



Full wwPDB X-ray Structure Validation Report

Sep 10, 2023 – 02:19 AM EDT

PDB ID : 4INT
Title : Yeast 20S proteasome in complex with the vinyl sulfone LU122
Authors : Geurink, P.P.; van der Linden, W.A.; Mirabella, A.C.; Gallastegui, N.; de Bruin, G.; Blom, A.E.M.; Voges, M.J.; Mock, E.D.; Florea, B.I.; van der Marel, G.A.; Driessen, C.; van der Stelt, M.; Groll, M.; Overkleeft, H.S.; Kisselev, A.F.
Deposited on : 2013-01-06
Resolution : 2.90 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](#) ①) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.35.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

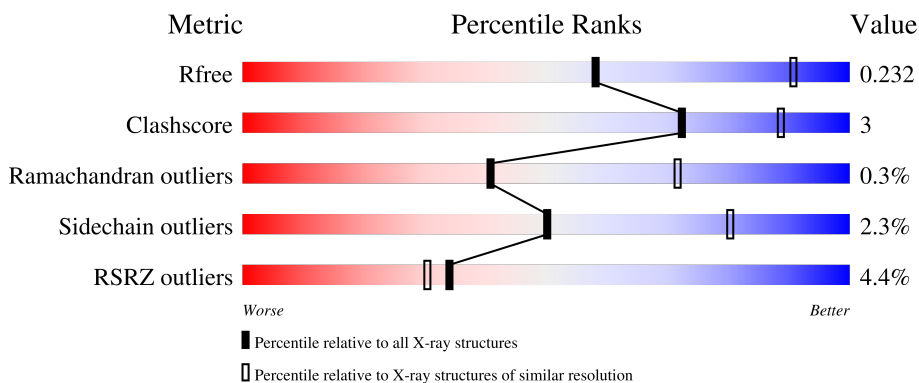
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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	250	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 92%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 8%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div>
1	O	250	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 91%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 8%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div>
2	B	258	<div style="display: flex; align-items: center;"> <div style="width: 7%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div>
2	P	258	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 13%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div>
3	C	254	<div style="display: flex; align-items: center;"> <div style="width: 6%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 82%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div>

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Mol	Chain	Length	Quality of chain
3	Q	254	10% 84% 10% • 5%
4	D	260	4% 81% 12% • 7%
4	R	260	7% 79% 13% • 7%
5	E	234	7% 89% 10%
5	S	234	8% 91% 8%
6	F	288	7% 74% 9% • 15%
6	T	288	5% 75% 9% • 15%
7	G	252	4% 87% 9% •
7	U	252	4% 88% 7% • •
8	H	232	% 91% 5% •
8	V	232	2% 89% 7% •
9	I	205	% 86% 14%
9	W	205	% 86% 14%
10	J	198	4% 89% 11%
10	X	198	4% 89% 11%
11	K	212	4% 90% 9% •
11	Y	212	5% 87% 11% •
12	L	222	2% 94% 5% •
12	Z	222	3% 91% 9%
13	M	233	2% 86% 13%
13	a	233	% 97% •
14	N	196	2% 99% •
14	b	196	% 100%

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
15	1G5	Y	301	-	-	X	-

2 Entry composition

There are 16 unique types of molecules in this entry. The entry contains 51033 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 component Y7.

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

- Molecule 2 is a protein called Proteasome component Y13.

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

- Molecule 3 is a protein called Proteasome component PRE6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	241	Total 1890	C 1181	N 331	O 374	S 4	0	0	0
3	Q	241	Total 1890	C 1181	N 331	O 374	S 4	0	0	0

- Molecule 4 is a protein called Proteasome component PUP2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	242	Total 1861	C 1162	N 314	O 378	S 7	0	0	0
4	R	242	Total 1861	C 1162	N 314	O 378	S 7	0	0	0

- Molecule 5 is a protein called Proteasome component PRE5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	233	Total	C	N	O	S	0	0	0
			1795	1129	312	350	4			
5	S	233	Total	C	N	O	S	0	0	0
			1795	1129	312	350	4			

- Molecule 6 is a protein called Proteasome component C1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	244	Total	C	N	O	S	0	0	0
			1896	1205	330	357	4			
6	T	244	Total	C	N	O	S	0	0	0
			1896	1205	330	357	4			

- Molecule 7 is a protein called Proteasome component C7-alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	243	Total	C	N	O	S	0	0	0
			1921	1221	322	370	8			
7	U	243	Total	C	N	O	S	0	0	0
			1921	1221	322	370	8			

- Molecule 8 is a protein called Proteasome component PUP1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	222	Total	C	N	O	S	0	0	0
			1684	1061	293	323	7			
8	V	222	Total	C	N	O	S	0	0	0
			1684	1061	293	323	7			

- Molecule 9 is a protein called Proteasome component PUP3.

