



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 3, 2024 – 06:40 pm GMT

PDB ID : 5LF3
Title : Human 20S proteasome complex with Bortezomib at 2.1 Angstrom
Authors : Schrader, J.; Henneberg, F.; Mata, R.; Tittmann, K.; Schneider, T.R.; Stark, H.; Bourenkov, G.; Chari, A.
Deposited on : 2016-06-30
Resolution : 2.10 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

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>.

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

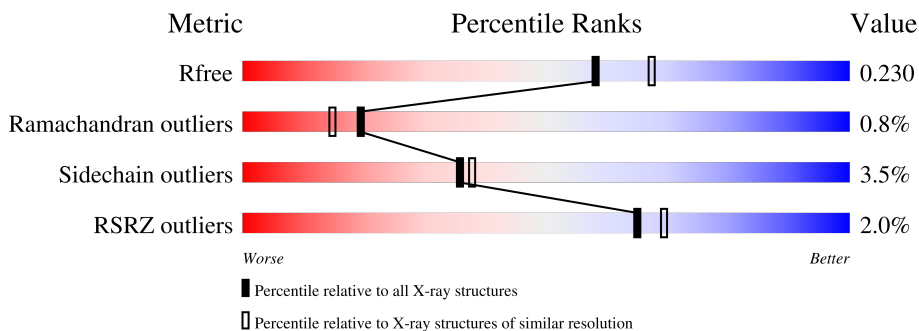
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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	5197 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	234	
1	O	234	
2	B	261	
2	P	261	
3	C	248	
3	Q	248	

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Mol	Chain	Length	Quality of chain
4	D	241	2% 93% ..
4	R	241	% 93% ..
5	E	263	4% 84% 5% 11%
5	S	263	3% 87% • 10%
6	F	255	89% 5% 6%
6	T	255	3% 87% 6% • 6%
7	G	246	% 94% ..
7	U	246	5% 91% 6% •
8	H	234	2% 90% • 6%
8	V	234	2% 90% • 6%
9	I	205	97% •
9	W	205	97% •
10	J	201	93% • •
10	X	201	94% • •
11	K	204	93% 5% •
11	Y	204	% 94% • •
12	L	213	96% •
12	Z	213	97% •
13	M	219	95% • •
13	a	219	94% • •
14	N	205	95% • •
14	b	205	97% • •

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
7	6V1	U	47	X	-	-	-

2 Entry composition

There are 20 unique types of molecules in this entry. The entry contains 52211 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	230	Total	C	N	O	S	0	3	0
			1788	1145	301	336	6			
1	O	230	Total	C	N	O	S	0	0	0
			1741	1111	293	331	6			

- Molecule 2 is a protein called Proteasome subunit alpha type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	248	Total	C	N	O	S	0	2	0
			1926	1220	332	363	11			
2	P	248	Total	C	N	O	S	0	2	0
			1909	1206	325	367	11			

- Molecule 3 is a protein called Proteasome subunit alpha type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	237	Total	C	N	O	S	0	2	0
			1798	1121	320	352	5			
3	Q	239	Total	C	N	O	S	0	0	0
			1820	1136	320	359	5			

- 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	233	Total	C	N	O	S	0	1	0
			1762	1105	290	356	11			
4	R	233	Total	C	N	O	S	0	1	0
			1753	1103	293	346	11			

- Molecule 5 is a protein called Proteasome subunit alpha type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	234	1822	1144	325	342	11	0	1	0
5	S	238	1875	1175	340	349	11	0	3	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	148	6V1	CYS	engineered mutation	UNP P25786
S	148	6V1	CYS	engineered mutation	UNP P25786

- Molecule 6 is a protein called Proteasome subunit alpha type-3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	239	1888	1198	325	353	12	0	4	0
6	T	240	1856	1178	315	351	12	0	1	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	G	244	1912	1214	321	364	13	0	2	0
7	U	238	1815	1147	304	350	14	0	1	0

- Molecule 8 is a protein called Proteasome subunit beta type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	220	1664	1047	284	320	13	0	2	0
8	V	220	1622	1023	269	318	12	0	2	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	I	204	1613	1028	270	295	20	0	3	0
9	W	204	1599	1018	267	295	19	0	2	0

- Molecule 10 is a protein called Proteasome subunit beta type-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	196	Total 1590	C 1021	N 271	O 288	S 10	0	3	0
10	X	196	Total 1574	C 1012	N 267	O 285	S 10	0	2	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	200	Total 1550	C 978	N 269	O 293	S 10	0	1	0
11	Y	201	Total 1580	C 996	N 280	O 294	S 10	0	3	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	213	Total 1636	C 1038	N 277	O 310	S 11	0	2	0
12	Z	213	Total 1642	C 1041	N 280	O 310	S 11	0	1	0

- Molecule 13 is a protein called Proteasome subunit beta type-4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	216	Total 1692	C 1067	N 291	O 322	S 12	0	1	0
13	a	216	Total 1688	C 1064	N 291	O 321	S 12	0	2	0

- Molecule 14 is a protein called Proteasome subunit beta type-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	202	Total 1519	C 953	N 258	O 295	S 13	0	1	0
14	b	203	Total 1524	C 956	N 259	O 296	S 13	0	1	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
N	1	THR	-	expression tag	UNP P28072

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Chain	Residue	Modelled	Actual	Comment	Reference
b	1	THR	-	expression tag	UNP P28072

- Molecule 15 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	A	4	Total Cl 4 4	0	0
15	B	2	Total Cl 2 2	0	0
15	C	2	Total Cl 2 2	0	0
15	D	2	Total Cl 2 2	0	0
15	E	3	Total Cl 3 3	0	0
15	F	1	Total Cl 1 1	0	0
15	G	2	Total Cl 2 2	0	0
15	H	1	Total Cl 1 1	0	0
15	I	1	Total Cl 1 1	0	0
15	K	3	Total Cl 3 3	0	0
15	M	4	Total Cl 4 4	0	0
15	N	2	Total Cl 2 2	0	0
15	O	4	Total Cl 4 4	0	0
15	P	1	Total Cl 1 1	0	0
15	Q	2	Total Cl 2 2	0	0
15	R	2	Total Cl 2 2	0	0
15	S	3	Total Cl 3 3	0	0
15	U	1	Total Cl 1 1	0	0
15	V	1	Total Cl 1 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
15	W	1	Total 1	Cl 1	0	0
15	Y	4	Total 4	Cl 4	0	0
15	a	3	Total 3	Cl 3	0	0
15	b	2	Total 2	Cl 2	0	0

- Molecule 16 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
16	G	1	Total 1	K 1	0	0
16	L	1	Total 1	K 1	0	0
16	N	1	Total 1	K 1	0	0
16	U	1	Total 1	K 1	0	0
16	Z	1	Total 1	K 1	0	0
16	b	1	Total 1	K 1	0	0

- Molecule 17 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

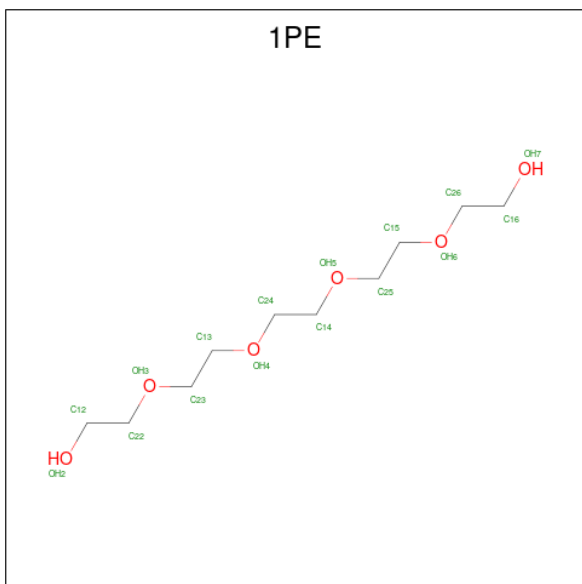
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	H	2	Total 2	Mg 2	0	0
17	I	2	Total 2	Mg 2	0	0
17	J	1	Total 1	Mg 1	0	0
17	K	1	Total 1	Mg 1	0	0
17	L	1	Total 1	Mg 1	0	0
17	V	1	Total 1	Mg 1	0	0
17	W	1	Total 1	Mg 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	X	1	Total	Mg	0	0
			1	1		

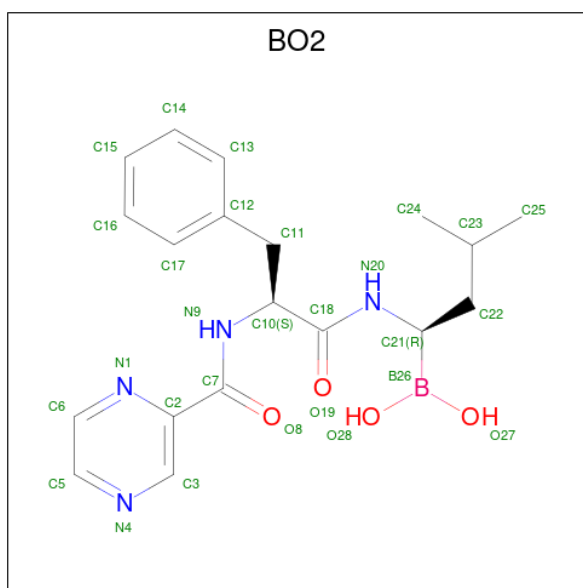
- Molecule 18 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: C₁₀H₂₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
18	H	1	Total	C	O	0	0
			16	10	6		
18	H	1	Total	C	O	0	0
			16	10	6		
18	I	1	Total	C	O	0	0
			16	10	6		
18	I	1	Total	C	O	0	0
			16	10	6		
18	L	1	Total	C	O	0	0
			16	10	6		
18	M	1	Total	C	O	0	0
			16	10	6		
18	W	1	Total	C	O	0	0
			16	10	6		
18	Z	1	Total	C	O	0	0
			16	10	6		
18	b	1	Total	C	O	0	0
			16	10	6		

- Molecule 19 is N-[(1R)-1-(DIHYDROXYBORYL)-3-METHYLBUTYL]-N-(PYRAZI N-2-YLCARBONYL)-L-PHENYLALANINAMIDE (three-letter code: BO2) (formula:

C₁₉H₂₅BN₄O₄).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	B	C	N	O		
19	H	1	Total 28	B 1	C 19	N 4	O 4	0	0
19	K	1	Total 28	B 1	C 19	N 4	O 4	0	0
19	N	1	Total 28	B 1	C 19	N 4	O 4	0	0
19	V	1	Total 28	B 1	C 19	N 4	O 4	0	0
19	Y	1	Total 28	B 1	C 19	N 4	O 4	0	0
19	b	1	Total 28	B 1	C 19	N 4	O 4	0	0

- Molecule 20 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
20	A	115	Total 115	O 115	0	0
20	B	131	Total 131	O 131	0	0
20	C	75	Total 75	O 75	0	0
20	D	95	Total 95	O 95	0	0
20	E	147	Total 147	O 147	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
20	F	186	Total 186	O 186	0	0
20	G	196	Total 196	O 196	0	0
20	H	159	Total 159	O 159	0	0
20	I	157	Total 157	O 157	0	0
20	J	138	Total 138	O 138	0	0
20	K	105	Total 105	O 105	0	0
20	L	125	Total 125	O 125	0	0
20	M	147	Total 147	O 147	0	0
20	N	162	Total 162	O 162	0	0
20	O	95	Total 95	O 95	0	0
20	P	125	Total 125	O 125	0	0
20	Q	75	Total 75	O 75	0	0
20	R	132	Total 132	O 132	0	0
20	S	130	Total 130	O 130	0	0
20	T	100	Total 100	O 100	0	0
20	U	107	Total 107	O 107	0	0
20	V	120	Total 120	O 120	0	0
20	W	118	Total 118	O 118	0	0
20	X	125	Total 125	O 125	0	0
20	Y	142	Total 142	O 142	0	0
20	Z	169	Total 169	O 169	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
20	a	174	Total 174	O 174	0	0
20	b	124	Total 124	O 124	0	0

3 Residue-property plots

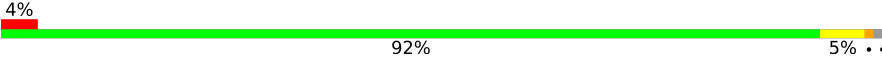
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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.

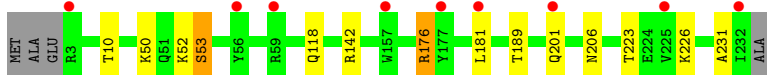
- Molecule 1: Proteasome subunit alpha type-2

Chain A:  91% 6% ..

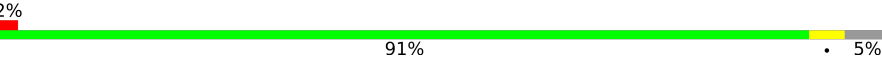


- Molecule 1: Proteasome subunit alpha type-2

Chain O:  4% 92% 5% ..




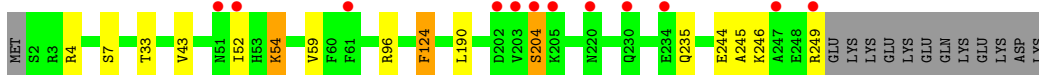
- Molecule 2: Proteasome subunit alpha type-4

Chain B:  2% 91% 5% ..




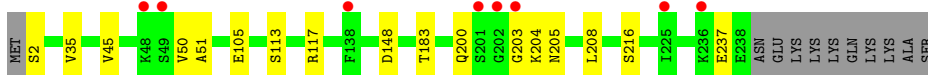
- Molecule 2: Proteasome subunit alpha type-4

Chain P:  5% 89% 5% • 5%

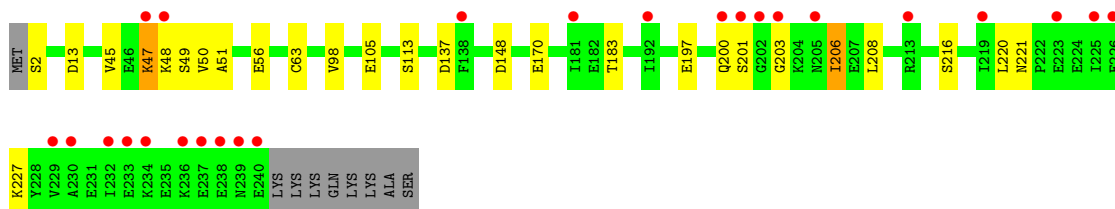
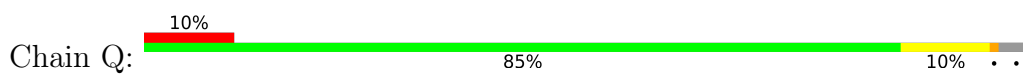


- Molecule 3: Proteasome subunit alpha type-7

Chain C:  3% 89% 7% ..



