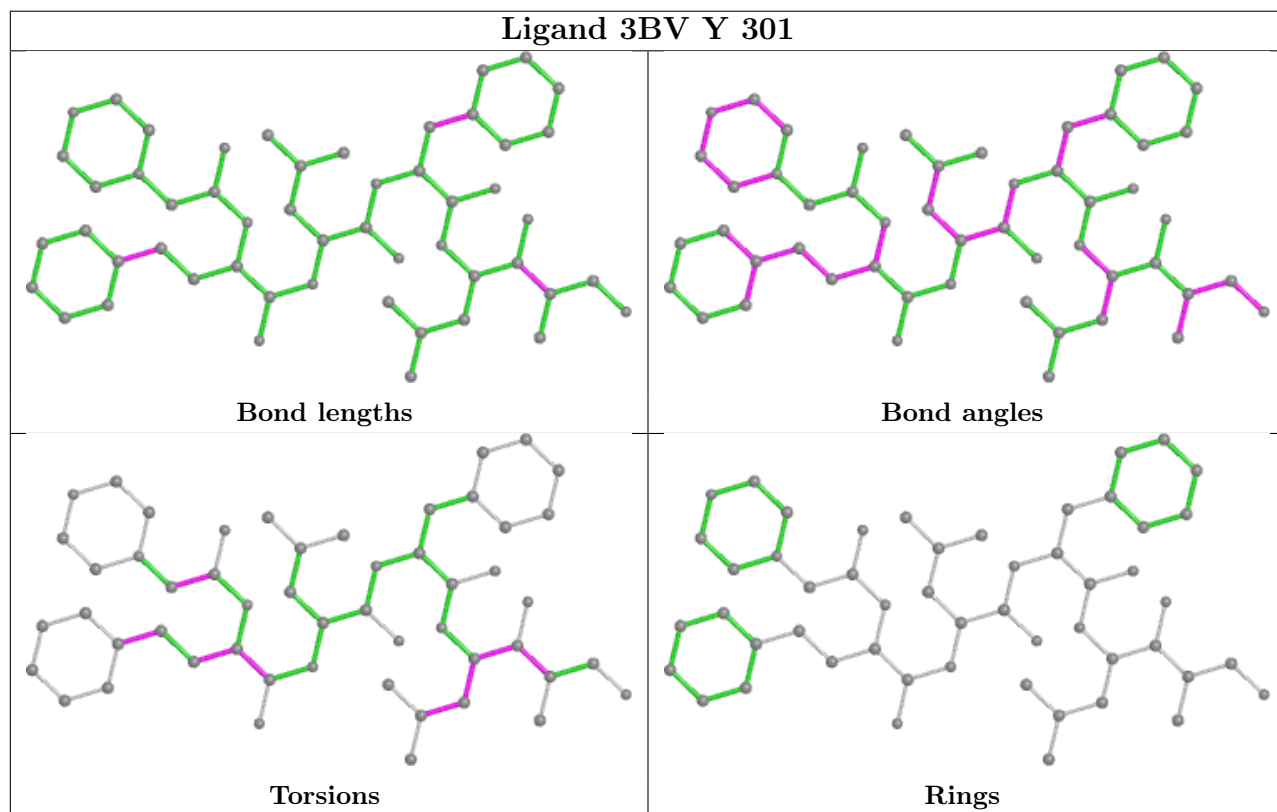
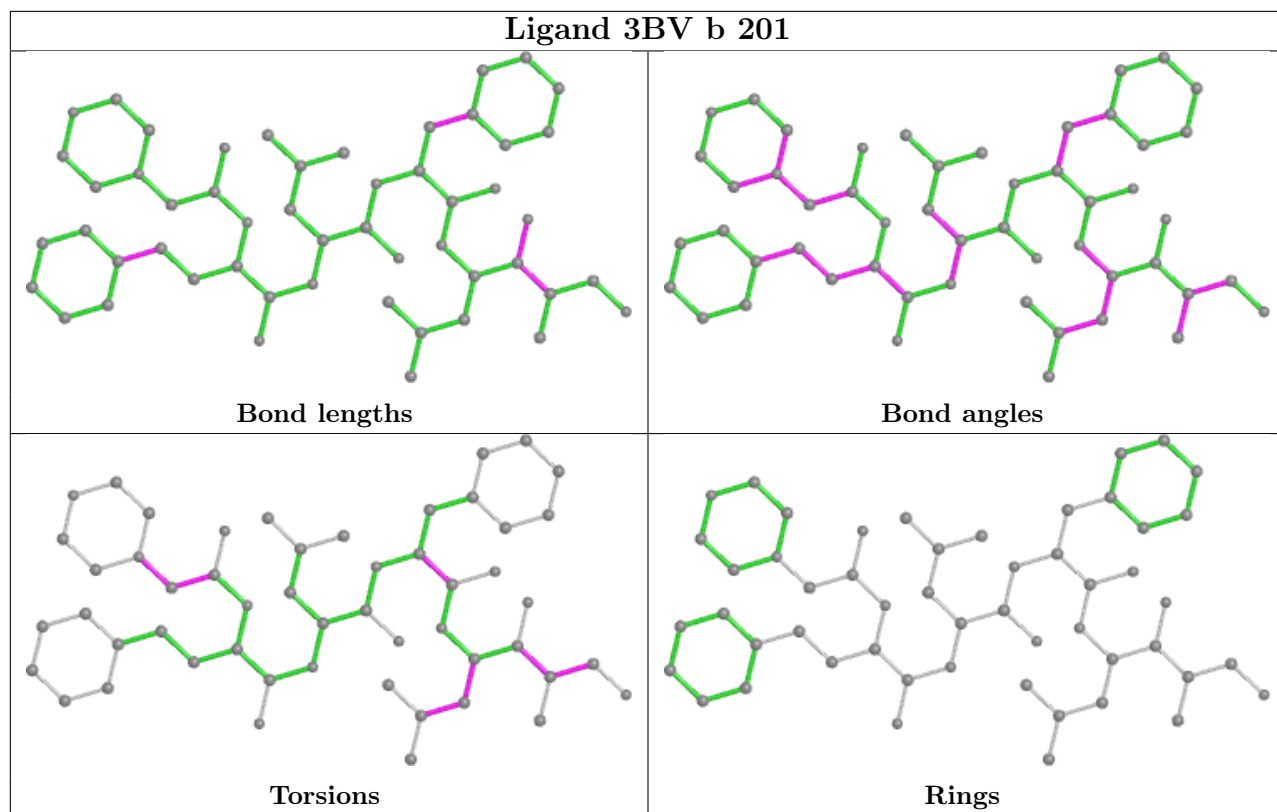
There are no ring outliers.