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 component C11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	198	Total	C	N	O	S	0	0	0
			1585	1005	269	305	6			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	X	198	Total	C	N	O	S	0	0	0
			1585	1005	269	305	6			

- Molecule 11 is a protein called Proteasome component PRE2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	212	Total	C	N	O	S	0	0	0
			1644	1045	280	312	7			
11	Y	212	Total	C	N	O	S	0	0	0
			1644	1045	280	312	7			

- Molecule 12 is a protein called Proteasome component C5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	222	Total	C	N	O	S	0	0	0
			1757	1115	303	335	4			
12	Z	222	Total	C	N	O	S	0	0	0
			1757	1115	303	335	4			

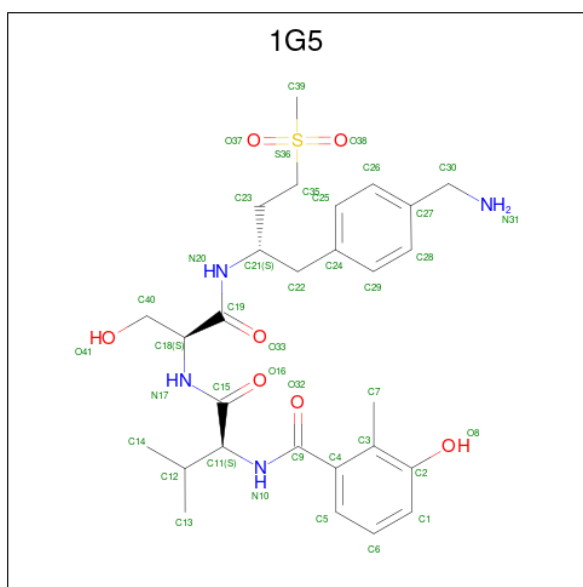
- Molecule 13 is a protein called Proteasome component PRE4.

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

- Molecule 14 is a protein called Proteasome component PRE3.

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

- Molecule 15 is HMB-Val-Ser-Phe(4-NH₂CH₂)-methyl vinyl sulfone, bound form (three-letter code: 1G5) (formula: C₂₈H₄₀N₄O₇S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
15	H	1	Total	C	N	O	S	0	0
			40	28	4	7	1		
15	K	1	Total	C	N	O	S	0	0
			40	28	4	7	1		
15	V	1	Total	C	N	O	S	0	0
			40	28	4	7	1		
15	Y	1	Total	C	N	O	S	0	0
			40	28	4	7	1		

- Molecule 16 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
16	A	61	Total	O	0	0
			61	61		
16	B	39	Total	O	0	0
			39	39		
16	C	42	Total	O	0	0
			42	42		
16	D	38	Total	O	0	0
			38	38		
16	E	22	Total	O	0	0
			22	22		
16	F	45	Total	O	0	0
			45	45		
16	G	59	Total	O	0	0
			59	59		
16	H	58	Total	O	0	0
			58	58		

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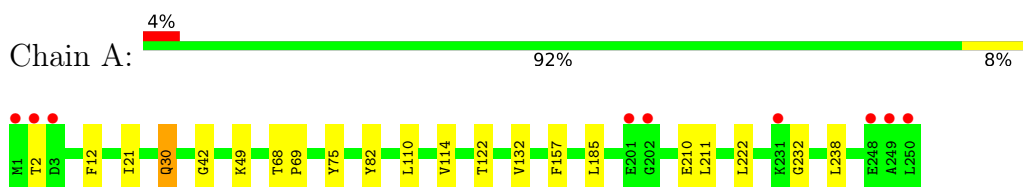
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
16	I	63	Total O 63 63	0	0
16	J	50	Total O 50 50	0	0
16	K	47	Total O 47 47	0	0
16	L	58	Total O 58 58	0	0
16	M	74	Total O 74 74	0	0
16	N	54	Total O 54 54	0	0
16	O	33	Total O 33 33	0	0
16	P	29	Total O 29 29	0	0
16	Q	29	Total O 29 29	0	0
16	R	33	Total O 33 33	0	0
16	S	20	Total O 20 20	0	0
16	T	41	Total O 41 41	0	0
16	U	56	Total O 56 56	0	0
16	V	50	Total O 50 50	0	0
16	W	55	Total O 55 55	0	0
16	X	47	Total O 47 47	0	0
16	Y	47	Total O 47 47	0	0
16	Z	49	Total O 49 49	0	0
16	a	79	Total O 79 79	0	0
16	b	57	Total O 57 57	0	0

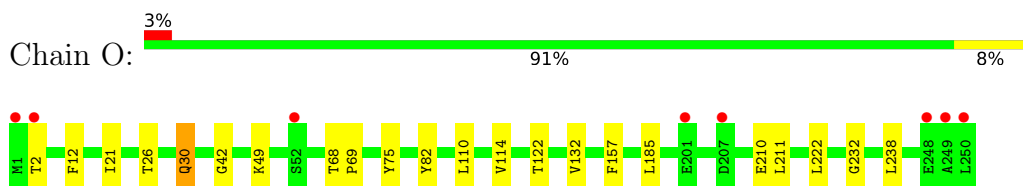
3 Residue-property plots [i](#)

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.