- Molecule 3: Proteasome subunit alpha type-7



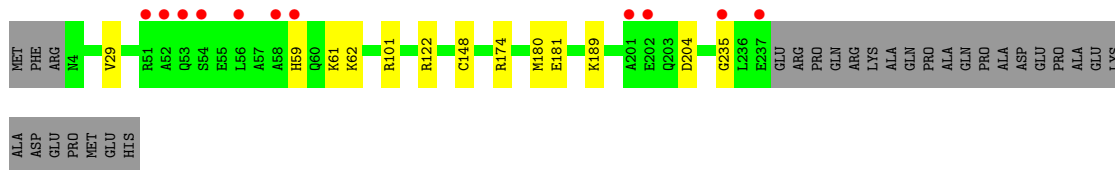
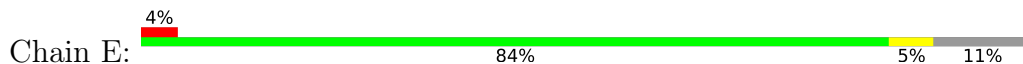
- Molecule 4: Proteasome subunit alpha type-5



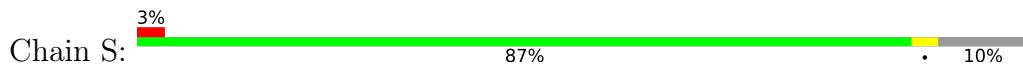
- Molecule 4: Proteasome subunit alpha type-5



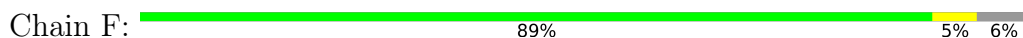
- Molecule 5: Proteasome subunit alpha type-1



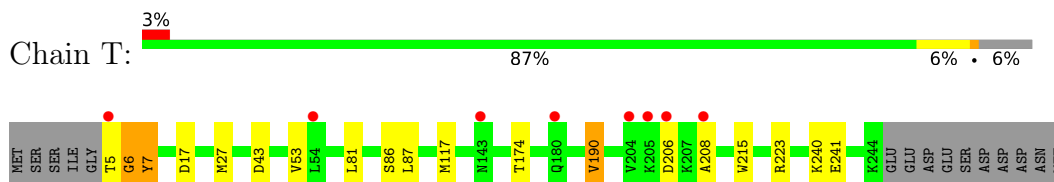
- Molecule 5: Proteasome subunit alpha type-1



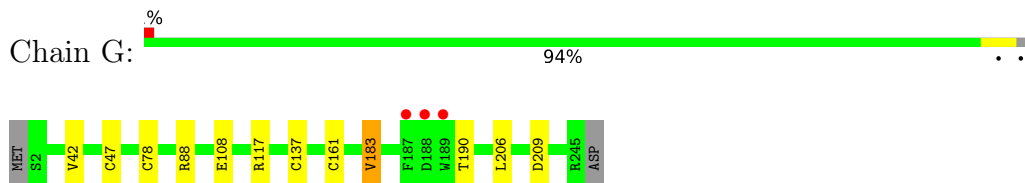
- Molecule 6: Proteasome subunit alpha type-3



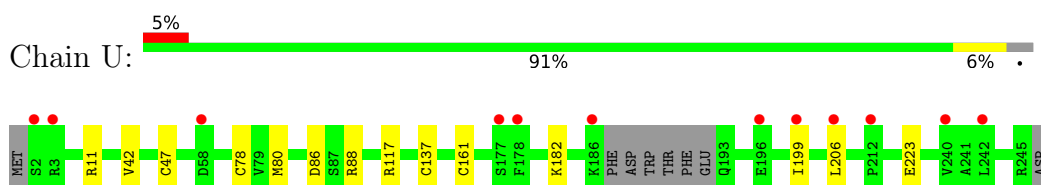
- Molecule 6: Proteasome subunit alpha type-3



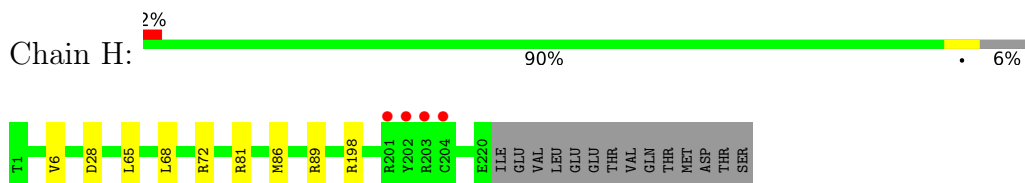
- Molecule 7: Proteasome subunit alpha type-6



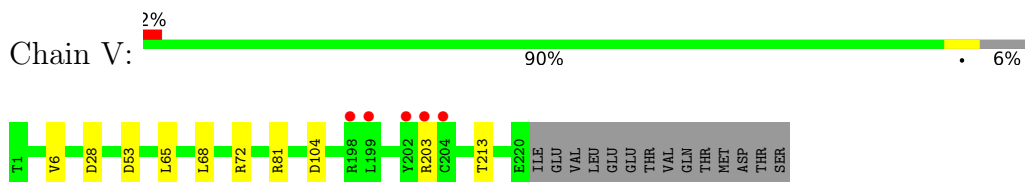
- Molecule 7: Proteasome subunit alpha type-6



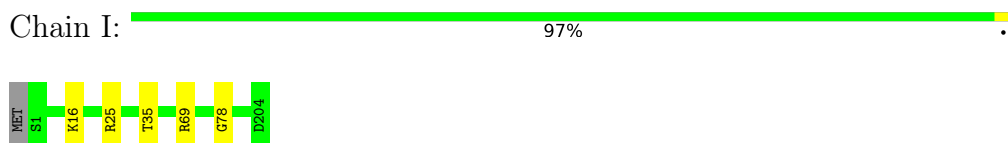
- Molecule 8: Proteasome subunit beta type-7



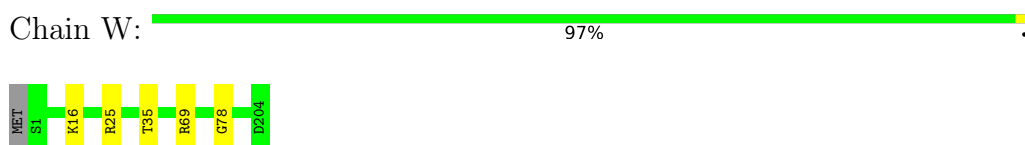
- Molecule 8: Proteasome subunit beta type-7



- Molecule 9: Proteasome subunit beta type-3

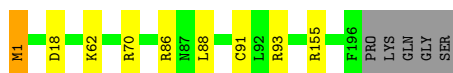


- Molecule 9: Proteasome subunit beta type-3



- Molecule 10: Proteasome subunit beta type-2

Chain J:  93%  ..



- Molecule 10: Proteasome subunit beta type-2

Chain X:  94%  ..



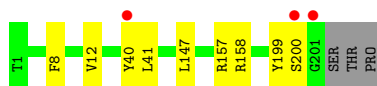
- Molecule 11: Proteasome subunit beta type-5

Chain K:  93%  5% ..



- Molecule 11: Proteasome subunit beta type-5

Chain Y:  94%  ..



- Molecule 12: Proteasome subunit beta type-1

Chain L:  96%  .



- Molecule 12: Proteasome subunit beta type-1

Chain Z:  97%  .



- Molecule 13: Proteasome subunit beta type-4

Chain M:  95%  ..



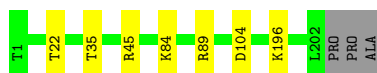
- Molecule 13: Proteasome subunit beta type-4

Chain a:  94% ..



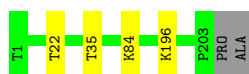
● Molecule 14: Proteasome subunit beta type-6

Chain N:  95% ..



● Molecule 14: Proteasome subunit beta type-6

Chain b:  97% ..



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	113.37Å 202.72Å 314.90Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	170.45 – 2.10 170.45 – 2.10	Depositor EDS
% Data completeness (in resolution range)	98.6 (170.45-2.10) 98.6 (170.45-2.10)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.15 (at 2.10Å)	Xtrriage
Refinement program	REFMAC 5.8.0103	Depositor
R, R_{free}	0.184 , 0.226 0.191 , 0.230	Depositor DCC
R_{free} test set	20644 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	40.7	Xtrriage
Anisotropy	0.168	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 47.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	52211	wwPDB-VP
Average B, all atoms (Å ²)	52.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.75% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: BO2, CL, 1PE, YCM, K, MG, 6V1

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	0.71	0/1833	0.83	1/2489 (0.0%)
1	O	0.63	0/1778	0.81	0/2419
2	B	0.70	0/1962	0.85	3/2649 (0.1%)
2	P	0.69	0/1945	0.89	4/2631 (0.2%)
3	C	0.66	0/1818	0.89	1/2469 (0.0%)
3	Q	0.67	0/1834	0.89	4/2490 (0.2%)
4	D	0.70	0/1789	0.81	2/2424 (0.1%)
4	R	0.73	0/1780	0.89	3/2408 (0.1%)
5	E	0.71	0/1842	0.86	2/2493 (0.1%)
5	S	0.68	0/1901	0.85	3/2571 (0.1%)
6	F	0.78	0/1935	0.90	3/2605 (0.1%)
6	T	0.68	1/1894 (0.1%)	0.92	6/2556 (0.2%)
7	G	0.78	1/1909 (0.1%)	0.83	2/2579 (0.1%)
7	U	0.64	0/1804	0.81	6/2441 (0.2%)
8	H	0.80	0/1697	0.97	8/2299 (0.3%)
8	V	0.69	0/1655	0.89	5/2251 (0.2%)
9	I	0.73	0/1648	0.97	5/2219 (0.2%)
9	W	0.66	0/1630	0.92	6/2197 (0.3%)
10	J	0.71	0/1613	0.99	5/2180 (0.2%)
10	X	0.72	0/1597	0.98	3/2160 (0.1%)
11	K	0.75	2/1584 (0.1%)	0.89	4/2141 (0.2%)
11	Y	0.79	1/1620 (0.1%)	0.94	4/2185 (0.2%)
12	L	0.73	0/1672	0.89	4/2257 (0.2%)
12	Z	0.80	1/1675 (0.1%)	0.91	3/2257 (0.1%)
13	M	0.74	0/1728	0.91	6/2339 (0.3%)
13	a	0.76	0/1724	0.91	5/2336 (0.2%)
14	N	0.81	0/1548	0.84	3/2095 (0.1%)
14	b	0.70	0/1554	0.83	0/2104
All	All	0.72	6/48969 (0.0%)	0.89	101/66244 (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
2	P	0	3
3	C	0	1
3	Q	0	2
4	D	0	4
4	R	0	2
5	E	0	1
6	T	0	1
7	U	1	0
9	I	0	1
9	W	0	1
10	J	0	2
10	X	0	1
11	Y	0	1
13	a	0	1
All	All	1	21

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	Z	3	SER	CB-OG	7.53	1.52	1.42
7	G	108	GLU	CD-OE1	7.45	1.33	1.25
11	Y	40	TYR	CE1-CZ	6.05	1.46	1.38
11	K	40	TYR	CE1-CZ	5.66	1.46	1.38
11	K	40	TYR	CG-CD1	5.44	1.46	1.39
6	T	7	TYR	N-CA	5.17	1.56	1.46