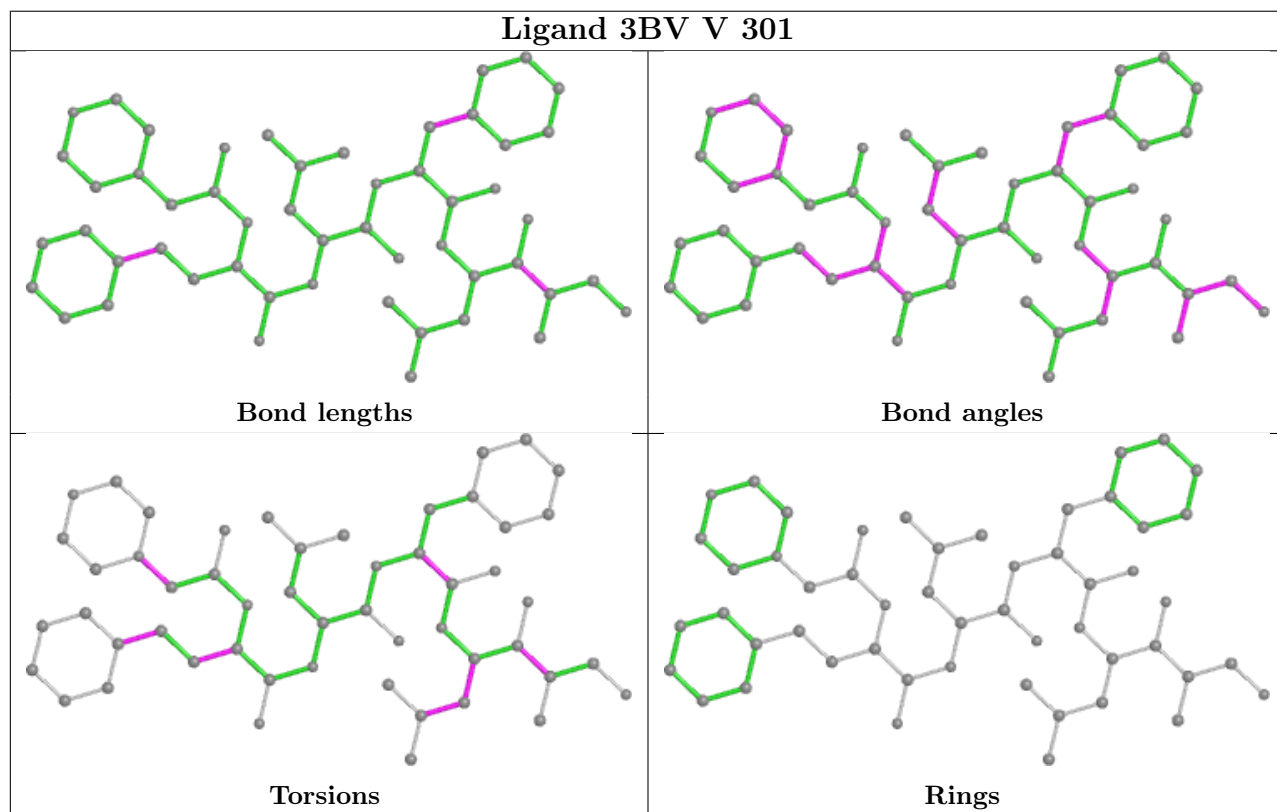
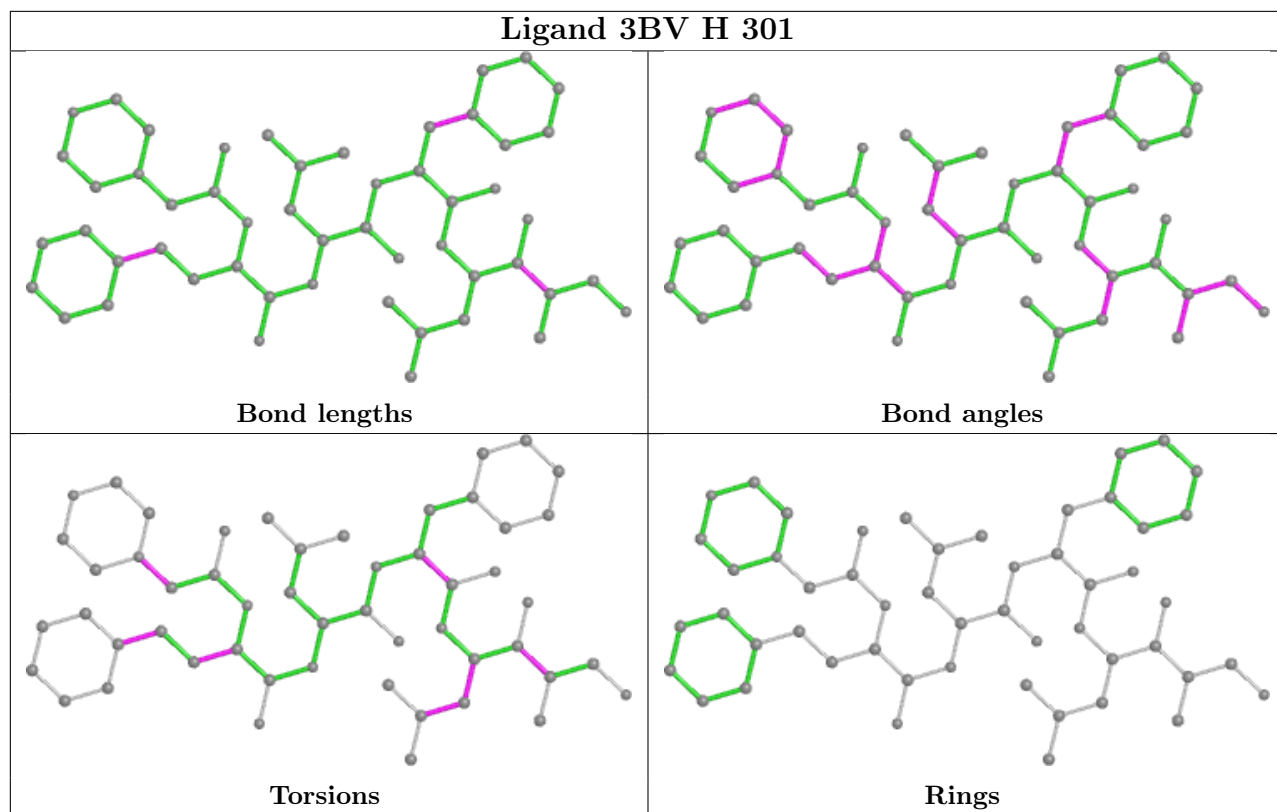
6 monomers are involved in 14 short contacts:

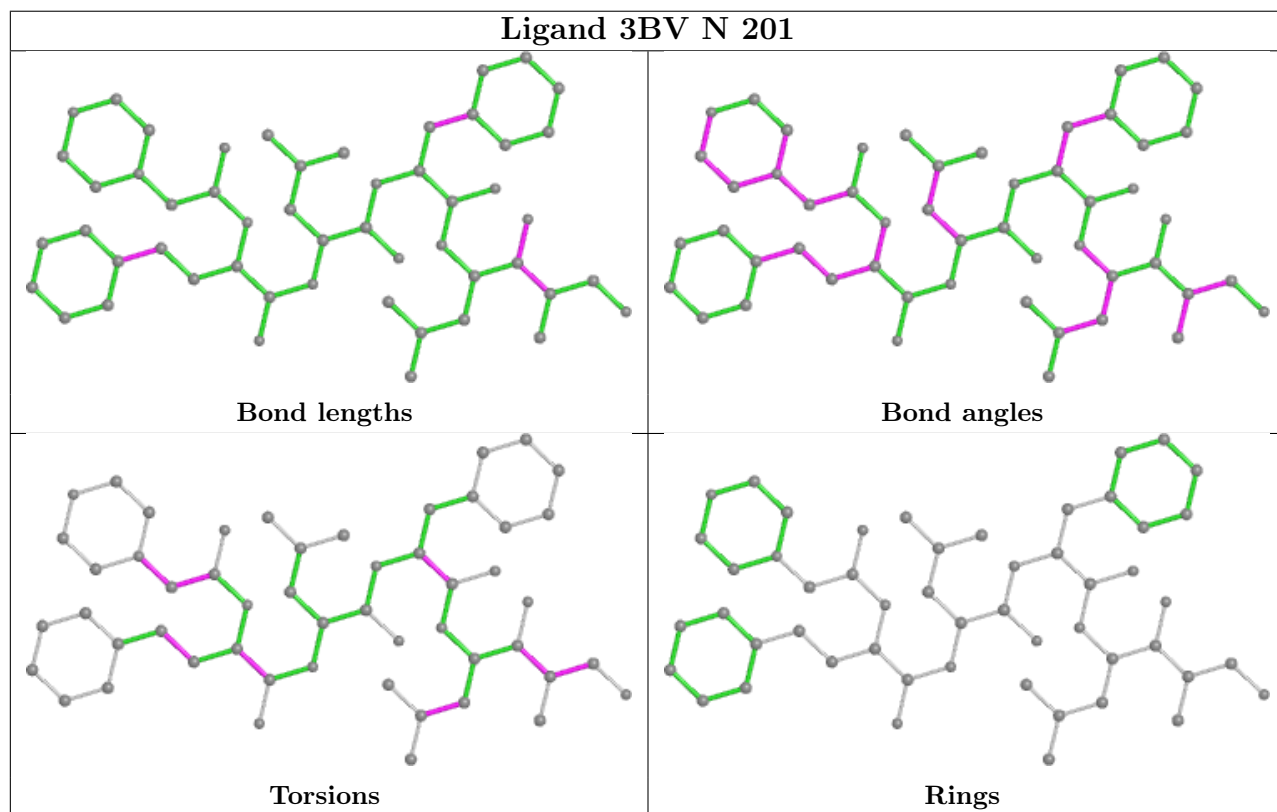
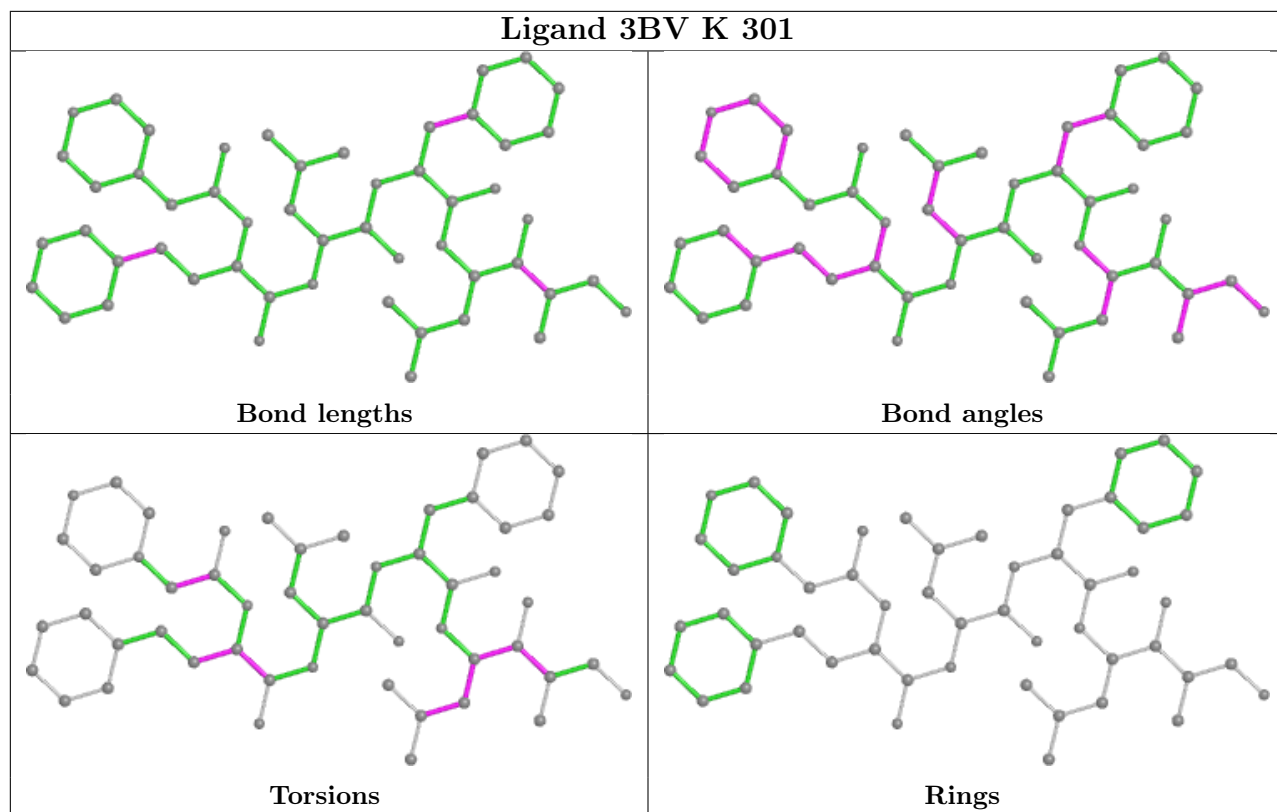
Mol	Chain	Res	Type	Clashes	Symm-Clashes
17	Y	301	3BV	4	0
17	H	301	3BV	2	0
17	V	301	3BV	2	0
17	K	301	3BV	3	0
18	X	201	MES	1	0
17	N	201	3BV	3	0