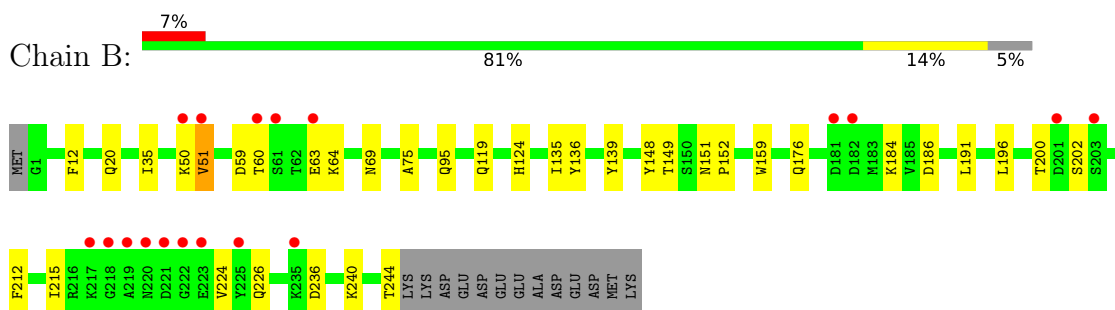
- Molecule 1: Proteasome component Y7



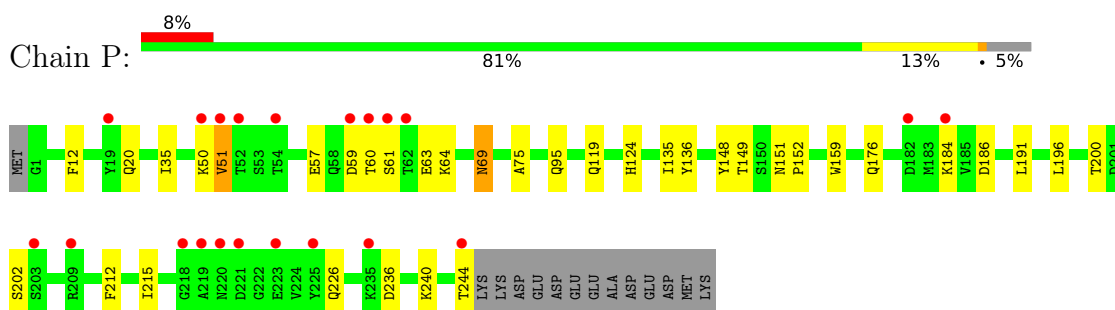
- Molecule 1: Proteasome component Y7




- Molecule 2: Proteasome component Y13

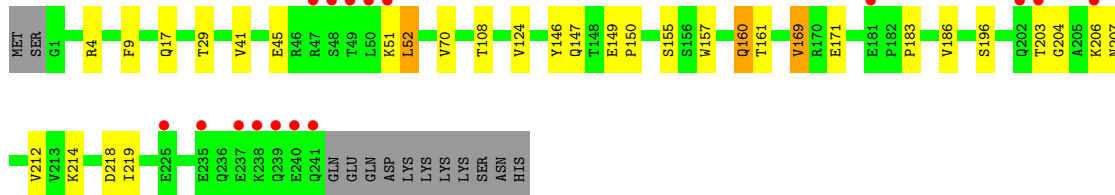


- Molecule 2: Proteasome component Y13




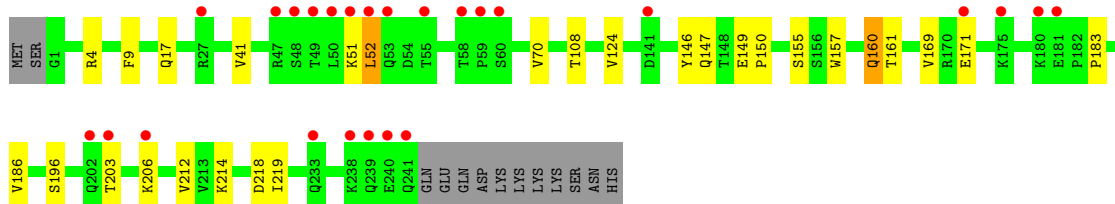
- Molecule 3: Proteasome component PRE6

Chain C: 




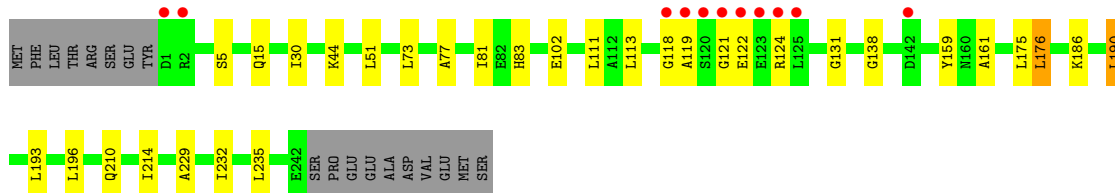
- Molecule 3: Proteasome component PRE6

Chain Q: 




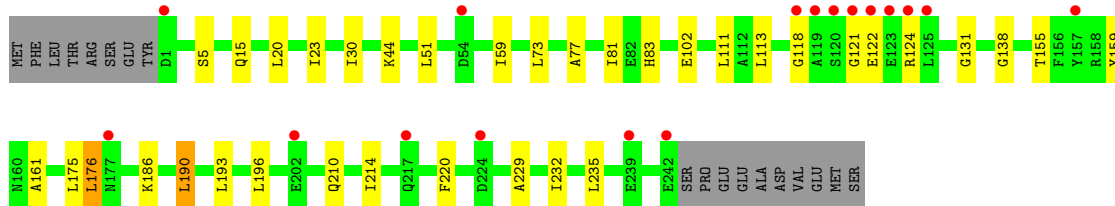
- Molecule 4: Proteasome component PUP2

Chain D: 




- Molecule 4: Proteasome component PUP2

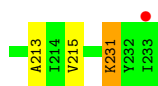
Chain R: 



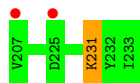
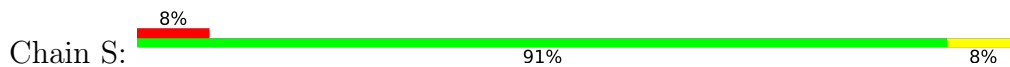
- Molecule 5: Proteasome component PRE5

Chain E: 