All (101) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	J	86	ARG	NE-CZ-NH2	-16.38	112.11	120.30
10	X	86	ARG	NE-CZ-NH2	-15.92	112.34	120.30
10	J	86	ARG	NE-CZ-NH1	13.76	127.18	120.30
10	X	86	ARG	NE-CZ-NH1	13.18	126.89	120.30
2	P	124	PHE	CB-CG-CD1	-10.33	113.57	120.80
8	H	72	ARG	NE-CZ-NH2	-10.16	115.22	120.30
9	I	25[A]	ARG	NE-CZ-NH1	9.71	125.16	120.30
9	I	25[B]	ARG	NE-CZ-NH1	9.71	125.16	120.30
4	R	120[A]	ALA	C-N-CA	9.40	145.21	121.70
4	R	120[B]	ALA	C-N-CA	9.40	145.21	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	W	69	ARG	NE-CZ-NH1	9.34	124.97	120.30
2	P	124	PHE	CB-CG-CD2	9.26	127.28	120.80
9	W	16[A]	LYS	C-N-CA	8.74	143.54	121.70
9	W	16[B]	LYS	C-N-CA	8.74	143.54	121.70
9	I	69	ARG	NE-CZ-NH1	8.51	124.55	120.30
11	Y	158	ARG	NE-CZ-NH1	8.49	124.55	120.30
9	I	16[A]	LYS	C-N-CA	8.44	142.80	121.70
9	I	16[B]	LYS	C-N-CA	8.44	142.80	121.70
2	B	96	ARG	NE-CZ-NH1	7.72	124.16	120.30
11	Y	158	ARG	NE-CZ-NH2	-7.67	116.47	120.30
7	U	11	ARG	NE-CZ-NH1	7.57	124.08	120.30
8	H	72	ARG	NE-CZ-NH1	7.41	124.00	120.30
6	T	43	ASP	CB-CG-OD2	7.13	124.72	118.30
13	M	151	ARG	NE-CZ-NH1	6.97	123.79	120.30
13	M	182	ARG	NE-CZ-NH1	6.90	123.75	120.30
9	W	25[A]	ARG	NE-CZ-NH1	6.83	123.72	120.30
9	W	25[B]	ARG	NE-CZ-NH1	6.83	123.72	120.30
6	T	27	MET	CG-SD-CE	6.82	111.12	100.20
3	Q	13	ASP	CB-CG-OD2	6.74	124.37	118.30
11	Y	157	ARG	NE-CZ-NH2	-6.70	116.95	120.30
2	B	4	ARG	NE-CZ-NH1	6.60	123.60	120.30
2	P	96	ARG	NE-CZ-NH1	6.56	123.58	120.30
5	E	122	ARG	NE-CZ-NH2	-6.55	117.03	120.30
10	J	93	ARG	NE-CZ-NH1	6.51	123.56	120.30
8	H	28	ASP	CB-CG-OD1	6.47	124.12	118.30
12	L	172	MET	CG-SD-CE	-6.39	89.97	100.20
7	U	88	ARG	NE-CZ-NH1	6.39	123.49	120.30
12	Z	172	MET	CG-SD-CE	-6.33	90.08	100.20
7	U	117	ARG	NE-CZ-NH1	6.30	123.45	120.30
5	S	122	ARG	NE-CZ-NH2	-6.28	117.16	120.30
8	V	28	ASP	CB-CG-OD1	6.24	123.92	118.30
8	H	198	ARG	NE-CZ-NH2	-6.21	117.20	120.30
13	M	151	ARG	NE-CZ-NH2	-6.15	117.22	120.30
8	H	89	ARG	NE-CZ-NH1	6.15	123.38	120.30
13	a	182	ARG	NE-CZ-NH1	6.08	123.34	120.30
12	L	99	ARG	NE-CZ-NH1	6.01	123.30	120.30
2	P	4	ARG	NE-CZ-NH1	6.01	123.30	120.30
7	G	117	ARG	NE-CZ-NH1	5.96	123.28	120.30
7	U	80[A]	MET	CG-SD-CE	5.94	109.70	100.20
7	U	80[B]	MET	CG-SD-CE	5.94	109.70	100.20
11	Y	157	ARG	NE-CZ-NH1	5.93	123.27	120.30
8	V	72	ARG	NE-CZ-NH1	5.92	123.26	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	H	198	ARG	NE-CZ-NH1	5.90	123.25	120.30
7	G	183	VAL	CB-CA-C	-5.86	100.28	111.40
13	M	94	ARG	NE-CZ-NH1	5.78	123.19	120.30
6	T	117	MET	CG-SD-CE	5.77	109.44	100.20
7	U	86	ASP	CB-CG-OD2	5.72	123.45	118.30
13	a	94	ARG	NE-CZ-NH1	5.70	123.15	120.30
6	F	190	VAL	CB-CA-C	-5.69	100.58	111.40
13	M	99	ARG	NE-CZ-NH1	5.68	123.14	120.30
14	N	45	ARG	NE-CZ-NH2	-5.68	117.46	120.30
5	S	122	ARG	NE-CZ-NH1	5.68	123.14	120.30
6	T	6	GLY	C-N-CA	5.67	135.87	121.70
4	D	175[A]	GLU	N-CA-C	-5.65	95.75	111.00
4	D	175[B]	GLU	N-CA-C	-5.65	95.75	111.00
10	X	70	ARG	NE-CZ-NH1	5.57	123.09	120.30
12	Z	99	ARG	NE-CZ-NH1	5.54	123.07	120.30
6	T	190	VAL	CB-CA-C	-5.52	100.92	111.40
2	B	96	ARG	NE-CZ-NH2	-5.47	117.57	120.30
11	K	107	ARG	NE-CZ-NH1	5.46	123.03	120.30
12	Z	99	ARG	NE-CZ-NH2	-5.46	117.57	120.30
5	E	174	ARG	NE-CZ-NH1	5.41	123.00	120.30
6	T	7	TYR	N-CA-CB	5.38	120.29	110.60
11	K	158	ARG	NE-CZ-NH1	5.38	122.99	120.30
11	K	157	ARG	NE-CZ-NH2	-5.36	117.62	120.30
8	V	53	ASP	CB-CG-OD2	5.35	123.12	118.30
3	Q	137	ASP	CB-CG-OD2	-5.35	113.49	118.30
14	N	104	ASP	CB-CG-OD2	5.34	123.11	118.30
14	N	89	ARG	NE-CZ-NH1	5.34	122.97	120.30
13	a	99	ARG	NE-CZ-NH1	5.33	122.97	120.30
10	J	70	ARG	NE-CZ-NH1	5.33	122.96	120.30
10	J	86	ARG	CD-NE-CZ	5.30	131.02	123.60
9	W	69	ARG	NE-CZ-NH2	-5.29	117.66	120.30
12	L	99	ARG	NE-CZ-NH2	-5.23	117.69	120.30
13	a	100	ARG	NE-CZ-NH1	5.22	122.91	120.30
12	L	114	ASP	CB-CG-OD1	5.20	122.98	118.30
4	R	168	ARG	NE-CZ-NH2	-5.18	117.71	120.30
3	Q	220	LEU	CA-C-N	5.17	128.58	117.20
8	V	72	ARG	NE-CZ-NH2	-5.17	117.71	120.30
8	V	81	ARG	NE-CZ-NH2	-5.17	117.71	120.30
8	H	86	MET	CG-SD-CE	-5.16	91.95	100.20
6	F	117	MET	CG-SD-CE	5.13	108.40	100.20
8	H	81	ARG	NE-CZ-NH2	-5.11	117.74	120.30
3	C	117	ARG	NE-CZ-NH1	5.08	122.84	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	S	174	ARG	NE-CZ-NH1	5.08	122.84	120.30
13	M	73	ASP	CB-CG-OD2	-5.06	113.75	118.30
13	a	151	ARG	NE-CZ-NH1	5.03	122.82	120.30
11	K	42	LEU	CA-CB-CG	5.03	126.87	115.30
6	F	85	ARG	NE-CZ-NH2	-5.02	117.79	120.30
3	Q	220	LEU	C-N-CA	5.02	134.25	121.70
1	A	73	LEU	CB-CA-C	-5.01	100.69	110.20

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
7	U	47	6V1	C1

All (21) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	237	GLU	Peptide
4	D	127	ASP	Peptide
4	D	175[A]	GLU	Peptide
4	D	175[B]	GLU	Peptide
4	D	223	GLY	Peptide
5	E	235	GLY	Peptide
9	I	78	GLY	Peptide
10	J	1[A]	MET	Peptide
10	J	1[B]	MET	Peptide
2	P	244	GLU	Peptide
2	P	245	ALA	Peptide
2	P	54	LYS	Peptide
3	Q	47	LYS	Peptide
3	Q	49	SER	Peptide
4	R	130	PRO	Peptide
4	R	223	GLY	Peptide
6	T	5	THR	Peptide
9	W	78	GLY	Peptide
10	X	1	MET	Peptide
11	Y	199	TYR	Peptide
13	a	215	ILE	Peptide

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	231/234 (99%)	222 (96%)	4 (2%)	5 (2%)	6	2
1	O	228/234 (97%)	218 (96%)	4 (2%)	6 (3%)	5	2
2	B	248/261 (95%)	239 (96%)	7 (3%)	2 (1%)	19	15
2	P	248/261 (95%)	232 (94%)	13 (5%)	3 (1%)	13	8
3	C	236/248 (95%)	224 (95%)	6 (2%)	6 (2%)	5	2
3	Q	236/248 (95%)	218 (92%)	8 (3%)	10 (4%)	3	0
4	D	232/241 (96%)	224 (97%)	4 (2%)	4 (2%)	9	4
4	R	232/241 (96%)	222 (96%)	7 (3%)	3 (1%)	12	7
5	E	232/263 (88%)	226 (97%)	5 (2%)	1 (0%)	34	32
5	S	238/263 (90%)	230 (97%)	6 (2%)	2 (1%)	19	15
6	F	241/255 (94%)	240 (100%)	1 (0%)	0	100	100
6	T	239/255 (94%)	233 (98%)	2 (1%)	4 (2%)	9	4
7	G	241/246 (98%)	235 (98%)	5 (2%)	1 (0%)	34	32
7	U	232/246 (94%)	228 (98%)	4 (2%)	0	100	100
8	H	220/234 (94%)	217 (99%)	3 (1%)	0	100	100
8	V	220/234 (94%)	217 (99%)	2 (1%)	1 (0%)	29	26
9	I	205/205 (100%)	200 (98%)	5 (2%)	0	100	100
9	W	204/205 (100%)	199 (98%)	5 (2%)	0	100	100
10	J	195/201 (97%)	192 (98%)	3 (2%)	0	100	100
10	X	195/201 (97%)	193 (99%)	2 (1%)	0	100	100
11	K	199/204 (98%)	196 (98%)	3 (2%)	0	100	100
11	Y	202/204 (99%)	198 (98%)	3 (2%)	1 (0%)	29	26
12	L	213/213 (100%)	211 (99%)	2 (1%)	0	100	100
12	Z	212/213 (100%)	210 (99%)	2 (1%)	0	100	100
13	M	215/219 (98%)	208 (97%)	7 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	a	216/219 (99%)	209 (97%)	7 (3%)	0	100	100
14	N	201/205 (98%)	199 (99%)	2 (1%)	0	100	100
14	b	202/205 (98%)	200 (99%)	2 (1%)	0	100	100
All	All	6213/6458 (96%)	6040 (97%)	124 (2%)	49 (1%)	19	15

All (49) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	50	LYS
1	A	52	LYS
1	A	53	SER
4	D	176	GLY
5	E	59	HIS
1	O	52	LYS
1	O	53	SER
2	P	204	SER
3	Q	47	LYS
3	Q	201	SER
3	Q	206	ILE
3	Q	221	ASN
4	R	130	PRO
5	S	238	GLU
6	T	208	ALA
11	Y	200	SER
3	C	200	GLN
1	O	50	LYS
1	O	231	ALA
2	P	52	ILE
2	P	54	LYS
3	Q	200	GLN
6	T	7	TYR
6	T	206	ASP
8	V	203	ARG
1	A	176	ARG
3	C	50	VAL
3	C	204	LYS
4	D	175[A]	GLU
4	D	175[B]	GLU
1	O	176	ARG
4	R	128	ALA
3	C	216	SER

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Mol	Chain	Res	Type
4	D	126	GLU
3	Q	48	LYS
3	Q	50	VAL
5	S	3	ARG
6	T	6	GLY
1	A	201	GLN
3	C	51	ALA
7	G	209	ASP
1	O	201	GLN
3	Q	216	SER
4	R	129	ASP
2	B	204	SER
3	Q	51	ALA
3	C	203	GLY
2	B	203	VAL
3	Q	203	GLY

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	185/191 (97%)	172 (93%)	13 (7%)	15	12
1	O	176/191 (92%)	166 (94%)	10 (6%)	20	18
2	B	200/221 (90%)	194 (97%)	6 (3%)	41	44
2	P	197/221 (89%)	186 (94%)	11 (6%)	21	18
3	C	179/210 (85%)	170 (95%)	9 (5%)	24	23
3	Q	184/210 (88%)	171 (93%)	13 (7%)	14	11
4	D	189/203 (93%)	184 (97%)	5 (3%)	46	50
4	R	187/203 (92%)	185 (99%)	2 (1%)	73	79
5	E	192/223 (86%)	183 (95%)	9 (5%)	26	25
5	S	197/223 (88%)	191 (97%)	6 (3%)	41	44
6	F	199/212 (94%)	188 (94%)	11 (6%)	21	19

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	T	192/212 (91%)	181 (94%)	11 (6%)	20	18
7	G	202/207 (98%)	196 (97%)	6 (3%)	41	44
7	U	186/207 (90%)	180 (97%)	6 (3%)	39	41
8	H	181/195 (93%)	178 (98%)	3 (2%)	60	67
8	V	172/195 (88%)	166 (96%)	6 (4%)	36	38
9	I	176/174 (101%)	175 (99%)	1 (1%)	86	90
9	W	173/174 (99%)	172 (99%)	1 (1%)	86	90
10	J	166/170 (98%)	160 (96%)	6 (4%)	35	36
10	X	164/170 (96%)	159 (97%)	5 (3%)	41	44
11	K	155/159 (98%)	148 (96%)	7 (4%)	27	27
11	Y	159/159 (100%)	155 (98%)	4 (2%)	47	52
12	L	175/178 (98%)	167 (95%)	8 (5%)	27	26
12	Z	175/178 (98%)	170 (97%)	5 (3%)	42	46
13	M	180/181 (99%)	178 (99%)	2 (1%)	73	79
13	a	178/181 (98%)	173 (97%)	5 (3%)	43	47
14	N	158/159 (99%)	154 (98%)	4 (2%)	47	52
14	b	158/159 (99%)	154 (98%)	4 (2%)	47	52
All	All	5035/5366 (94%)	4856 (96%)	179 (4%)	36	36

All (179) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	LYS
1	A	50	LYS
1	A	53	SER
1	A	61	VAL
1	A	69	LYS
1	A	142	ARG
1	A	174	GLU
1	A	176	ARG
1	A	189	THR
1	A	206	ASN
1	A	223	THR
1	A	226	LYS
1	A	227	ASP
2	B	33	THR

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Mol	Chain	Res	Type
2	B	43	VAL
2	B	59	VAL
2	B	190	LEU
2	B	229	LYS
2	B	249	ARG
3	C	2	SER
3	C	35	VAL
3	C	45	VAL
3	C	105	GLU
3	C	113	SER
3	C	148	ASP
3	C	183	THR
3	C	205	ASN
3	C	208	LEU
4	D	46	VAL
4	D	65	GLU
4	D	95	GLU
4	D	126	GLU
4	D	199	LEU
5	E	29	VAL
5	E	61	LYS
5	E	62	LYS
5	E	101[A]	ARG
5	E	101[B]	ARG
5	E	180	MET
5	E	181	GLU
5	E	189	LYS
5	E	204	ASP
6	F	17	ASP
6	F	53	VAL
6	F	81	LEU
6	F	86	SER
6	F	87	LEU
6	F	174	THR
6	F	187	ARG
6	F	190	VAL
6	F	215	TRP
6	F	240	LYS
6	F	244	LYS
7	G	42	VAL
7	G	78	CYS
7	G	88	ARG

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Mol	Chain	Res	Type
7	G	183	VAL
7	G	190	THR
7	G	206	LEU
8	H	6	VAL
8	H	65	LEU
8	H	68	LEU
9	I	35	THR
10	J	1[A]	MET
10	J	1[B]	MET
10	J	18	ASP
10	J	62	LYS
10	J	88	LEU
10	J	155	ARG
11	K	8	PHE
11	K	12	VAL
11	K	41	LEU
11	K	147	LEU
11	K	158	ARG
11	K	174	VAL
11	K	187	VAL
12	L	3[A]	SER
12	L	3[B]	SER
12	L	102	PHE
12	L	163	HIS
12	L	169	ASP
12	L	172	MET
12	L	174	LEU
12	L	207	THR
13	M	100	ARG
13	M	154	LEU
14	N	22	THR
14	N	35	THR
14	N	84	LYS
14	N	196	LYS
1	O	10	THR
1	O	53	SER
1	O	118	GLN
1	O	142	ARG
1	O	176	ARG
1	O	181	LEU
1	O	189	THR
1	O	206	ASN