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.









## 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	250/250 (100%)	-0.31	8 (3%) 47 48	32, 51, 90, 131	0
1	O	250/250 (100%)	-0.27	11 (4%) 34 33	37, 54, 100, 137	0
2	B	244/258 (94%)	-0.19	9 (3%) 41 41	36, 55, 100, 150	0
2	P	244/258 (94%)	-0.15	12 (4%) 29 28	39, 57, 101, 154	0
3	C	240/254 (94%)	-0.01	17 (7%) 16 14	34, 62, 135, 172	0
3	Q	240/254 (94%)	0.08	20 (8%) 11 9	36, 68, 146, 189	0
4	D	235/260 (90%)	-0.28	2 (0%) 84 85	41, 59, 92, 132	0
4	R	235/260 (90%)	-0.17	7 (2%) 50 51	49, 68, 108, 139	0
5	E	231/234 (98%)	-0.12	5 (2%) 62 63	42, 62, 105, 148	0
5	S	231/234 (98%)	-0.14	8 (3%) 44 44	44, 65, 105, 142	0
6	F	243/288 (84%)	-0.33	8 (3%) 46 46	36, 57, 106, 134	0
6	T	243/288 (84%)	-0.23	9 (3%) 41 41	34, 62, 118, 151	0
7	G	241/252 (95%)	-0.35	8 (3%) 46 46	35, 54, 98, 158	0
7	U	241/252 (95%)	-0.35	6 (2%) 57 59	33, 51, 88, 128	0
8	H	226/232 (97%)	-0.44	5 (2%) 62 63	31, 48, 86, 144	0
8	V	226/232 (97%)	-0.41	5 (2%) 62 63	33, 47, 81, 150	0
9	I	204/205 (99%)	-0.59	1 (0%) 91 92	32, 48, 78, 99	0
9	W	204/205 (99%)	-0.59	2 (0%) 82 83	33, 49, 80, 102	0
10	J	195/198 (98%)	-0.41	3 (1%) 73 76	32, 52, 82, 126	0
10	X	195/198 (98%)	-0.38	4 (2%) 63 65	35, 54, 84, 130	0
11	K	211/211 (100%)	-0.28	3 (1%) 75 77	37, 57, 88, 116	0
11	Y	211/211 (100%)	-0.34	1 (0%) 91 92	37, 58, 91, 113	0
12	L	222/222 (100%)	-0.26	4 (1%) 68 70	41, 56, 101, 131	0
12	Z	222/222 (100%)	-0.29	7 (3%) 47 48	38, 57, 100, 133	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
13	M	233/246 (94%)	-0.52	1 (0%) 92 93	33, 50, 73, 90	0
13	a	233/246 (94%)	-0.50	1 (0%) 92 93	30, 50, 74, 91	0
14	N	196/196 (100%)	-0.58	1 (0%) 91 92	31, 46, 77, 105	0
14	b	196/196 (100%)	-0.53	1 (0%) 91 92	31, 45, 77, 108	0
All	All	6342/6612 (95%)	-0.31	169 (2%) 54 55	30, 55, 100, 189	0