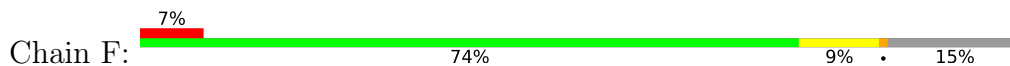




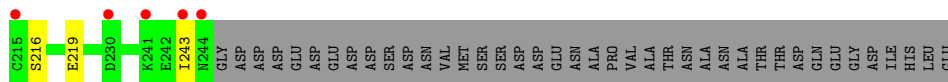
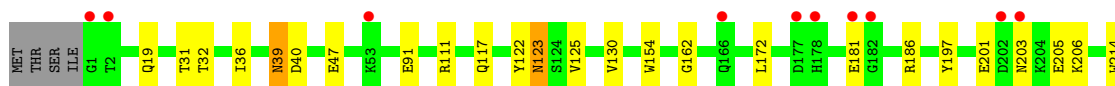
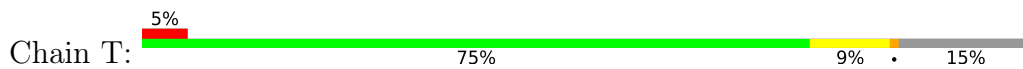
• Molecule 5: Proteasome component PRE5



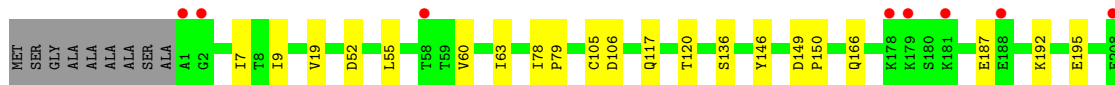
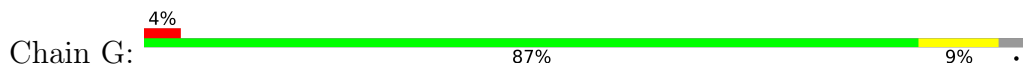
• Molecule 6: Proteasome component C1



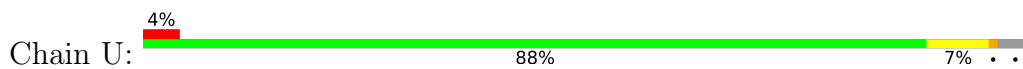
• Molecule 6: Proteasome component C1



• Molecule 7: Proteasome component C7-alpha

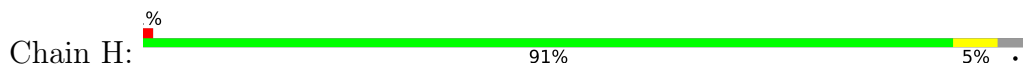


• Molecule 7: Proteasome component C7-alpha

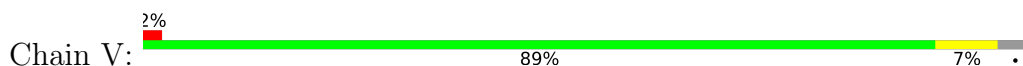




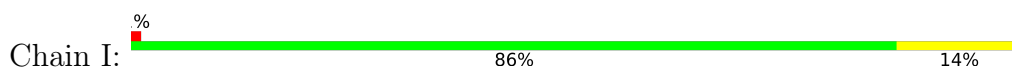
- Molecule 8: Proteasome component PUP1



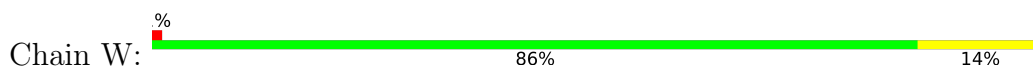
- Molecule 8: Proteasome component PUP1



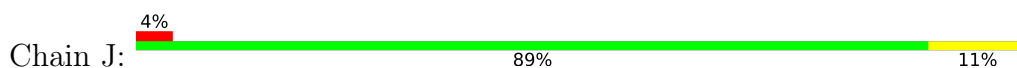
- Molecule 9: Proteasome component PUP3



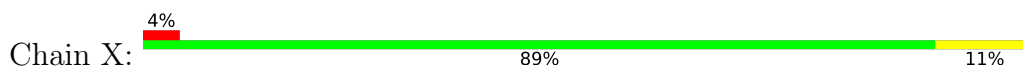
- Molecule 9: Proteasome component PUP3



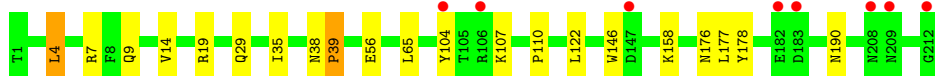
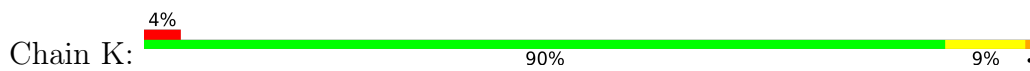
- Molecule 10: Proteasome component C11



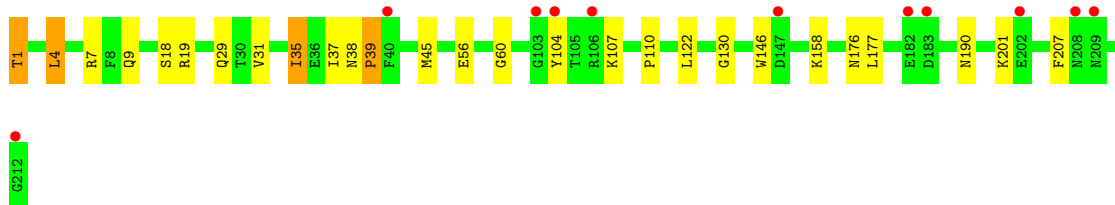
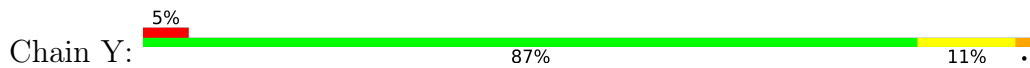
- Molecule 10: Proteasome component C11