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Mol	Chain	Res	Type
1	O	223	THR
1	O	226	LYS
2	P	7[A]	SER
2	P	7[B]	SER
2	P	33	THR
2	P	43	VAL
2	P	59	VAL
2	P	124	PHE
2	P	190	LEU
2	P	204	SER
2	P	235	GLN
2	P	246	LYS
2	P	249	ARG
3	Q	2	SER
3	Q	45	VAL
3	Q	56	GLU
3	Q	98	VAL
3	Q	105	GLU
3	Q	113	SER
3	Q	148	ASP
3	Q	170	GLU
3	Q	183	THR
3	Q	197	GLU
3	Q	206	ILE
3	Q	208	LEU
3	Q	227	LYS
4	R	32	LYS
4	R	46	VAL
5	S	3	ARG
5	S	29	VAL
5	S	45	VAL
5	S	62	LYS
5	S	101	ARG
5	S	180	MET
6	T	17	ASP
6	T	53	VAL
6	T	81	LEU
6	T	86	SER
6	T	87	LEU
6	T	174	THR
6	T	190	VAL
6	T	215	TRP

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Mol	Chain	Res	Type
6	T	223	ARG
6	T	240	LYS
6	T	241	GLU
7	U	42	VAL
7	U	78	CYS
7	U	182	LYS
7	U	199	ILE
7	U	206	LEU
7	U	223	GLU
8	V	6	VAL
8	V	65	LEU
8	V	68	LEU
8	V	104[A]	ASP
8	V	104[B]	ASP
8	V	213	THR
9	W	35	THR
10	X	1	MET
10	X	62	LYS
10	X	88	LEU
10	X	95	ARG
10	X	158	GLU
11	Y	8	PHE
11	Y	12	VAL
11	Y	41	LEU
11	Y	147	LEU
12	Z	102	PHE
12	Z	169	ASP
12	Z	172	MET
12	Z	174	LEU
12	Z	207	THR
13	a	92	LEU
13	a	100	ARG
13	a	154	LEU
13	a	198	GLU
13	a	216	SER
14	b	22	THR
14	b	35	THR
14	b	84	LYS
14	b	196	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	51	GLN
1	A	108	GLN
1	A	206	ASN
2	B	40	ASN
5	E	16	GLN
5	E	65	HIS
6	F	143	ASN
7	G	68	HIS
8	H	116	HIS
8	H	153	ASN
8	H	193	ASN
9	I	161	HIS
10	J	87	ASN
10	J	101	ASN
11	K	162	GLN
12	L	157	ASN
13	M	162	GLN
1	O	62	HIS
1	O	118	GLN
1	O	206	ASN
2	P	40	ASN
2	P	109	GLN
2	P	146	GLN
3	Q	18	GLN
4	R	186	HIS
5	S	86	ASN
6	T	68	ASN
6	T	143	ASN
8	V	116	HIS
8	V	193	ASN
9	W	172	ASN
10	X	24	ASN
11	Y	162	GLN
12	Z	79	ASN
12	Z	157	ASN
13	a	89	HIS
13	a	162	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](#)

12 non-standard protein/DNA/RNA residues 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
10	6V1	J	91	10	12,15,16	2.22	3 (25%)	9,20,22	4.06	5 (55%)
3	YCM	Q	63	3	7,9,10	1.26	1 (14%)	4,10,12	3.37	3 (75%)
10	6V1	X	91	10	12,15,16	1.73	2 (16%)	9,20,22	4.61	5 (55%)
5	6V1	S	148	5	12,15,16	2.11	4 (33%)	9,20,22	3.26	5 (55%)
7	YCM	U	137	7	7,9,10	1.07	1 (14%)	4,10,12	1.42	1 (25%)
7	6V1	U	47	7	12,15,16	2.01	4 (33%)	9,20,22	2.57	4 (44%)
5	6V1	E	148	5	12,15,16	2.01	3 (25%)	9,20,22	3.09	5 (55%)
3	YCM	C	63	3	7,9,10	0.85	0	4,10,12	0.85	0
7	YCM	G	137	7	7,9,10	1.66	1 (14%)	4,10,12	2.42	2 (50%)
7	6V1	G	161	7	12,15,16	1.57	2 (16%)	9,20,22	2.23	5 (55%)
7	6V1	U	161	7	12,15,16	1.52	2 (16%)	9,20,22	2.37	4 (44%)
7	6V1	G	47	7	12,15,16	2.16	3 (25%)	9,20,22	1.68	2 (22%)

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
10	6V1	J	91	10	-	2/6/25/27	0/1/1/1
3	YCM	Q	63	3	-	3/6/8/10	-
10	6V1	X	91	10	-	2/6/25/27	0/1/1/1
5	6V1	S	148	5	-	0/6/25/27	0/1/1/1
7	YCM	U	137	7	-	1/6/8/10	-
7	6V1	U	47	7	1/1/5/6	0/6/25/27	0/1/1/1
5	6V1	E	148	5	-	2/6/25/27	0/1/1/1
3	YCM	C	63	3	-	0/6/8/10	-
7	YCM	G	137	7	-	2/6/8/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	6V1	G	161	7	-	1/6/25/27	0/1/1/1
7	6V1	U	161	7	-	1/6/25/27	0/1/1/1
7	6V1	G	47	7	-	1/6/25/27	0/1/1/1

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	J	91	6V1	C1-SG	-6.52	1.76	1.83
7	G	47	6V1	CB-SG	-5.92	1.75	1.82
5	S	148	6V1	CB-SG	-5.56	1.76	1.82
5	E	148	6V1	CB-SG	-5.02	1.76	1.82
10	X	91	6V1	C1-SG	-4.63	1.78	1.83
7	U	47	6V1	CB-SG	-4.59	1.77	1.82
7	U	47	6V1	C1-SG	-3.25	1.79	1.83
7	G	161	6V1	C2-N3	-3.21	1.34	1.38
7	G	47	6V1	C4-N3	-3.17	1.33	1.38
5	E	148	6V1	C2-N3	-3.15	1.34	1.38
7	G	137	YCM	CB-SG	-3.11	1.68	1.80
5	S	148	6V1	C2-N3	-3.10	1.34	1.38
7	U	161	6V1	CB-SG	-2.92	1.78	1.82
7	G	161	6V1	CB-SG	-2.85	1.79	1.82
7	U	47	6V1	C2-N3	-2.73	1.34	1.38
7	G	47	6V1	C2-N3	-2.64	1.35	1.38
3	Q	63	YCM	CD-SG	-2.63	1.74	1.81
10	J	91	6V1	C4-N3	-2.49	1.34	1.38
5	S	148	6V1	C4-N3	-2.46	1.34	1.38
7	U	47	6V1	C4-N3	-2.41	1.34	1.38
5	E	148	6V1	C1-SG	-2.35	1.80	1.83
5	S	148	6V1	C5-C4	2.32	1.54	1.50
10	X	91	6V1	C4-N3	-2.25	1.35	1.38
7	U	137	YCM	CB-SG	-2.16	1.72	1.80
7	U	161	6V1	C2-N3	-2.15	1.35	1.38
10	J	91	6V1	CB-SG	-2.04	1.79	1.82

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	X	91	6V1	C5-C4-N3	8.57	113.18	108.13
10	J	91	6V1	C5-C4-N3	7.82	112.74	108.13
5	E	148	6V1	C5-C4-N3	7.14	112.34	108.13
10	X	91	6V1	C2-N3-C4	-6.67	109.08	113.04
5	S	148	6V1	C2-N3-C4	-5.98	109.49	113.04

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	S	148	6V1	C5-C4-N3	5.93	111.63	108.13
10	X	91	6V1	O7-C2-N3	5.81	131.24	124.14
10	J	91	6V1	O7-C2-N3	5.69	131.09	124.14
10	J	91	6V1	C2-N3-C4	-5.10	110.01	113.04
3	Q	63	YCM	CE-CD-SG	-4.93	99.08	113.59
7	U	47	6V1	C2-N3-C4	-4.82	110.18	113.04
10	X	91	6V1	C6-N3-C2	4.66	129.27	123.36
7	U	47	6V1	C5-C4-N3	4.59	110.84	108.13
10	J	91	6V1	C6-N3-C2	4.16	128.64	123.36
7	U	161	6V1	O8-C4-N3	4.10	128.46	123.92
7	G	137	YCM	CE-CD-SG	3.94	125.19	113.59
5	E	148	6V1	C2-N3-C4	-3.92	110.71	113.04
10	X	91	6V1	O8-C4-C5	-3.87	121.60	127.24
5	S	148	6V1	C6-N3-C4	3.59	127.27	122.59
3	Q	63	YCM	CA-CB-SG	-3.48	101.00	113.74
7	U	161	6V1	O8-C4-C5	-3.43	122.24	127.24
7	U	161	6V1	C2-N3-C4	-3.32	111.07	113.04
7	G	47	6V1	C5-C4-N3	3.27	110.06	108.13
7	G	47	6V1	C2-N3-C4	-3.24	111.12	113.04
10	J	91	6V1	O8-C4-C5	-3.06	122.79	127.24
7	G	161	6V1	O8-C4-N3	2.99	127.23	123.92
7	G	161	6V1	C6-N3-C2	2.90	127.03	123.36
3	Q	63	YCM	CB-SG-CD	2.89	131.27	104.44
5	E	148	6V1	C6-N3-C2	2.69	126.77	123.36
7	G	161	6V1	C3-C6-N3	-2.62	103.08	111.65
5	E	148	6V1	O8-C4-C5	-2.60	123.46	127.24
7	G	161	6V1	O8-C4-C5	-2.55	123.53	127.24
7	U	47	6V1	O8-C4-C5	-2.55	123.53	127.24
7	U	161	6V1	C6-N3-C4	2.43	125.76	122.59
7	G	161	6V1	O7-C2-N3	2.31	126.97	124.14
7	U	137	YCM	CE-CD-SG	2.13	119.85	113.59
5	S	148	6V1	O8-C4-C5	-2.10	124.18	127.24
5	E	148	6V1	C3-C6-N3	2.09	118.49	111.65
7	U	47	6V1	C6-N3-C2	2.08	126.00	123.36
7	G	137	YCM	CA-CB-SG	-2.08	106.14	113.74
5	S	148	6V1	O7-C2-N3	-2.07	121.61	124.14

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
7	U	47	6V1	C1

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	G	137	YCM	CE-CD-SG-CB
7	G	137	YCM	SG-CD-CE-NZ2
10	J	91	6V1	C3-C6-N3-C2
10	J	91	6V1	C3-C6-N3-C4
3	Q	63	YCM	CE-CD-SG-CB
3	Q	63	YCM	SG-CD-CE-OZ1
3	Q	63	YCM	SG-CD-CE-NZ2
7	U	137	YCM	CE-CD-SG-CB
10	X	91	6V1	C3-C6-N3-C2
10	X	91	6V1	C3-C6-N3-C4
5	E	148	6V1	C3-C6-N3-C2
5	E	148	6V1	C3-C6-N3-C4
7	G	47	6V1	C5-C1-SG-CB
7	G	161	6V1	N-CA-CB-SG
7	U	161	6V1	N-CA-CB-SG

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 82 ligands modelled in this entry, 67 are monoatomic - leaving 15 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
18	1PE	H	304	-	15,15,15	0.51	0	14,14,14	0.53	0
18	1PE	I	303	-	15,15,15	0.54	0	14,14,14	0.85	1 (7%)
19	BO2	H	306	8	25,29,29	1.02	1 (4%)	32,38,38	1.20	1 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
18	1PE	b	303	-	15,15,15	0.60	0	14,14,14	0.65	0
19	BO2	K	305	11	25,29,29	0.69	0	32,38,38	1.28	4 (12%)
19	BO2	N	304	14	25,29,29	0.94	1 (4%)	32,38,38	1.79	10 (31%)
18	1PE	Z	301	-	15,15,15	0.58	0	14,14,14	0.45	0
19	BO2	b	305	14	25,29,29	0.89	0	32,38,38	1.30	4 (12%)
18	1PE	M	305	-	15,15,15	0.53	0	14,14,14	0.32	0
19	BO2	Y	305	11	25,29,29	0.66	0	32,38,38	1.11	2 (6%)
18	1PE	I	304	-	15,15,15	0.52	0	14,14,14	0.44	0
18	1PE	W	303	-	15,15,15	0.58	0	14,14,14	0.38	0
18	1PE	H	305	-	15,15,15	0.55	0	14,14,14	0.38	0
19	BO2	V	303	8	25,29,29	0.77	0	32,38,38	1.44	2 (6%)
18	1PE	L	301	-	15,15,15	0.56	0	14,14,14	0.68	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
18	1PE	H	304	-	-	7/13/13/13	-
18	1PE	I	303	-	-	6/13/13/13	-
19	BO2	H	306	8	-	5/22/28/28	0/2/2/2
18	1PE	b	303	-	-	6/13/13/13	-
19	BO2	K	305	11	-	3/22/28/28	0/2/2/2
19	BO2	N	304	14	-	1/22/28/28	0/2/2/2
18	1PE	Z	301	-	-	6/13/13/13	-
19	BO2	b	305	14	-	2/22/28/28	0/2/2/2
18	1PE	M	305	-	-	6/13/13/13	-
19	BO2	Y	305	11	-	3/22/28/28	0/2/2/2
18	1PE	I	304	-	-	10/13/13/13	-
18	1PE	W	303	-	-	9/13/13/13	-
18	1PE	H	305	-	-	4/13/13/13	-
19	BO2	V	303	8	-	5/22/28/28	0/2/2/2
18	1PE	L	301	-	-	6/13/13/13	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
19	H	306	BO2	C11-C10	-2.19	1.48	1.54
19	N	304	BO2	O8-C7	-2.03	1.19	1.23

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
19	V	303	BO2	C7-C2-N1	4.92	123.29	117.48
19	N	304	BO2	C6-N1-C2	4.63	122.94	116.93
19	H	306	BO2	C7-C2-N1	4.16	122.39	117.48
19	N	304	BO2	C3-C2-N1	-3.52	117.42	121.61
19	K	305	BO2	C7-C2-N1	3.29	121.37	117.48
19	K	305	BO2	C2-C3-N4	-3.25	118.01	122.05
19	N	304	BO2	C5-N4-C3	3.23	122.43	116.85
19	b	305	BO2	C6-C5-N4	-3.01	118.19	121.95
19	N	304	BO2	C2-C7-N9	2.98	120.73	115.20
19	N	304	BO2	C6-C5-N4	-2.86	118.38	121.95
19	K	305	BO2	C3-C2-C7	-2.74	116.71	119.62
19	b	305	BO2	C5-N4-C3	2.61	121.37	116.85
19	K	305	BO2	C5-N4-C3	2.58	121.31	116.85
19	N	304	BO2	O8-C7-C2	-2.56	115.50	121.08
19	N	304	BO2	C3-C2-C7	2.41	122.19	119.62
19	N	304	BO2	C7-C2-N1	2.40	120.31	117.48
19	b	305	BO2	C3-C2-N1	-2.39	118.76	121.61
19	b	305	BO2	C7-C2-N1	2.39	120.30	117.48
19	Y	305	BO2	C7-C2-N1	2.29	120.18	117.48
19	V	303	BO2	C3-C2-C7	-2.21	117.27	119.62
19	N	304	BO2	C2-C3-N4	-2.12	119.42	122.05
18	I	303	1PE	C25-OH5-C14	2.07	122.27	113.29
19	Y	305	BO2	C2-C3-N4	-2.04	119.52	122.05
19	N	304	BO2	C5-C6-N1	-2.00	119.29	122.17

There are no chirality outliers.