All (169) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
10	J	1	MET	8.7
2	B	218	GLY	7.3
10	X	1	MET	7.2
9	W	1	SER	7.1
3	Q	240	GLU	6.8
1	A	1	MET	5.9
1	O	249	ALA	5.9
2	P	218	GLY	5.6
5	E	202	ASP	5.6
2	P	51	VAL	5.4
3	Q	206	LYS	5.3
3	Q	236	GLN	5.3
9	I	1	SER	5.2
3	Q	50	LEU	5.2
2	B	51	VAL	5.1
2	P	221	ASP	5.0
2	B	221	ASP	5.0
3	Q	238	LYS	4.9
2	P	219	ALA	4.9
6	F	202	ASP	4.8
3	Q	225	GLU	4.7
12	Z	174	TYR	4.6
3	C	206	LYS	4.3
8	V	226	GLU	4.3
3	Q	239	GLN	4.2
1	A	249	ALA	4.1
10	J	194	ASP	4.0
12	L	174	TYR	4.0
10	X	194	ASP	4.0
4	D	242	GLU	4.0
3	Q	202	GLN	3.9
1	O	2	THR	3.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
6	F	181	GLU	3.9
2	B	220	ASN	3.9
2	P	220	ASN	3.9
8	V	222	ASP	3.9
3	C	238	LYS	3.8
2	B	219	ALA	3.8
1	O	1	MET	3.8
3	C	50	LEU	3.8
8	H	224	GLN	3.8
5	S	202	ASP	3.7
14	b	195	GLN	3.6
3	C	49	THR	3.6
8	H	226	GLU	3.6
5	E	54	GLU	3.5
1	O	250	LEU	3.5
3	C	225	GLU	3.5
5	S	203	GLU	3.4
4	R	1	ASP	3.4
5	E	233	ILE	3.4
6	T	181	GLU	3.3
2	P	59	ASP	3.3
3	C	202	GLN	3.3
11	K	146	ASP	3.3
3	C	236	GLN	3.2
4	R	230	GLU	3.2
3	C	239	GLN	3.2
6	T	244	ASN	3.2
5	S	3	ASN	3.1
7	G	242	GLN	3.1
10	X	195	PHE	3.1
3	Q	237	GLU	3.1
2	P	222	GLY	3.1
6	T	2	THR	3.1
12	L	165	ASN	3.1
3	Q	48	SER	3.1
7	G	2	GLY	3.0
6	F	205	GLU	3.0
6	T	205	GLU	3.0
14	N	195	GLN	2.9
10	J	95	ARG	2.9
8	V	221	CYS	2.9
3	C	216	ASP	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
8	V	145	ASP	2.9
7	U	242	GLN	2.9
4	R	217	GLN	2.9
6	T	180	PRO	2.9
10	X	193	ASP	2.9
4	R	241	ALA	2.8
6	F	203	ASN	2.8
1	A	231	LYS	2.8
3	Q	205	ALA	2.8
7	U	206	GLY	2.8
3	C	60	SER	2.8
2	B	217	LYS	2.7
11	K	211	GLY	2.7
5	E	173	ARG	2.7
7	G	188	GLU	2.7
1	O	231	LYS	2.7
2	P	186	ASP	2.7
4	D	117	GLU	2.7
6	T	230	ASP	2.7
11	Y	211	GLY	2.6
13	a	1	THR	2.6
12	Z	173	LYS	2.6
1	A	2	THR	2.6
3	C	235	GLU	2.6
7	U	2	GLY	2.6
4	R	125	LEU	2.6
2	P	203	SER	2.6
6	T	241	LYS	2.6
3	Q	229	GLN	2.5
7	U	188	GLU	2.5
8	V	224	GLN	2.5
3	Q	203	THR	2.5
5	S	173	ARG	2.5
1	O	201	GLU	2.5
7	U	222	ASP	2.5
3	Q	180	LYS	2.5
5	S	218	ASP	2.5
12	Z	210	ASP	2.5
5	S	122	TYR	2.5
12	L	173	LYS	2.5
5	E	201	ARG	2.5
3	Q	181	GLU	2.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	166	LYS	2.4
3	C	59	PRO	2.4
6	T	237	ASP	2.4
1	A	250	LEU	2.4
1	O	248	GLU	2.4
7	G	3	TYR	2.4
3	C	180	LYS	2.4
1	A	201	GLU	2.4
12	L	1	GLN	2.4
4	R	242	GLU	2.4
1	O	241	GLN	2.3
8	H	221	CYS	2.3
9	W	160	GLU	2.3
1	O	52	SER	2.3
12	Z	116	GLU	2.3
13	M	1	THR	2.3
2	B	203	SER	2.2
8	H	222	ASP	2.2
12	Z	106	TYR	2.2
7	U	203	ASP	2.2
12	Z	1	GLN	2.2
2	P	52	THR	2.2
8	H	145	ASP	2.2
2	B	59	ASP	2.2
3	C	240	GLU	2.2
6	F	244	ASN	2.2
3	C	181	GLU	2.2
3	Q	235	GLU	2.2
6	F	215	CYS	2.2
7	G	230	GLU	2.2
5	S	207	VAL	2.2
3	Q	49	THR	2.2
6	F	241	LYS	2.1
5	S	227	GLU	2.1
2	B	182	ASP	2.1
7	G	179	LYS	2.1
2	P	217	LYS	2.1
1	O	182	GLU	2.1
2	P	230	LYS	2.1
6	T	243	ILE	2.1
3	Q	141	ASP	2.1
11	K	182	ASP	2.1

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Mol	Chain	Res	Type	RSRZ
3	Q	60	SER	2.1
3	Q	51	LYS	2.0
12	Z	167	LYS	2.0
7	G	237	VAL	2.0
7	G	241	GLU	2.0
3	C	3	ASP	2.0
1	O	4	ARG	2.0
1	A	248	GLU	2.0
3	C	203	THR	2.0
4	R	203	LYS	2.0
6	F	230	ASP	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 monosaccharides 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.