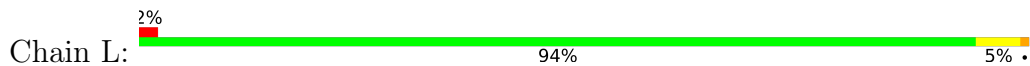
- Molecule 11: Proteasome component PRE2



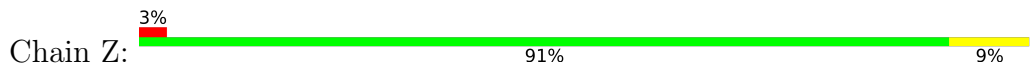
- Molecule 11: Proteasome component PRE2



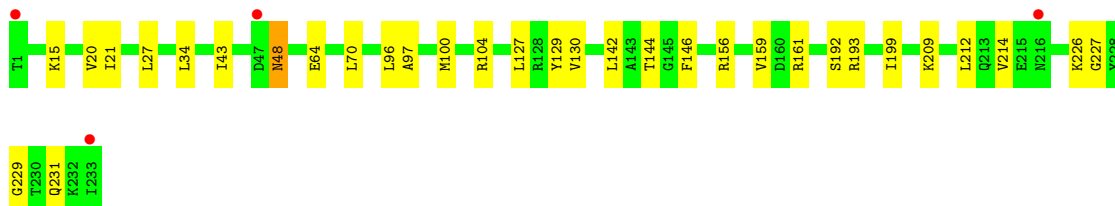
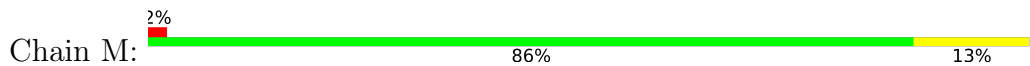
- Molecule 12: Proteasome component C5



- Molecule 12: Proteasome component C5



- Molecule 13: Proteasome component PRE4

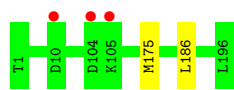


- Molecule 13: Proteasome component PRE4



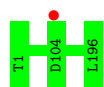
- Molecule 14: Proteasome component PRE3

Chain N:  2%
99%



- Molecule 14: Proteasome component PRE3

Chain b:  %
100%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	137.01Å 299.51Å 145.04Å 90.00° 113.24° 90.00°	Depositor
Resolution (Å)	15.00 – 2.90 15.00 – 2.90	Depositor EDS
% Data completeness (in resolution range)	98.7 (15.00-2.90) 98.9 (15.00-2.90)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	50.01 (at 2.91Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.222 , 0.230 0.223 , 0.232	Depositor DCC
R_{free} test set	11610 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	64.9	Xtrriage
Anisotropy	0.047	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 33.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	51033	wwPDB-VP
Average B, all atoms (Å ²)	74.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.25% 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: 1G5

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	0.36	0/1952	0.46	0/2642
1	O	0.36	0/1952	0.46	0/2642
2	B	0.33	0/1934	0.46	0/2618
2	P	0.33	0/1934	0.46	0/2618
3	C	0.34	0/1919	0.47	0/2598
3	Q	0.34	0/1919	0.47	0/2598
4	D	0.35	0/1886	0.48	0/2541
4	R	0.36	0/1886	0.48	0/2541
5	E	0.31	0/1823	0.45	0/2463
5	S	0.31	0/1823	0.45	0/2463
6	F	0.41	1/1936 (0.1%)	0.45	0/2614
6	T	0.41	0/1936	0.45	0/2614
7	G	0.35	0/1959	0.46	0/2652
7	U	0.34	0/1959	0.46	0/2652
8	H	0.44	0/1715	0.47	0/2326
8	V	0.44	0/1715	0.46	0/2326
9	I	0.34	0/1611	0.47	0/2174
9	W	0.34	0/1611	0.47	0/2174
10	J	0.31	0/1613	0.45	0/2173
10	X	0.31	0/1613	0.45	0/2173
11	K	0.50	1/1681 (0.1%)	0.49	1/2274 (0.0%)
11	Y	0.50	1/1681 (0.1%)	0.49	1/2274 (0.0%)
12	L	0.36	0/1795	0.45	0/2420
12	Z	0.36	0/1795	0.45	0/2420
13	M	0.36	0/1855	0.47	0/2514
13	a	0.36	0/1855	0.47	0/2514
14	N	0.39	0/1541	0.44	0/2087
14	b	0.39	0/1541	0.44	0/2087
All	All	0.37	3/50440 (0.0%)	0.46	2/68192 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	K	146	TRP	CD2-CE2	5.09	1.47	1.41
11	Y	146	TRP	CD2-CE2	5.05	1.47	1.41
6	F	214	TRP	CD2-CE2	5.02	1.47	1.41

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	Y	4	LEU	CA-CB-CG	5.21	127.28	115.30
11	K	4	LEU	CA-CB-CG	5.16	127.16	115.30