All (79) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
19	H	306	BO2	N1-C2-C7-N9
19	H	306	BO2	C3-C2-C7-O8
19	H	306	BO2	C3-C2-C7-N9
19	K	305	BO2	C3-C2-C7-N9
19	V	303	BO2	C3-C2-C7-O8
19	V	303	BO2	C3-C2-C7-N9
19	Y	305	BO2	C3-C2-C7-N9

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Mol	Chain	Res	Type	Atoms
19	H	306	BO2	N1-C2-C7-O8
19	V	303	BO2	N1-C2-C7-O8
19	V	303	BO2	N1-C2-C7-N9
18	b	303	1PE	C24-C14-OH5-C25
18	L	301	1PE	C16-C26-OH6-C15
18	W	303	1PE	OH6-C15-C25-OH5
18	Z	301	1PE	OH6-C15-C25-OH5
18	M	305	1PE	OH5-C14-C24-OH4
18	H	305	1PE	OH4-C13-C23-OH3
18	b	303	1PE	OH4-C13-C23-OH3
18	I	303	1PE	OH6-C15-C25-OH5
18	L	301	1PE	OH5-C14-C24-OH4
18	L	301	1PE	OH6-C15-C25-OH5
18	H	305	1PE	OH5-C14-C24-OH4
18	H	304	1PE	OH4-C13-C23-OH3
18	H	304	1PE	OH2-C12-C22-OH3
18	W	303	1PE	OH2-C12-C22-OH3
18	I	303	1PE	C15-C25-OH5-C14
18	I	304	1PE	OH4-C13-C23-OH3
18	W	303	1PE	OH7-C16-C26-OH6
18	M	305	1PE	OH6-C15-C25-OH5
18	Z	301	1PE	OH4-C13-C23-OH3
18	I	304	1PE	C24-C14-OH5-C25
18	Z	301	1PE	C16-C26-OH6-C15
18	H	304	1PE	OH7-C16-C26-OH6
18	L	301	1PE	OH2-C12-C22-OH3
18	H	305	1PE	OH2-C12-C22-OH3
18	I	303	1PE	OH2-C12-C22-OH3
18	L	301	1PE	C25-C15-OH6-C26
18	W	303	1PE	C24-C14-OH5-C25
18	b	303	1PE	OH2-C12-C22-OH3
18	I	304	1PE	OH6-C15-C25-OH5
18	W	303	1PE	C12-C22-OH3-C23
18	L	301	1PE	C13-C23-OH3-C22
18	W	303	1PE	C23-C13-OH4-C24
18	I	304	1PE	C16-C26-OH6-C15
18	I	304	1PE	C23-C13-OH4-C24
18	I	303	1PE	C24-C14-OH5-C25
19	V	303	BO2	C21-C22-C23-C24
18	b	303	1PE	OH7-C16-C26-OH6
18	M	305	1PE	C23-C13-OH4-C24
18	H	305	1PE	OH7-C16-C26-OH6

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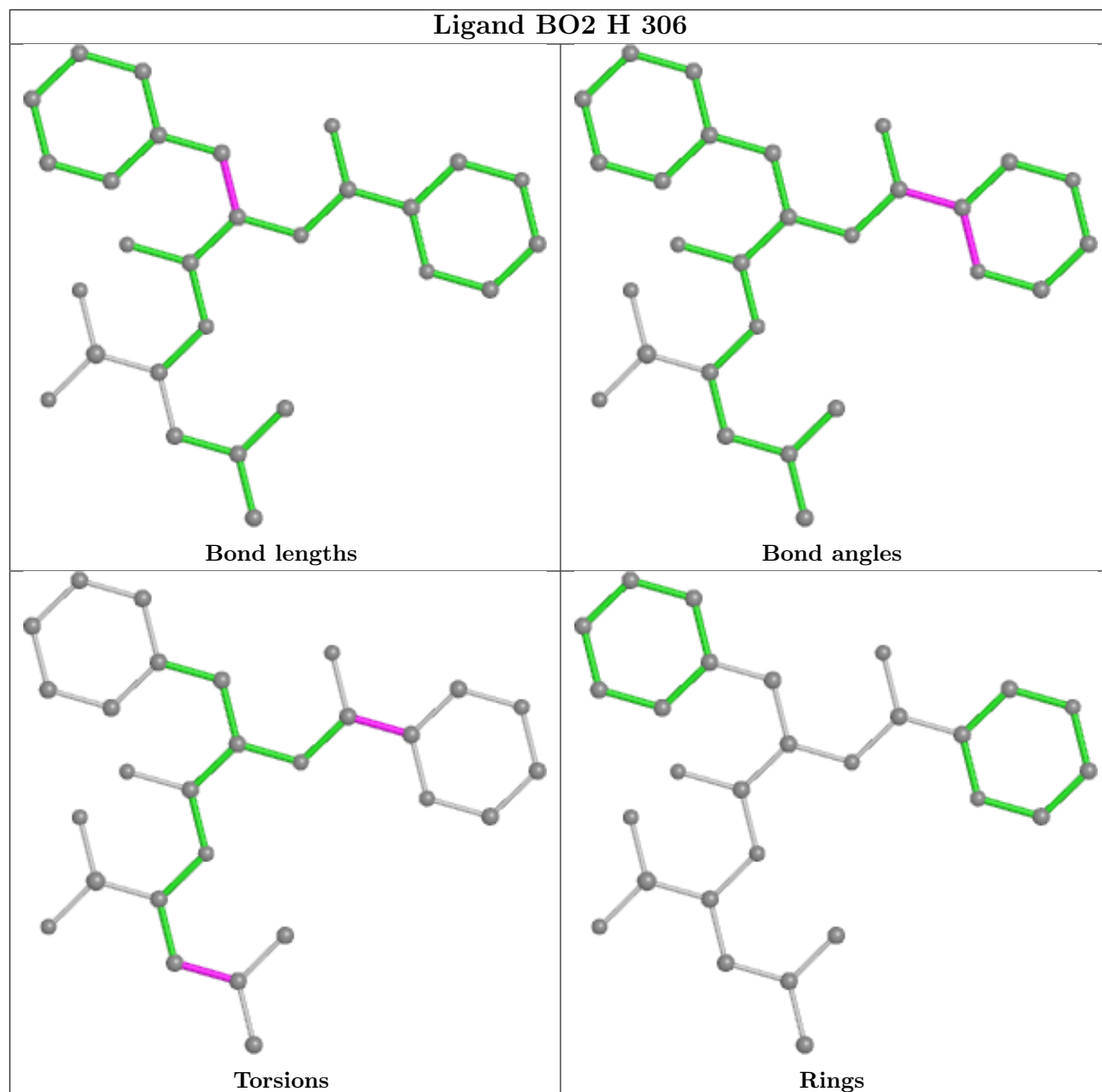
Mol	Chain	Res	Type	Atoms
18	I	304	1PE	OH7-C16-C26-OH6
18	I	303	1PE	C12-C22-OH3-C23
18	M	305	1PE	OH4-C13-C23-OH3
18	H	304	1PE	C13-C23-OH3-C22
18	I	304	1PE	C13-C23-OH3-C22
18	Z	301	1PE	C23-C13-OH4-C24
19	K	305	BO2	C3-C2-C7-O8
18	I	303	1PE	OH5-C14-C24-OH4
18	b	303	1PE	OH5-C14-C24-OH4
19	Y	305	BO2	C3-C2-C7-O8
18	H	304	1PE	C12-C22-OH3-C23
18	Z	301	1PE	C12-C22-OH3-C23
18	W	303	1PE	C13-C23-OH3-C22
18	H	304	1PE	C16-C26-OH6-C15
19	N	304	BO2	C3-C2-C7-N9
19	b	305	BO2	C3-C2-C7-N9
18	W	303	1PE	C14-C24-OH4-C13
19	b	305	BO2	C3-C2-C7-O8
18	Z	301	1PE	OH2-C12-C22-OH3
18	M	305	1PE	C12-C22-OH3-C23
18	W	303	1PE	C25-C15-OH6-C26
18	H	304	1PE	C25-C15-OH6-C26
18	I	304	1PE	C12-C22-OH3-C23
18	I	304	1PE	C15-C25-OH5-C14
18	I	304	1PE	OH5-C14-C24-OH4
19	H	306	BO2	C21-C22-C23-C24
19	K	305	BO2	C21-C22-C23-C24
19	Y	305	BO2	C21-C22-C23-C24
18	b	303	1PE	OH6-C15-C25-OH5
18	M	305	1PE	OH7-C16-C26-OH6

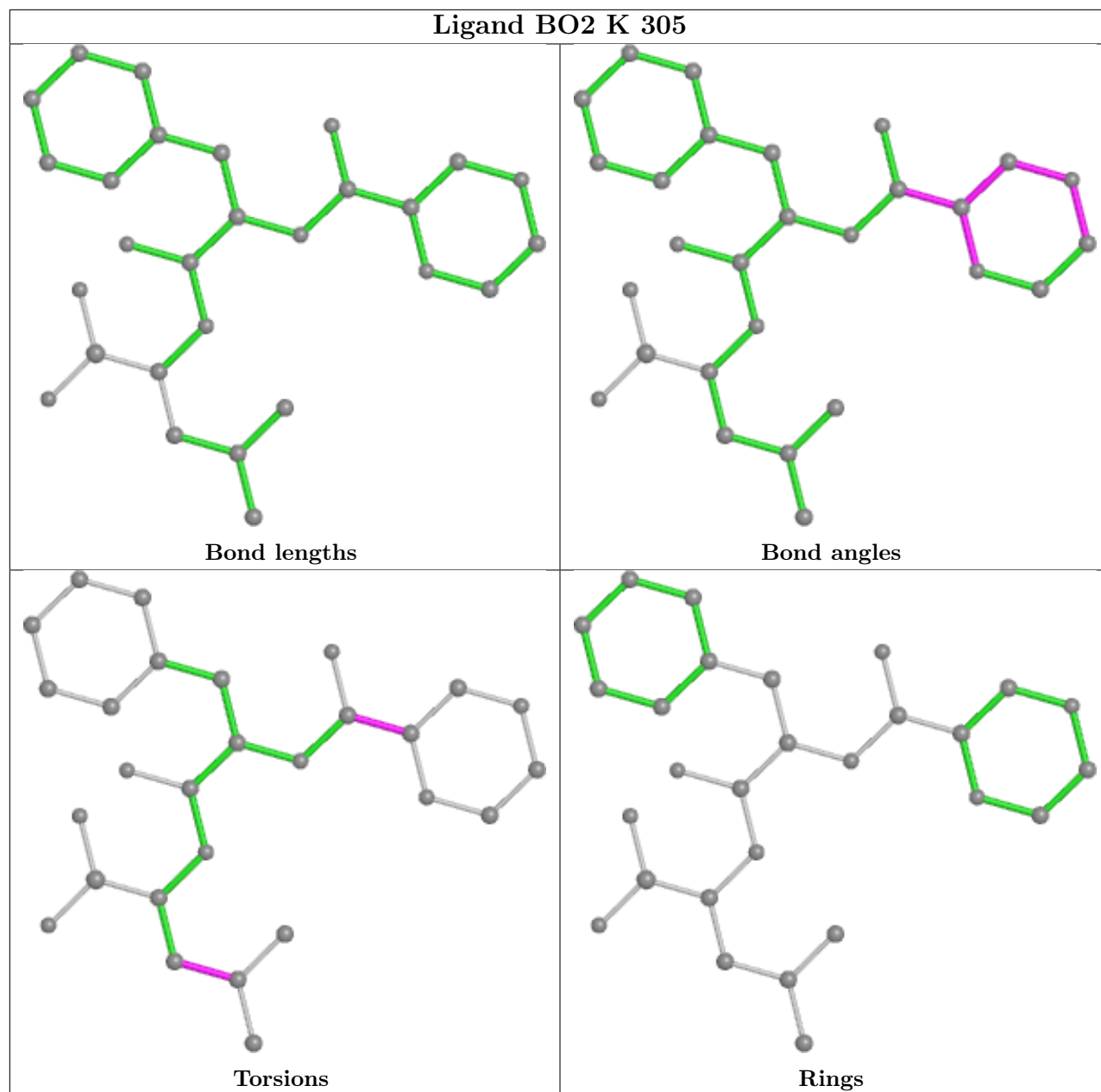
There are no ring outliers.