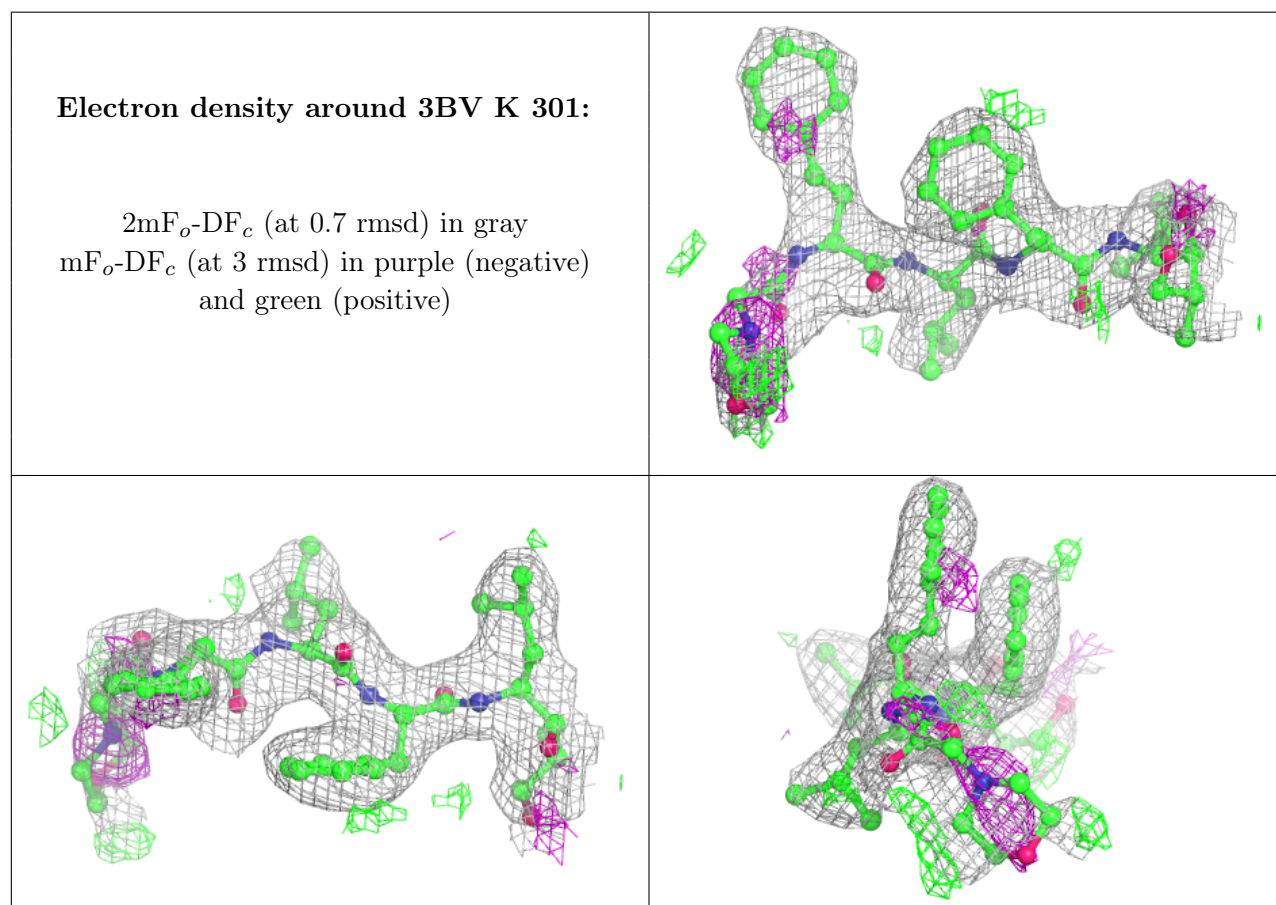
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
17	3BV	K	301	52/52	0.85	0.23	43,56,112,116	0
17	3BV	Y	301	52/52	0.85	0.26	46,55,109,116	0
18	MES	K	304	12/12	0.87	0.40	47,51,67,72	12
17	3BV	N	201	52/52	0.88	0.21	37,51,131,134	0
17	3BV	b	201	52/52	0.89	0.20	39,54,135,138	0
17	3BV	V	301	52/52	0.89	0.21	46,55,102,106	0
18	MES	X	201	12/12	0.89	0.32	47,49,66,71	12
17	3BV	H	301	52/52	0.90	0.21	45,57,104,107	0
15	MG	Z	301	1/1	0.90	0.21	69,69,69,69	0
18	MES	V	302	12/12	0.91	0.32	75,77,83,94	0
15	MG	G	301	1/1	0.93	0.10	50,50,50,50	0
15	MG	K	303	1/1	0.93	0.26	68,68,68,68	0