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	10	0
1	O	1915	0	1929	11	0
2	B	1904	0	1904	17	0
2	P	1904	0	1904	18	0
3	C	1890	0	1903	17	0
3	Q	1890	0	1903	15	0
4	D	1861	0	1839	19	0
4	R	1861	0	1839	21	0
5	E	1795	0	1800	15	0
5	S	1795	0	1800	12	0
6	F	1896	0	1889	14	0
6	T	1896	0	1889	14	0
7	G	1921	0	1913	11	0
7	U	1921	0	1913	10	0
8	H	1684	0	1687	7	0
8	V	1684	0	1687	10	0
9	I	1581	0	1574	17	0
9	W	1581	0	1574	15	0
10	J	1585	0	1590	13	0
10	X	1585	0	1590	14	0
11	K	1644	0	1594	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	Y	1644	0	1594	19	0
12	L	1757	0	1711	7	0
12	Z	1757	0	1711	10	0
13	M	1824	0	1832	16	0
13	a	1824	0	1832	0	0
14	N	1512	0	1481	1	0
14	b	1512	0	1481	0	0
15	H	40	0	39	1	0
15	K	40	0	39	0	0
15	V	40	0	39	3	0
15	Y	40	0	39	24	0
16	A	61	0	0	0	0
16	B	39	0	0	0	0
16	C	42	0	0	0	0
16	D	38	0	0	0	0
16	E	22	0	0	0	0
16	F	45	0	0	0	0
16	G	59	0	0	0	0
16	H	58	0	0	0	0
16	I	63	0	0	0	0
16	J	50	0	0	1	0
16	K	47	0	0	0	0
16	L	58	0	0	0	0
16	M	74	0	0	0	0
16	N	54	0	0	0	0
16	O	33	0	0	0	0
16	P	29	0	0	0	0
16	Q	29	0	0	0	0
16	R	33	0	0	0	0
16	S	20	0	0	0	0
16	T	41	0	0	0	0
16	U	56	0	0	0	0
16	V	50	0	0	0	0
16	W	55	0	0	0	0
16	X	47	0	0	1	0
16	Y	47	0	0	0	0
16	Z	49	0	0	0	0
16	a	79	0	0	0	0
16	b	57	0	0	0	0
All	All	51033	0	49448	318	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 3.