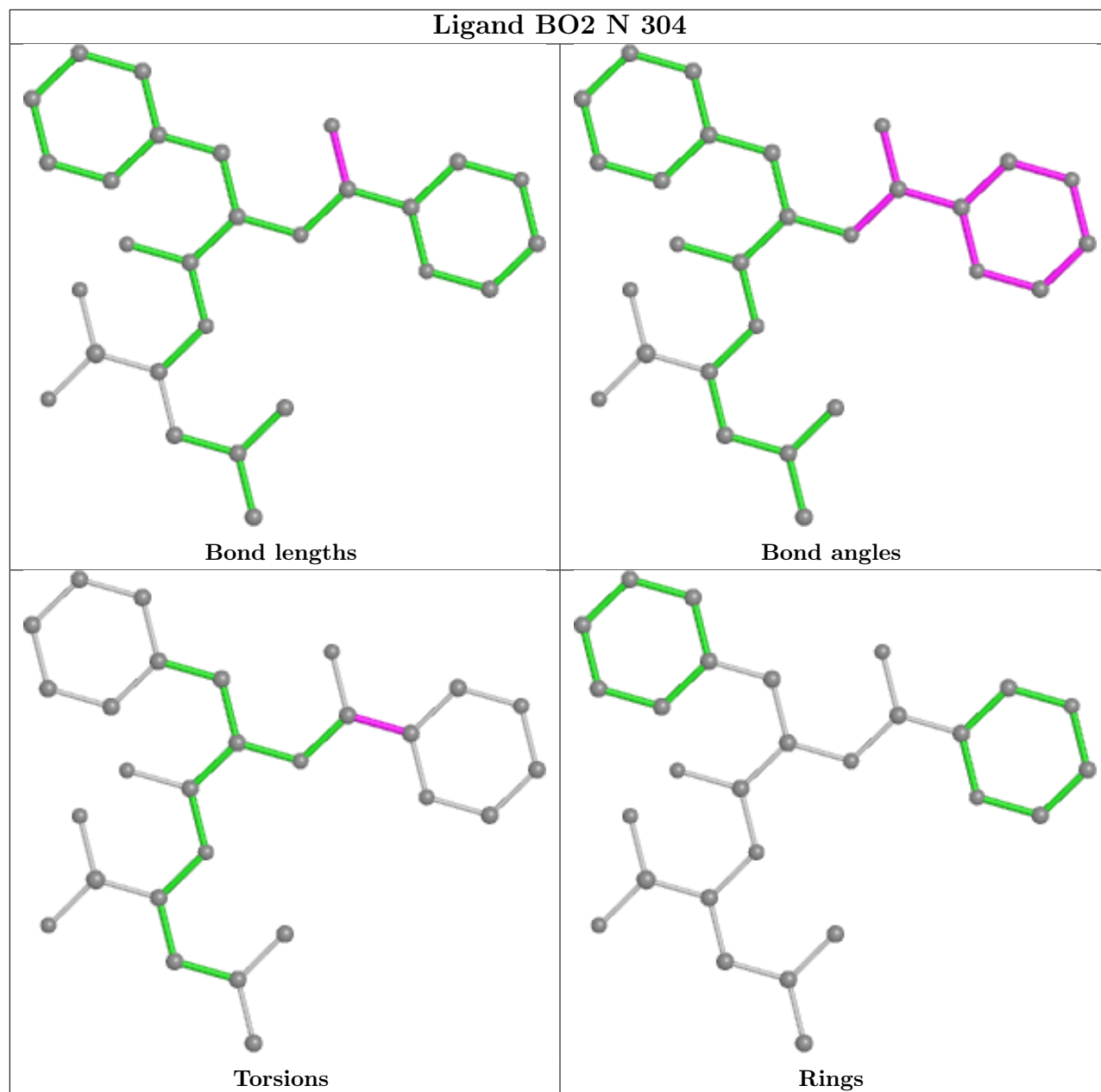
No monomer is involved in short contacts.

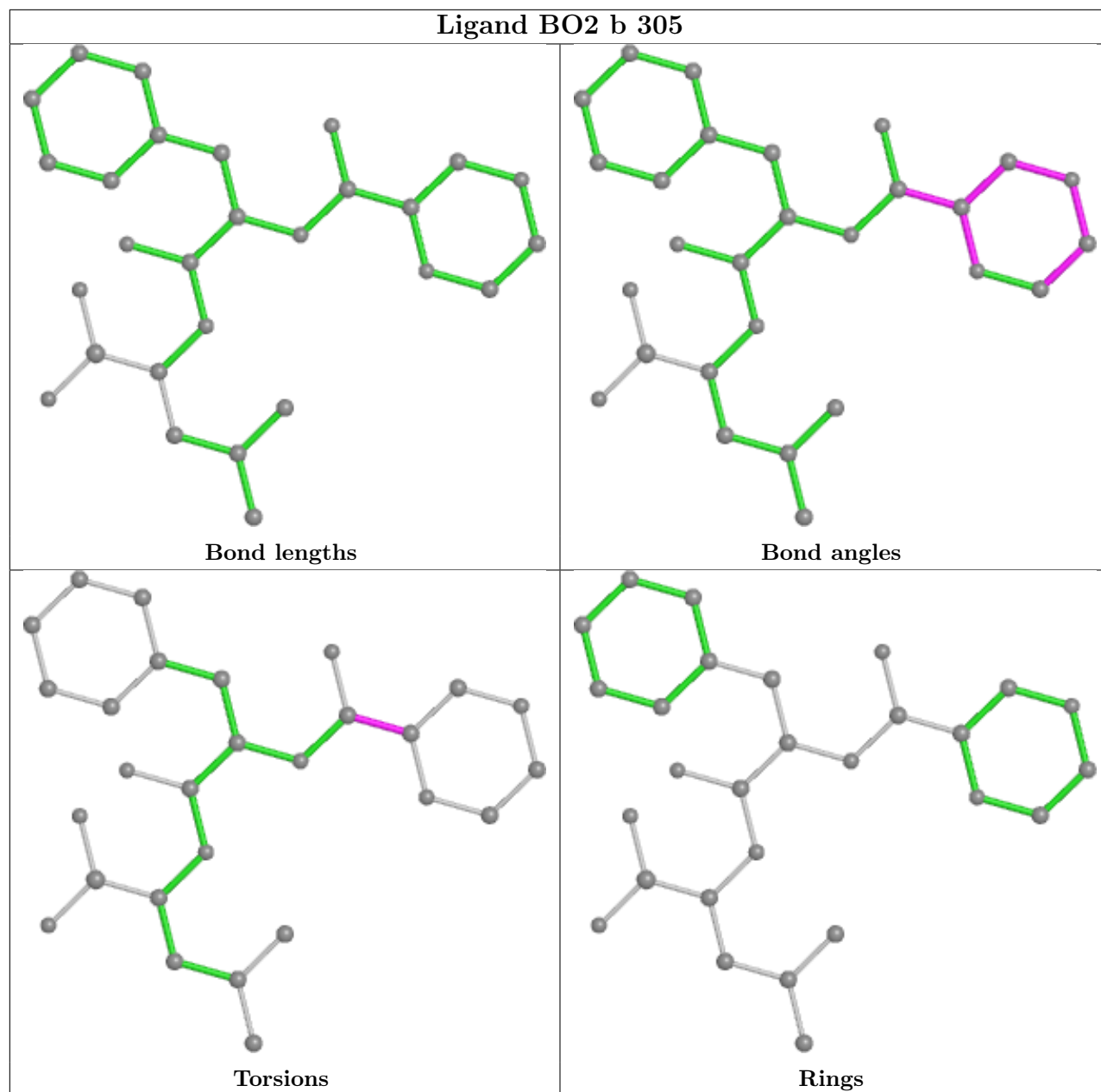
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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

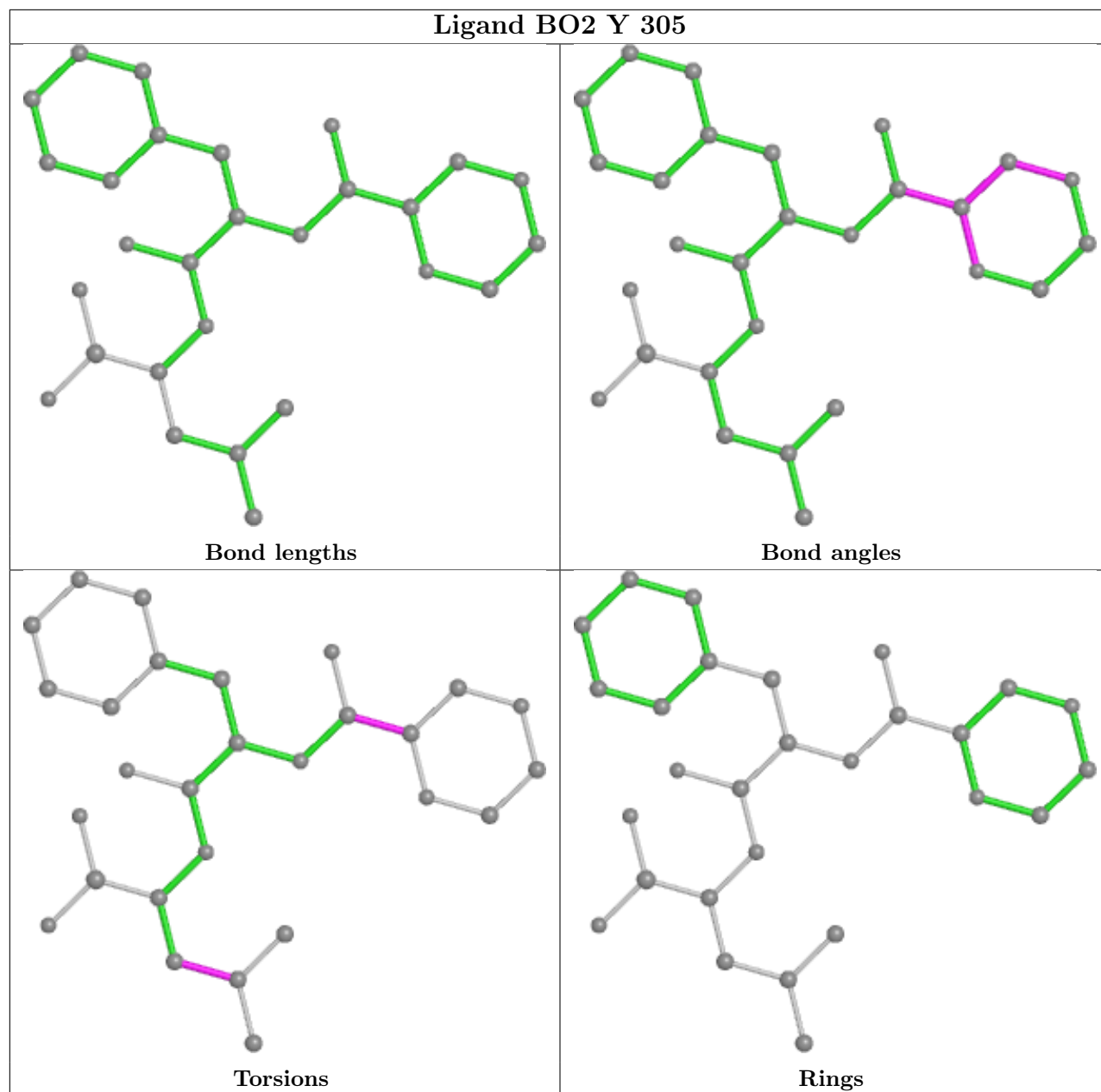
any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