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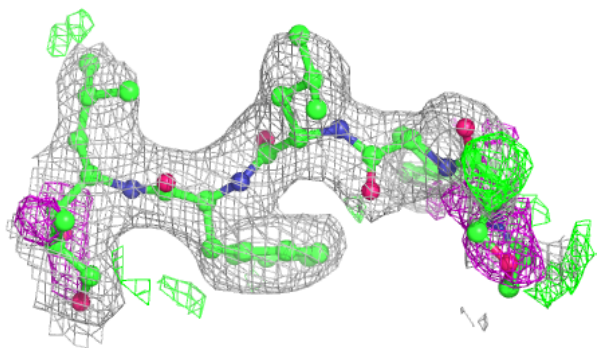
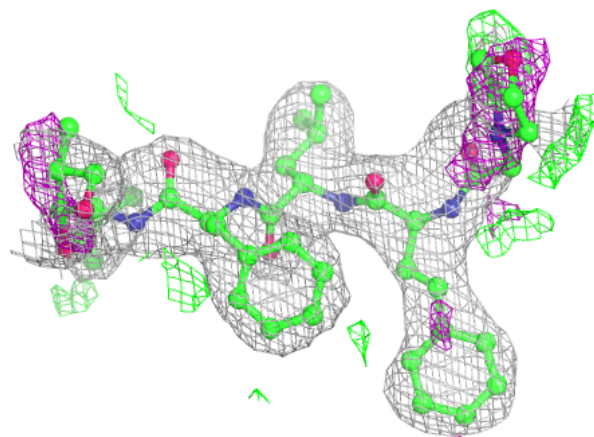
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
18	MES	H	302	12/12	0.94	0.37	74,76,81,85	0
15	MG	I	301	1/1	0.96	0.21	58,58,58,58	0
15	MG	N	202	1/1	0.97	0.09	49,49,49,49	0
15	MG	J	201	1/1	0.97	0.11	50,50,50,50	0
16	CL	N	203	1/1	0.98	0.10	57,57,57,57	0
16	CL	b	203	1/1	0.98	0.08	51,51,51,51	0
15	MG	K	302	1/1	0.98	0.10	56,56,56,56	0
15	MG	b	202	1/1	0.99	0.07	35,35,35,35	0
16	CL	G	302	1/1	0.99	0.11	44,44,44,44	0
15	MG	I	302	1/1	0.99	0.03	58,58,58,58	0
16	CL	U	301	1/1	0.99	0.16	45,45,45,45	0
15	MG	L	301	1/1	0.99	0.07	52,52,52,52	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.



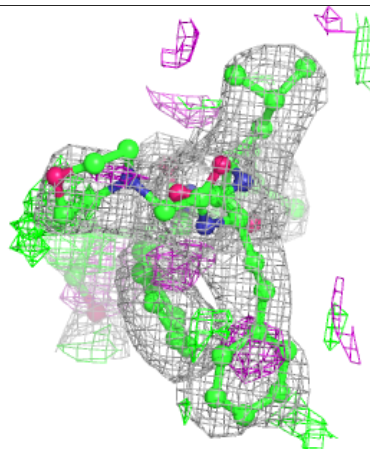
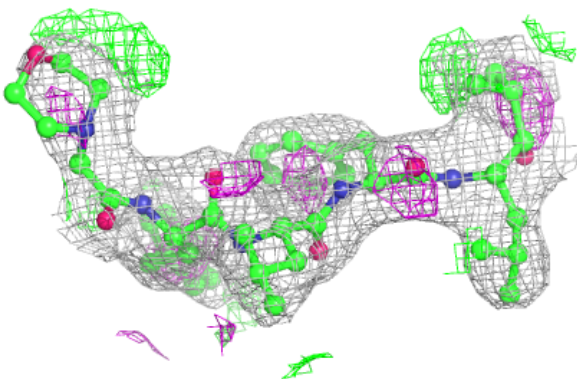
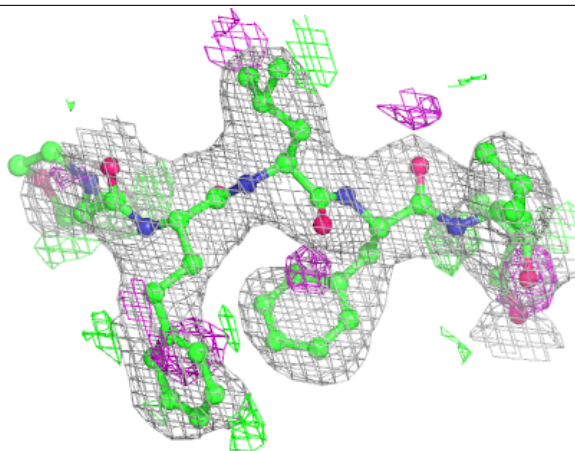
**Electron density around 3BV Y 301:**

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



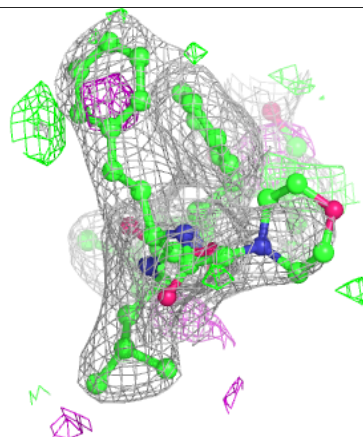
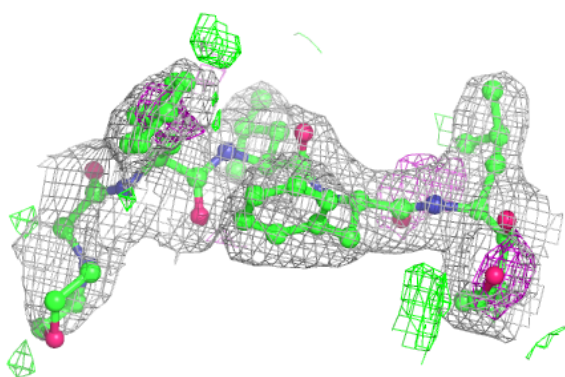
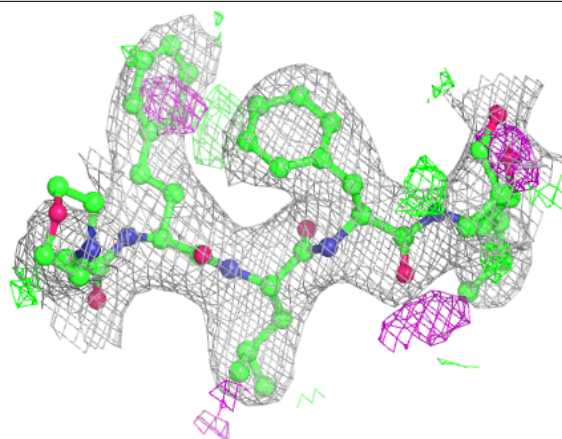
**Electron density around 3BV N 201:**