All (318) 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)
15:Y:301:1G5:H20	15:Y:301:1G5:C39	1.68	1.22
15:Y:301:1G5:C39	15:Y:301:1G5:C40	2.23	1.16
15:Y:301:1G5:H20	15:Y:301:1G5:H30	1.36	1.05
15:Y:301:1G5:H20	15:Y:301:1G5:H29	1.52	0.89
15:Y:301:1G5:C39	15:Y:301:1G5:H19	2.11	0.79
8:V:1:THR:H1	15:V:301:1G5:H27	1.47	0.79
15:Y:301:1G5:H30	15:Y:301:1G5:C19	2.15	0.77
3:C:160:GLN:HE21	3:C:160:GLN:HA	1.51	0.76
3:Q:160:GLN:HA	3:Q:160:GLN:HE21	1.51	0.75
15:Y:301:1G5:C40	15:Y:301:1G5:H30	2.03	0.74
15:Y:301:1G5:C40	15:Y:301:1G5:H29	2.13	0.74
8:V:1:THR:N	15:V:301:1G5:H27	2.02	0.74
15:Y:301:1G5:C40	15:Y:301:1G5:H28	2.17	0.74
15:Y:301:1G5:H28	15:Y:301:1G5:H22	1.53	0.73
15:Y:301:1G5:C39	15:Y:301:1G5:N20	2.53	0.72
10:J:4:ILE:HG22	10:J:103:LEU:HD12	1.71	0.72
3:C:9:PHE:H	4:D:15:GLN:HE22	1.40	0.70
6:T:91:GLU:HG2	6:T:111:ARG:HB3	1.75	0.68
10:X:4:ILE:HG22	10:X:103:LEU:HD12	1.74	0.68
15:Y:301:1G5:H28	15:Y:301:1G5:N20	2.07	0.68
15:Y:301:1G5:C39	15:Y:301:1G5:C19	2.71	0.68
3:Q:9:PHE:H	4:R:15:GLN:HE22	1.40	0.68
5:E:12:PHE:H	6:F:19:GLN:HE22	1.42	0.67
5:S:12:PHE:H	6:T:19:GLN:HE22	1.43	0.67
1:O:12:PHE:H	2:P:20:GLN:HE22	1.43	0.66
15:Y:301:1G5:H19	15:Y:301:1G5:H28	1.75	0.66
6:F:91:GLU:HG2	6:F:111:ARG:HB3	1.76	0.65
11:Y:1:THR:N	15:Y:301:1G5:H27	2.12	0.65
1:A:12:PHE:H	2:B:20:GLN:HE22	1.46	0.64
2:B:151:ASN:HB2	2:B:152:PRO:HD2	1.83	0.60
3:C:169:VAL:HG23	3:C:196:SER:HB2	1.84	0.60
3:Q:169:VAL:HG23	3:Q:196:SER:HB2	1.84	0.59
13:M:48:ASN:H	13:M:48:ASN:HD22	1.51	0.59
2:P:151:ASN:HB2	2:P:152:PRO:HD2	1.85	0.59
13:M:27:LEU:HD21	13:M:34:LEU:HD22	1.85	0.58
3:Q:161:THR:HG21	3:Q:169:VAL:HG13	1.86	0.57
12:Z:109:THR:HG23	12:Z:125:PHE:HB2	1.84	0.57
14:N:175:MET:HB2	14:N:186:LEU:HB2	1.86	0.57
2:P:124:HIS:HB3	3:Q:124:VAL:HG12	1.86	0.57
2:B:124:HIS:HB3	3:C:124:VAL:HG12	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:Y:1:THR:H3	15:Y:301:1G5:H27	1.69	0.56
8:H:104:ASP:HB2	8:H:105:PRO:HD2	1.86	0.56
4:R:73:LEU:HD12	4:R:131:GLY:HA3	1.88	0.56
11:Y:107:LYS:H	11:Y:107:LYS:HD2	1.70	0.56
4:D:73:LEU:HD12	4:D:131:GLY:HA3	1.88	0.56
4:R:77:ALA:O	4:R:81:ILE:HG12	2.06	0.56
2:P:215:ILE:HG12	2:P:226:GLN:HG2	1.88	0.56
11:K:107:LYS:H	11:K:107:LYS:HD2	1.70	0.55
8:V:1:THR:N	15:V:301:1G5:C35	2.68	0.55
1:A:21:ILE:HD11	1:A:122:THR:HG21	1.87	0.55
4:R:44:LYS:HE3	4:R:210:GLN:HB2	1.86	0.55
2:B:12:PHE:H	3:C:17:GLN:HE22	1.55	0.55
6:T:31:THR:HG23	6:T:47:GLU:HB3	1.89	0.55
12:Z:195:HIS:HD2	12:Z:197:GLN:H	1.53	0.55
4:R:161:ALA:HB3	5:S:55:LEU:HD23	1.89	0.55
2:P:63:GLU:HG3	2:P:64:LYS:HG3	1.89	0.54
2:P:200:THR:HG22	2:P:202:SER:H	1.71	0.54
2:B:215:ILE:HG12	2:B:226:GLN:HG2	1.88	0.54
2:P:12:PHE:H	3:Q:17:GLN:HE22	1.56	0.54
6:F:91:GLU:HG3	6:F:111:ARG:HH11	1.72	0.54
9:I:35:VAL:HG13	16:J:240:HOH:O	2.07	0.54
1:O:21:ILE:HD11	1:O:122:THR:HG21	1.88	0.54
6:T:91:GLU:HG3	6:T:111:ARG:HH11	1.73	0.54
9:W:9:GLY:HA3	9:W:41:LYS:HE2	1.88	0.54
2:B:75:ALA:HB3	2:B:135:ILE:HB	1.89	0.53
12:L:109:THR:HG23	12:L:125:PHE:HB2	1.90	0.53
4:D:77:ALA:O	4:D:81:ILE:HG12	2.09	0.53
4:D:44:LYS:HE3	4:D:210:GLN:HB2	1.89	0.53
13:M:156:ARG:HH11	8:V:165:ASN:HD22	1.57	0.53
11:Y:1:THR:N	15:Y:301:1G5:C35	2.72	0.53
2:B:35:ILE:HD12	2:B:196:LEU:HG	1.90	0.53
9:I:20:VAL:HG23	9:I:189:ILE:HB	1.91	0.53
2:P:75:ALA:HB3	2:P:135:ILE:HB	1.90	0.53
5:E:80:ALA:HB2	5:E:129:VAL:HG21	1.91	0.53
8:H:163:ILE:HG23	8:H:170:GLY:HA2	1.91	0.53
9:I:9:GLY:HA3	9:I:41:LYS:HE2	1.90	0.52
8:V:104:ASP:HB2	8:V:105:PRO:HD2	1.91	0.52
13:M:127:LEU:HG	13:M:142:LEU:HD12	1.91	0.52
12:Z:17:GLY:HA2	12:Z:174:TYR:HE1	1.75	0.52
7:U:187:GLU:HG2	7:U:192:LYS:HB2	1.91	0.52
2:P:35:ILE:HD12	2:P:196:LEU:HG	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:63:GLU:HG3	2:B:64:LYS:HG3	1.90	0.52