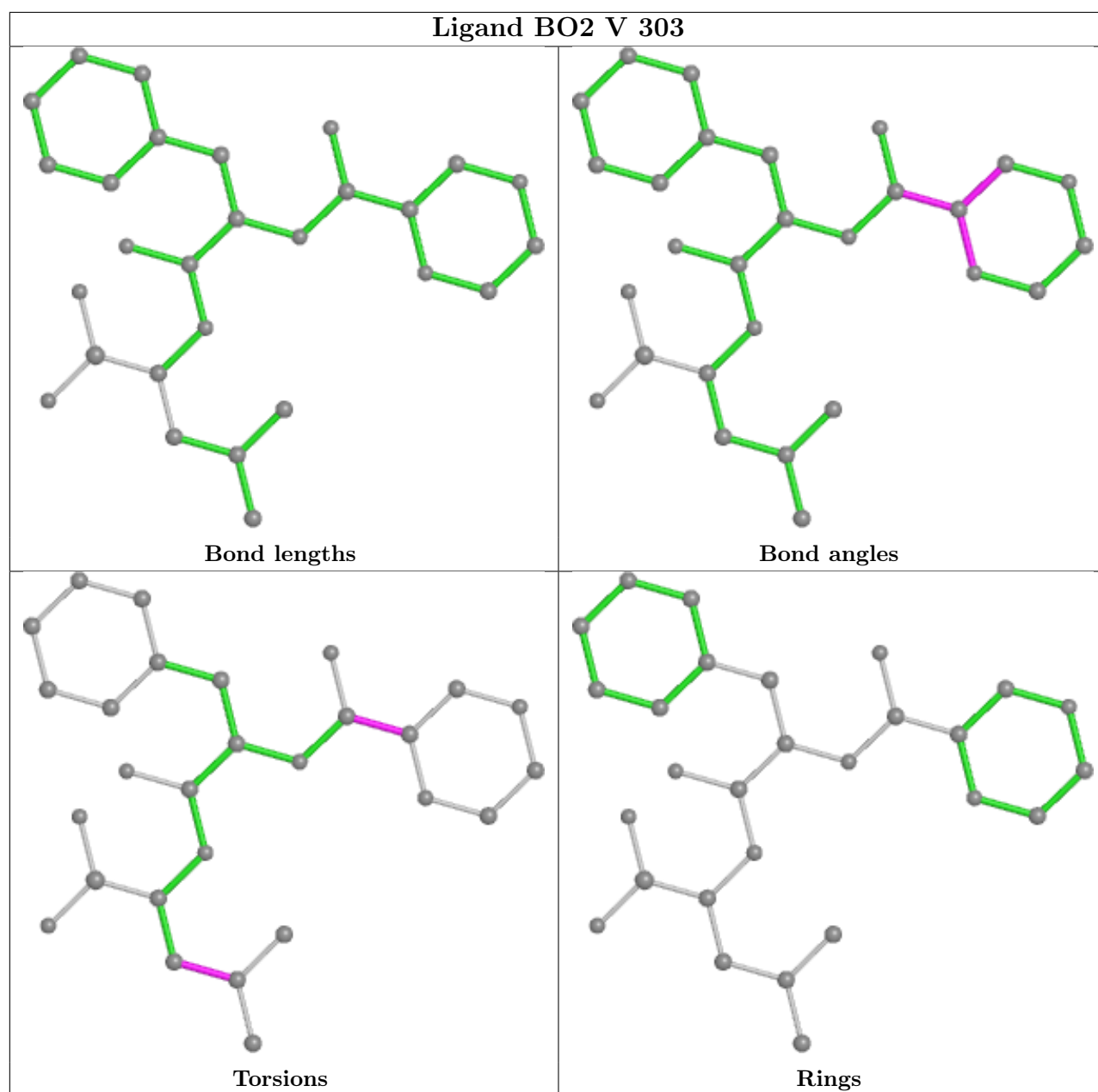












5.7 Other polymers [i](#)

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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	230/234 (98%)	-0.26	1 (0%) 92 93	31, 46, 82, 94	0
1	O	230/234 (98%)	0.06	9 (3%) 39 45	43, 63, 103, 122	0
2	B	248/261 (95%)	-0.20	4 (1%) 72 75	34, 52, 94, 132	0
2	P	248/261 (95%)	0.02	12 (4%) 30 36	39, 57, 100, 142	0
3	C	236/248 (95%)	0.03	8 (3%) 45 51	35, 62, 101, 125	0
3	Q	238/248 (95%)	0.38	25 (10%) 6 8	38, 66, 116, 153	0
4	D	233/241 (96%)	-0.05	4 (1%) 70 74	38, 57, 85, 118	0
4	R	233/241 (96%)	-0.18	3 (1%) 77 80	33, 47, 75, 97	0
5	E	233/263 (88%)	-0.07	11 (4%) 31 37	29, 43, 89, 116	0
5	S	237/263 (90%)	-0.11	8 (3%) 45 51	38, 51, 89, 114	0
6	F	239/255 (93%)	-0.25	0 100 100	27, 37, 59, 74	0
6	T	240/255 (94%)	0.08	8 (3%) 46 53	40, 60, 90, 114	0
7	G	241/246 (97%)	-0.20	3 (1%) 79 82	28, 42, 74, 108	0
7	U	235/246 (95%)	0.18	12 (5%) 28 33	45, 68, 100, 131	0
8	H	220/234 (94%)	-0.24	4 (1%) 68 72	29, 38, 69, 109	0
8	V	220/234 (94%)	-0.17	5 (2%) 60 65	37, 49, 79, 105	0
9	I	204/205 (99%)	-0.35	0 100 100	29, 38, 58, 76	0
9	W	204/205 (99%)	-0.25	0 100 100	34, 47, 71, 77	0
10	J	195/201 (97%)	-0.35	0 100 100	32, 43, 60, 75	0
10	X	195/201 (97%)	-0.37	0 100 100	33, 43, 58, 73	0
11	K	200/204 (98%)	-0.33	1 (0%) 91 92	32, 44, 69, 81	0
11	Y	201/204 (98%)	-0.27	3 (1%) 73 77	28, 40, 63, 80	0
12	L	213/213 (100%)	-0.32	0 100 100	32, 46, 68, 82	0
12	Z	213/213 (100%)	-0.34	0 100 100	29, 39, 61, 73	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
13	M	216/219 (98%)	-0.29	1 (0%) 91 92	28, 41, 64, 90	0
13	a	216/219 (98%)	-0.32	1 (0%) 91 92	30, 43, 64, 83	0
14	N	202/205 (98%)	-0.33	0 100 100	29, 38, 57, 87	0
14	b	203/205 (99%)	-0.26	0 100 100	34, 46, 72, 101	0
All	All	6223/6458 (96%)	-0.16	123 (1%) 65 69	27, 48, 87, 153	0

All (123) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	P	204	SER	12.9
1	O	232	ILE	9.6
4	D	241	ILE	9.0
3	Q	202	GLY	7.6
2	P	203	VAL	7.2
5	E	54	SER	7.0
3	Q	238	GLU	6.7
3	Q	232	ILE	6.6
7	U	2	SER	6.5
3	Q	233	GLU	6.3
8	V	203	ARG	6.1
3	Q	236	LYS	6.0
3	C	49	SER	5.9
3	Q	234	LYS	5.9
11	K	40	TYR	5.6
13	a	216	SER	5.6
2	P	61	PHE	5.5
6	T	208	ALA	5.0
8	H	204	CYS	4.8
3	Q	240	GLU	4.7
5	E	201	ALA	4.6
5	E	53	GLN	4.4
2	P	205	LYS	4.2
4	R	241	ILE	4.2
5	E	52	ALA	4.2
5	S	239	ARG	4.1
3	Q	48	LYS	4.1
3	C	201	SER	3.9
7	U	242	LEU	3.8
1	O	201	GLN	3.8
11	Y	40	TYR	3.8
11	Y	200	SER	3.8

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Mol	Chain	Res	Type	RSRZ
3	Q	229	VAL	3.8
2	B	61	PHE	3.8
3	C	138	PHE	3.8
3	Q	239	ASN	3.7
8	H	203	ARG	3.7
5	S	57	ALA	3.7
2	P	51	ASN	3.6
7	G	187	PHE	3.5
5	E	56	LEU	3.5
2	B	202	ASP	3.5
3	Q	205	ASN	3.5
2	B	203	VAL	3.4
3	Q	201	SER	3.4
3	Q	203	GLY	3.4
4	R	127	ASP	3.3
8	V	204	CYS	3.2
3	Q	200	GLN	3.2
2	P	202	ASP	3.2
3	Q	225	ILE	3.2
5	E	58	ALA	3.2
6	T	206	ASP	3.2
4	R	128	ALA	3.1
7	G	188	ASP	3.1
6	T	205	LYS	3.1
1	O	225	VAL	3.0
8	H	201	ARG	3.0
7	U	199	ILE	3.0
8	V	198	ARG	3.0
7	U	212	PRO	3.0
8	V	199	LEU	3.0
5	S	54	SER	2.9
5	S	56	LEU	2.8
11	Y	201	GLY	2.8
7	U	206	LEU	2.8
8	V	202	TYR	2.8
3	C	225	ILE	2.7
3	Q	230	ALA	2.7
5	S	53	GLN	2.7
4	D	131	GLY	2.7
1	O	181	LEU	2.7
3	Q	138	PHE	2.6
3	Q	47	LYS	2.6

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Mol	Chain	Res	Type	RSRZ
4	D	130	PRO	2.6
2	P	220	ASN	2.6
3	Q	223	GLU	2.6
7	U	3	ARG	2.5
3	C	202	GLY	2.5
6	T	5	THR	2.5
2	P	234	GLU	2.5
1	O	157	TRP	2.5
1	O	56	TYR	2.4
2	P	247	ALA	2.4
1	O	3	ARG	2.4
5	E	237	GLU	2.4
6	T	143	ASN	2.4
3	C	236	LYS	2.4
3	C	203	GLY	2.4
6	T	204	VAL	2.4
7	U	177	SER	2.4
5	E	202	GLU	2.4
2	P	230	GLN	2.4
7	U	58	ASP	2.4
3	Q	181	ILE	2.3
1	O	177	TYR	2.3
7	U	186	LYS	2.3
2	P	52	ILE	2.3
3	C	48	LYS	2.3
2	P	249	ARG	2.3
3	Q	192	ILE	2.3
5	S	55	GLU	2.3
5	E	235	GLY	2.3
3	Q	237	GLU	2.3
6	T	180	GLN	2.3
8	H	202	TYR	2.2
5	S	51	ARG	2.2
6	T	54	LEU	2.2
7	U	240	VAL	2.2
4	D	127	ASP	2.2
13	M	215	ILE	2.2
7	U	196	GLU	2.2
1	O	59	ARG	2.1
5	S	174	ARG	2.1
3	Q	226	GLU	2.1
5	E	51	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
7	G	189	TRP	2.1
3	Q	219	ILE	2.0
5	E	59	HIS	2.0
3	Q	213	ARG	2.0
1	A	232	ILE	2.0
7	U	178	PHE	2.0
2	B	205	LYS	2.0

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
7	6V1	U	47	15/16	0.77	0.29	82,108,112,115	0
3	YCM	C	63	10/11	0.89	0.10	55,60,68,69	0
7	YCM	U	137	10/11	0.90	0.15	57,65,83,84	0
7	YCM	G	137	10/11	0.91	0.14	35,43,60,61	0
10	6V1	J	91	15/16	0.92	0.16	36,55,59,59	0
7	6V1	U	161	15/16	0.92	0.14	58,72,79,80	0
10	6V1	X	91	15/16	0.92	0.16	38,59,64,70	0
5	6V1	S	148	15/16	0.92	0.15	39,63,69,69	0
3	YCM	Q	63	10/11	0.93	0.09	54,57,66,68	0
5	6V1	E	148	15/16	0.93	0.11	32,51,59,59	0
7	6V1	G	47	15/16	0.93	0.13	42,58,60,61	0
7	6V1	G	161	15/16	0.94	0.16	33,54,60,63	0

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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
18	1PE	I	304	16/16	0.79	0.29	62,76,88,88	0
18	1PE	M	305	16/16	0.79	0.19	75,80,95,96	0
18	1PE	L	301	16/16	0.82	0.17	55,70,75,76	0
15	CL	O	303	1/1	0.82	0.11	87,87,87,87	0
15	CL	A	302	1/1	0.83	0.11	69,69,69,69	0
18	1PE	Z	301	16/16	0.83	0.16	57,71,80,80	0
18	1PE	H	305	16/16	0.84	0.20	65,69,89,90	0
15	CL	Q	301	1/1	0.85	0.17	78,78,78,78	0
18	1PE	W	303	16/16	0.87	0.12	56,63,79,79	0
15	CL	C	301	1/1	0.87	0.08	66,66,66,66	0
18	1PE	b	303	16/16	0.87	0.16	52,59,77,78	0
18	1PE	I	303	16/16	0.88	0.15	56,60,68,72	0
15	CL	K	304	1/1	0.89	0.13	71,71,71,71	0
15	CL	V	302	1/1	0.89	0.10	60,60,60,60	0
15	CL	Q	302	1/1	0.90	0.14	70,70,70,70	0
17	MG	V	301	1/1	0.90	0.09	57,57,57,57	0
15	CL	K	303	1/1	0.91	0.12	68,68,68,68	0
15	CL	Y	304	1/1	0.91	0.19	70,70,70,70	0
17	MG	I	301	1/1	0.91	0.07	37,37,37,37	0
15	CL	S	302	1/1	0.91	0.11	69,69,69,69	0
19	BO2	H	306	28/28	0.91	0.15	38,45,67,67	0
19	BO2	V	303	28/28	0.91	0.15	49,54,66,67	0
15	CL	O	304	1/1	0.92	0.12	70,70,70,70	0
16	K	b	304	1/1	0.93	0.07	46,46,46,46	0
18	1PE	H	304	16/16	0.93	0.13	46,51,64,67	0
15	CL	C	302	1/1	0.93	0.08	69,69,69,69	0
19	BO2	b	305	28/28	0.93	0.14	37,43,53,55	0
15	CL	G	302	1/1	0.94	0.05	62,62,62,62	0
19	BO2	N	304	28/28	0.94	0.12	35,37,44,47	0
15	CL	Y	303	1/1	0.94	0.07	64,64,64,64	0
15	CL	U	301	1/1	0.94	0.12	64,64,64,64	0
15	CL	P	301	1/1	0.95	0.06	51,51,51,51	0
17	MG	L	303	1/1	0.95	0.09	37,37,37,37	0
15	CL	a	303	1/1	0.95	0.07	66,66,66,66	0
15	CL	S	301	1/1	0.95	0.22	75,75,75,75	0
15	CL	R	302	1/1	0.96	0.18	58,58,58,58	0
15	CL	D	302	1/1	0.96	0.07	65,65,65,65	0
17	MG	W	301	1/1	0.96	0.06	36,36,36,36	0
15	CL	N	302	1/1	0.96	0.10	59,59,59,59	0
15	CL	S	303	1/1	0.96	0.06	61,61,61,61	0
15	CL	O	301	1/1	0.96	0.09	59,59,59,59	0
15	CL	E	303	1/1	0.96	0.06	60,60,60,60	0
15	CL	Y	301	1/1	0.96	0.10	67,67,67,67	0

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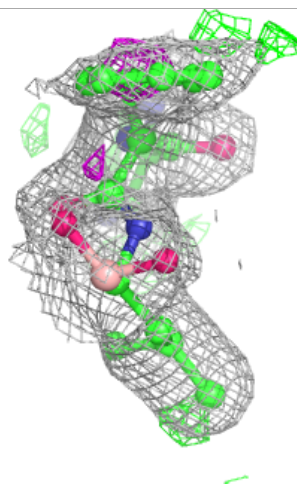
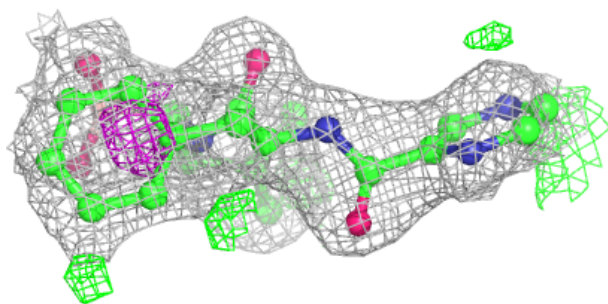
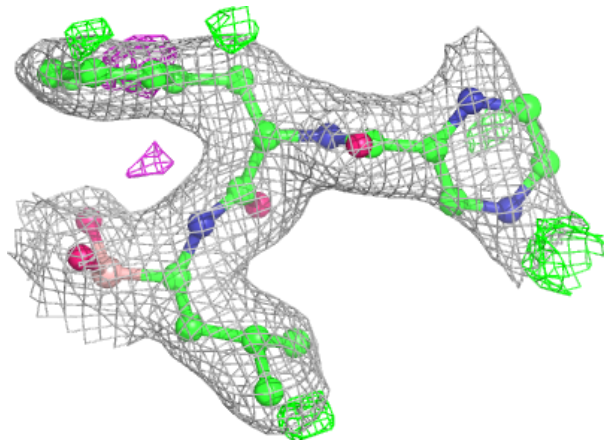
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
15	CL	B	302	1/1	0.96	0.13	62,62,62,62	0
15	CL	H	303	1/1	0.96	0.08	47,47,47,47	0
15	CL	a	301	1/1	0.96	0.07	67,67,67,67	0
15	CL	I	302	1/1	0.96	0.08	44,44,44,44	0
15	CL	b	301	1/1	0.96	0.15	68,68,68,68	0
15	CL	b	302	1/1	0.96	0.17	64,64,64,64	0
15	CL	D	301	1/1	0.96	0.16	73,73,73,73	0
15	CL	R	301	1/1	0.96	0.09	61,61,61,61	0
16	K	N	303	1/1	0.97	0.08	45,45,45,45	0
15	CL	M	302	1/1	0.97	0.15	65,65,65,65	0
17	MG	H	302	1/1	0.97	0.14	34,34,34,34	0
15	CL	M	304	1/1	0.97	0.09	58,58,58,58	0
17	MG	K	301	1/1	0.97	0.05	34,34,34,34	0
15	CL	N	301	1/1	0.97	0.10	37,37,37,37	0
15	CL	B	301	1/1	0.97	0.10	45,45,45,45	0
15	CL	E	302	1/1	0.97	0.09	53,53,53,53	0
19	BO2	K	305	28/28	0.97	0.10	32,37,41,42	0
17	MG	X	301	1/1	0.97	0.04	49,49,49,49	0
15	CL	O	302	1/1	0.97	0.11	60,60,60,60	0
19	BO2	Y	305	28/28	0.97	0.10	29,32,37,38	0
15	CL	W	302	1/1	0.97	0.06	52,52,52,52	0
15	CL	M	301	1/1	0.98	0.22	68,68,68,68	0
15	CL	A	304	1/1	0.98	0.11	59,59,59,59	0
15	CL	E	301	1/1	0.98	0.09	65,65,65,65	0
17	MG	I	305	1/1	0.98	0.07	31,31,31,31	0
15	CL	a	302	1/1	0.98	0.08	49,49,49,49	0
15	CL	A	301	1/1	0.98	0.08	48,48,48,48	0
15	CL	K	302	1/1	0.98	0.08	74,74,74,74	0
15	CL	A	303	1/1	0.98	0.06	52,52,52,52	0
16	K	L	302	1/1	0.98	0.05	49,49,49,49	0
15	CL	F	301	1/1	0.98	0.09	56,56,56,56	0
16	K	U	302	1/1	0.98	0.04	46,46,46,46	0
16	K	Z	302	1/1	0.98	0.08	42,42,42,42	0
17	MG	H	301	1/1	0.99	0.06	53,53,53,53	0
15	CL	M	303	1/1	0.99	0.07	47,47,47,47	0
15	CL	G	301	1/1	0.99	0.13	50,50,50,50	0
15	CL	Y	302	1/1	0.99	0.04	68,68,68,68	0
17	MG	J	301	1/1	0.99	0.06	48,48,48,48	0
16	K	G	303	1/1	1.00	0.07	37,37,37,37	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.