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

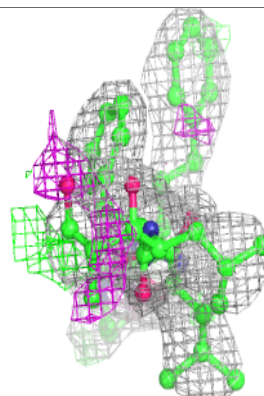
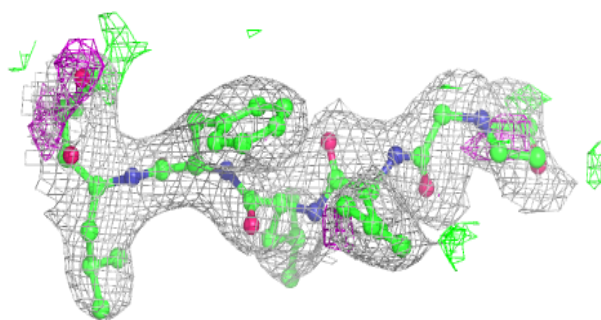
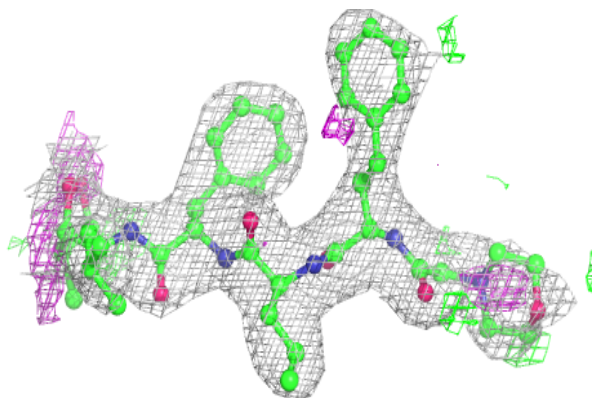


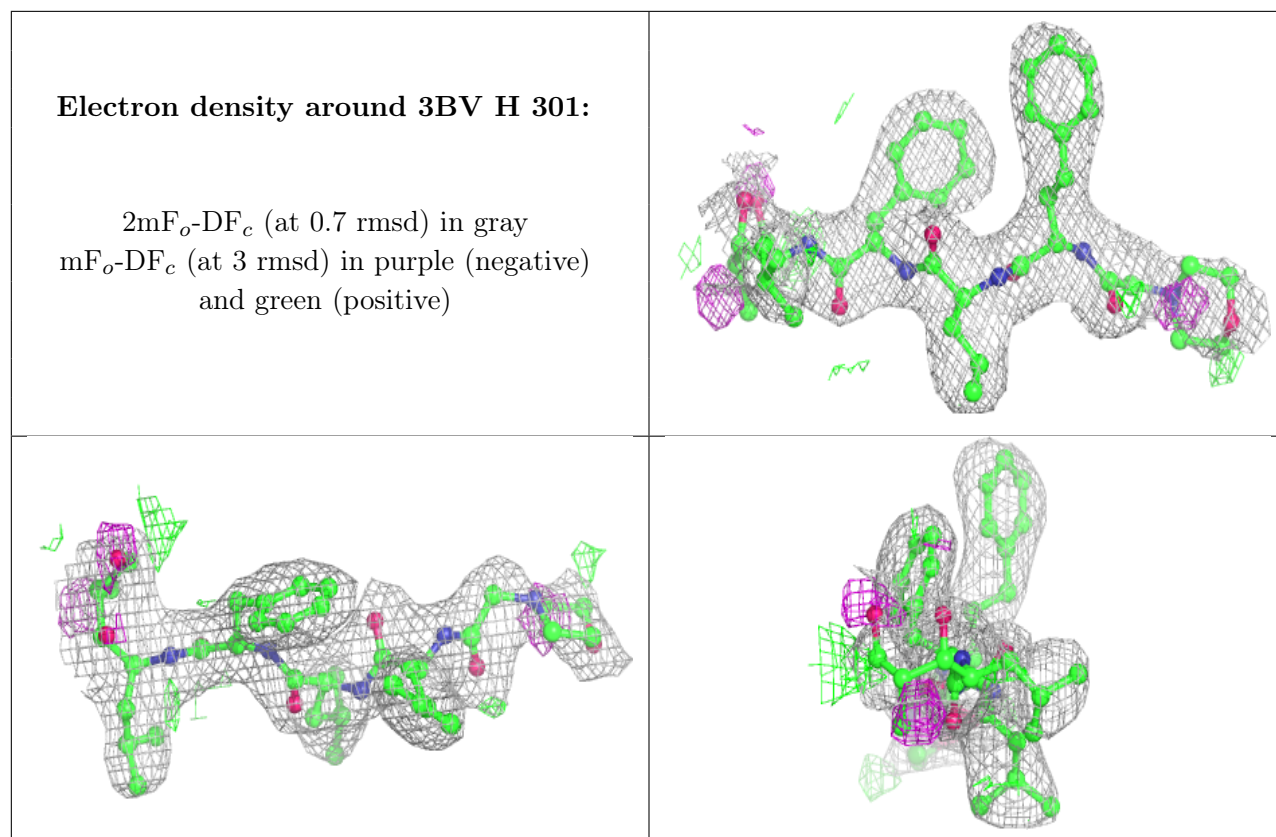
**Electron density around 3BV b 201:**

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

**Electron density around 3BV V 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 [i](#)

There are no such residues in this entry.