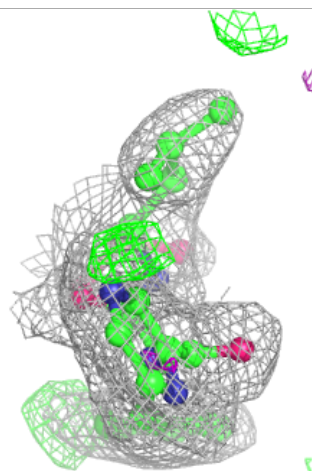
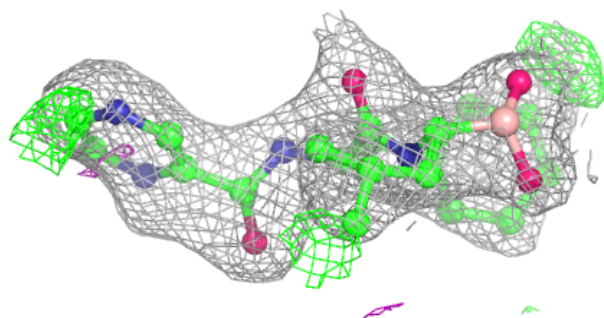
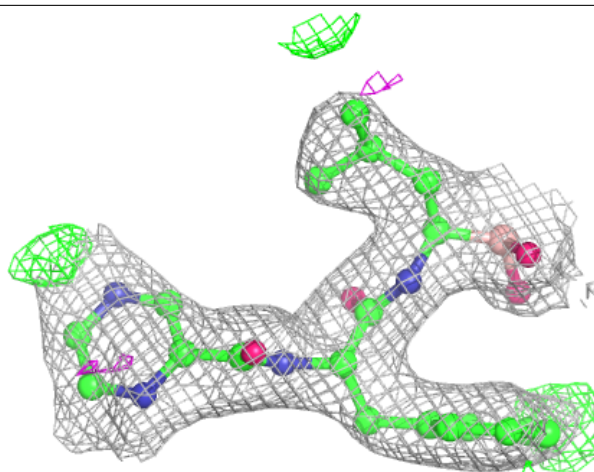
Electron density around BO2 H 306:

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



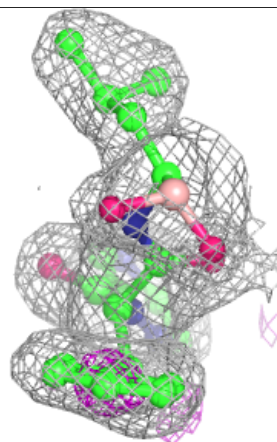
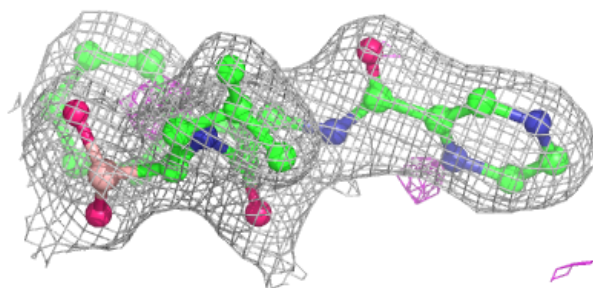
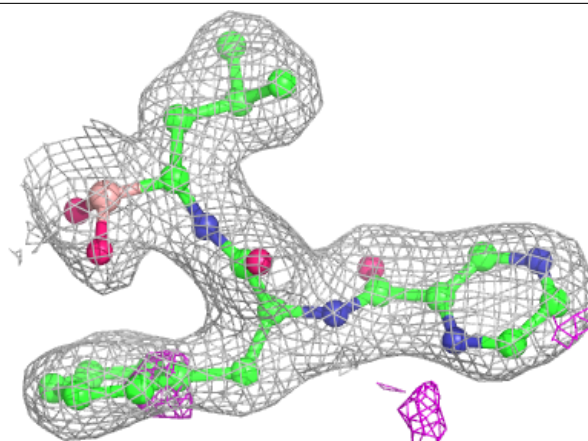
Electron density around BO2 V 303:

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



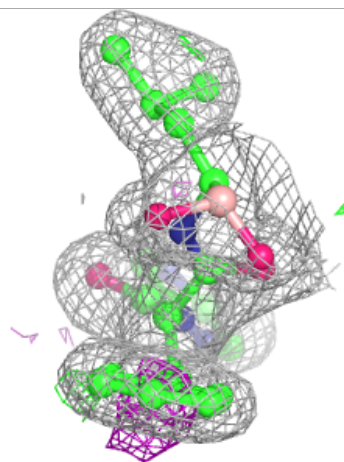
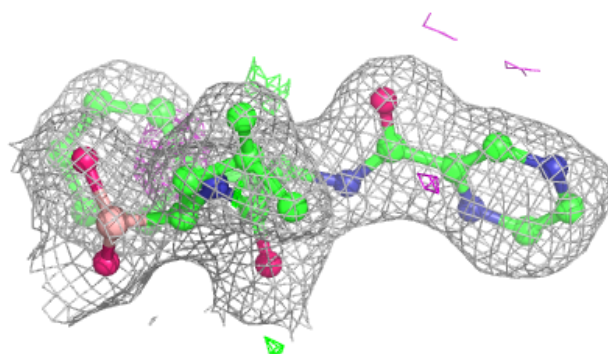
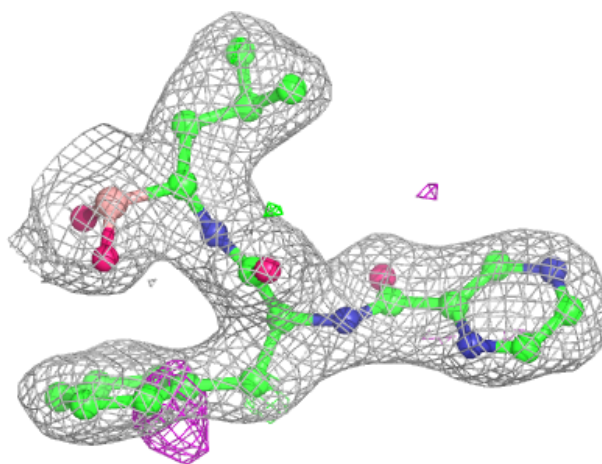
Electron density around BO2 b 305:

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



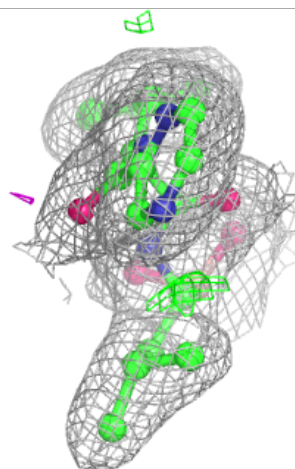
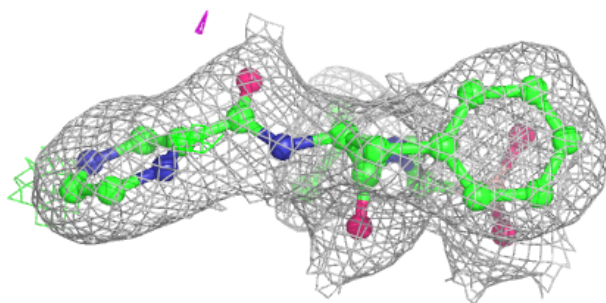
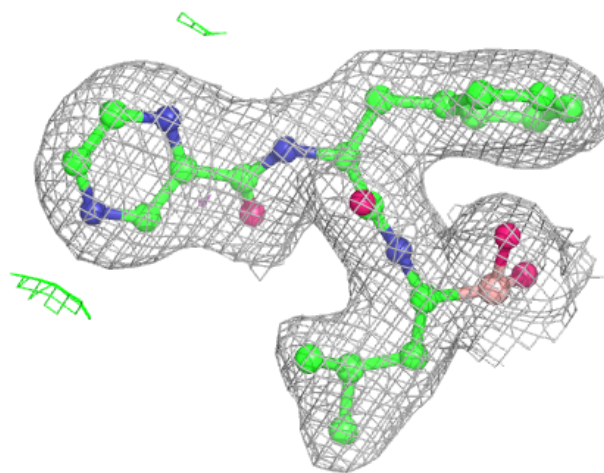
Electron density around BO2 N 304:

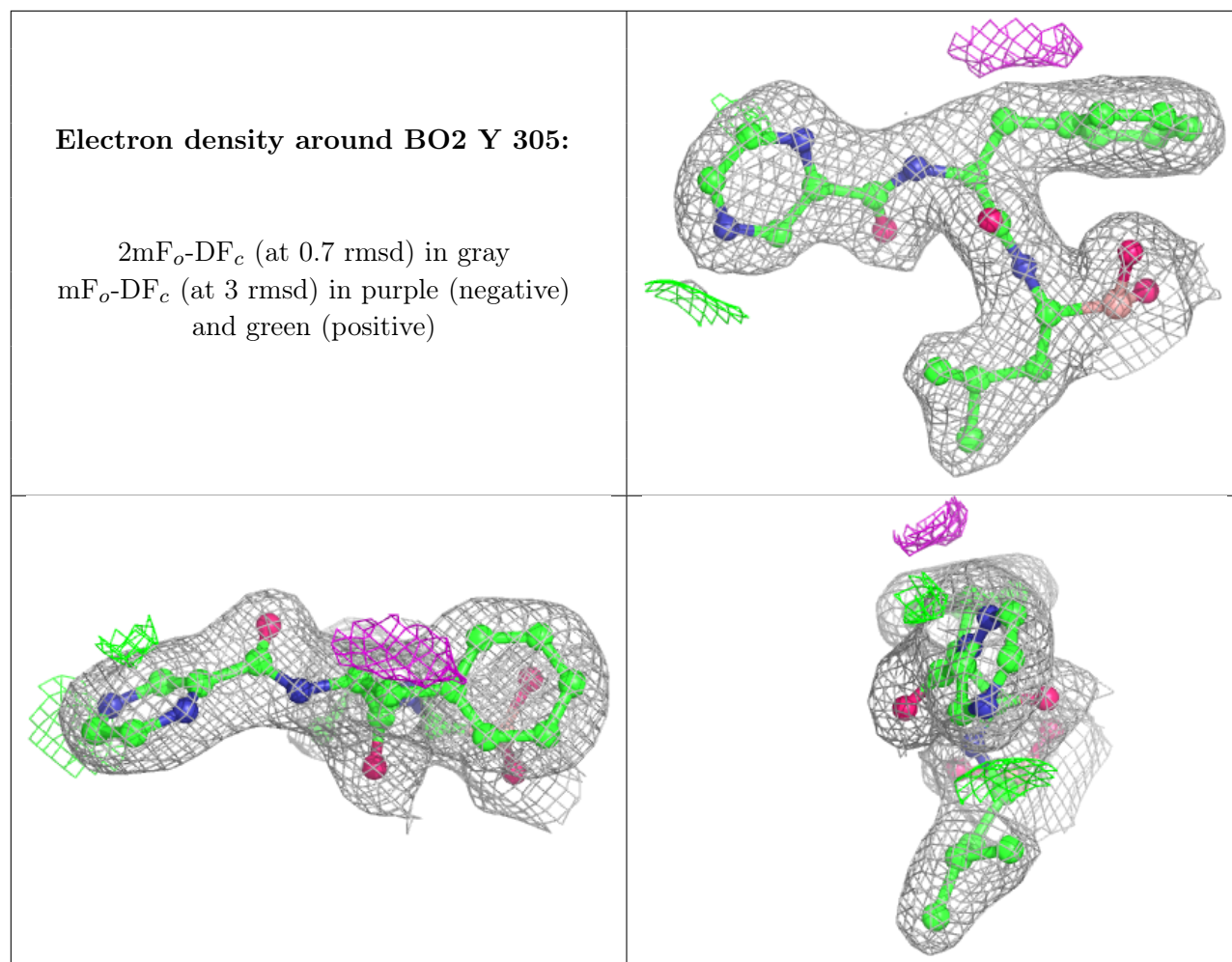
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around BO2 K 305:

$2mF_o-DF_c$ (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.