7:G:187:GLU:HG2	7:G:192:LYS:HB2	1.93	0.51
4:R:5:SER:HB2	5:S:125:ARG:HD3	1.93	0.51
11:Y:31:VAL:HG11	15:Y:301:1G5:C26	2.40	0.51
3:C:161:THR:HG21	3:C:169:VAL:HG13	1.91	0.51
6:F:31:THR:HG23	6:F:47:GLU:HB3	1.92	0.51
12:L:16:ALA:HB2	12:L:122:VAL:HG23	1.93	0.51
12:L:195:HIS:HD2	12:L:197:GLN:H	1.59	0.51
2:B:95:GLN:HE22	9:I:71:ASN:HD22	1.58	0.51
13:M:48:ASN:HD22	13:M:48:ASN:N	2.09	0.51
13:M:21:ILE:HG12	13:M:199:ILE:HG12	1.93	0.51
12:Z:16:ALA:HB2	12:Z:122:VAL:HG23	1.93	0.51
13:M:27:LEU:HD11	13:M:34:LEU:HB3	1.94	0.50
1:O:222:LEU:HD13	1:O:232:GLY:HA2	1.93	0.50
6:F:122:TYR:HB2	6:F:125:VAL:HG22	1.93	0.50
1:O:110:LEU:O	1:O:114:VAL:HG23	2.11	0.50
2:P:95:GLN:HE22	9:W:71:ASN:HD22	1.58	0.50
10:X:168:LEU:O	10:X:172:MET:HB2	2.12	0.50
9:W:35:VAL:HG13	16:X:222:HOH:O	2.11	0.50
3:C:149:GLU:HB2	3:C:150:PRO:HD2	1.93	0.50
7:G:78:ILE:N	7:G:79:PRO:HD2	2.26	0.50
11:K:38:ASN:HB2	11:K:39:PRO:HD2	1.93	0.50
3:Q:70:VAL:HG13	3:Q:219:ILE:HD13	1.94	0.50
4:D:5:SER:HB2	5:E:125:ARG:HD3	1.94	0.50
3:C:214:LYS:HB2	3:C:218:ASP:HB3	1.94	0.50
5:S:80:ALA:HB2	5:S:129:VAL:HG21	1.93	0.50
6:T:122:TYR:HB2	6:T:125:VAL:HG22	1.94	0.50
9:W:106:PRO:HD2	9:W:123:PHE:HB2	1.94	0.50
9:I:106:PRO:HD2	9:I:123:PHE:HB2	1.93	0.50
3:C:70:VAL:HG13	3:C:219:ILE:HD13	1.94	0.49
12:L:13:LEU:HD11	12:L:150:LEU:HD21	1.92	0.49
15:Y:301:1G5:H30	15:Y:301:1G5:C18	2.43	0.49
10:J:3:ILE:HD13	10:J:168:LEU:HD13	1.94	0.49
10:J:168:LEU:O	10:J:172:MET:HB2	2.13	0.49
7:U:63:ILE:HD12	7:U:215:GLU:HG2	1.94	0.49
10:J:149:ARG:HB2	10:J:152:MET:HG3	1.93	0.49
3:Q:157:TRP:CE2	4:R:51:LEU:HD23	2.47	0.49
6:T:36:ILE:HG12	6:T:172:LEU:HD11	1.94	0.49
8:V:163:ILE:HG23	8:V:170:GLY:HA2	1.94	0.49
1:A:110:LEU:O	1:A:114:VAL:HG23	2.12	0.49
9:W:20:VAL:HG23	9:W:189:ILE:HB	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:Y:35:ILE:HG21	11:Y:56:GLU:HB3	1.93	0.49
13:M:209:LYS:HB3	13:M:212:LEU:HD11	1.94	0.49
2:B:149:THR:HG22	2:B:159:TRP:HE1	1.78	0.48
7:G:63:ILE:HD12	7:G:215:GLU:HG2	1.95	0.48
1:O:211:LEU:HD22	1:O:238:LEU:HD12	1.95	0.48
2:P:176:GLN:HG3	3:Q:52:LEU:HD13	1.95	0.48
5:S:231:LYS:H	5:S:231:LYS:HD2	1.78	0.48
8:V:210:THR:HG21	9:W:167:SER:HB3	1.94	0.48
10:J:22:THR:HG21	10:X:173:PRO:HB3	1.96	0.48
7:U:78:ILE:N	7:U:79:PRO:HD2	2.28	0.48
9:W:28:LEU:HB3	9:W:36:SER:HB3	1.96	0.48
1:A:211:LEU:HD22	1:A:238:LEU:HD12	1.94	0.48
2:B:200:THR:HG22	2:B:202:SER:H	1.77	0.48
11:K:35:ILE:HG21	11:K:56:GLU:HB3	1.95	0.48
1:O:68:THR:HB	1:O:69:PRO:HD2	1.96	0.48
3:Q:214:LYS:HB2	3:Q:218:ASP:HB3	1.95	0.48
10:X:3:ILE:HD13	10:X:168:LEU:HD13	1.96	0.48
8:H:210:THR:HG21	9:I:167:SER:HB3	1.94	0.47
2:P:151:ASN:HB2	2:P:152:PRO:CD	2.44	0.47
3:C:157:TRP:CE2	4:D:51:LEU:HD23	2.48	0.47
10:J:119:ILE:HG12	10:J:125:LYS:HG3	1.95	0.47
10:X:149:ARG:HB2	10:X:152:MET:HG3	1.96	0.47
9:I:23:ALA:HB1	9:I:170:LEU:HD22	1.96	0.47
10:J:173:PRO:HB3	10:X:22:THR:HG21	1.96	0.47
9:I:141:ALA:HB2	9:I:177:ASP:HB2	1.97	0.47
5:S:87:LEU:HD11	5:S:107:ALA:HB1	1.97	0.47
9:W:52:ILE:HB	9:W:59:VAL:HG13	1.97	0.47
9:W:141:ALA:HB2	9:W:177:ASP:HB2	1.97	0.47
9:I:28:LEU:HB3	9:I:36:SER:HB3	1.96	0.47
11:Y:19:ARG:HH21	11:Y:29:GLN:HE22	1.62	0.47
12:Z:111:ILE:HG12	12:Z:125:PHE:HE1	1.80	0.47
13:M:27:LEU:HB2	13:M:192:SER:HB2	1.97	0.46
1:O:30:GLN:HA	1:O:30:GLN:HE21	1.80	0.46
10:X:15:LEU:HD12	10:X:43:LEU:HD23	1.96	0.46
9:W:23:ALA:HB1	9:W:170:LEU:HD22	1.97	0.46
4:D:119:ALA:HA	5:E:124:GLY:HA2	1.96	0.46
6:F:36:ILE:HG12	6:F:172:LEU:HD11	1.96	0.46
9:I:94:LEU:HD11	9:I:106:PRO:HG2	1.97	0.46
12:L:17:GLY:HA2	12:L:174:TYR:HE1	1.80	0.46
3:C:108:THR:HG21	3:C:146:TYR:HB3	1.97	0.46
5:E:231:LYS:H	5:E:231:LYS:HD2	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:12:VAL:HG23	9:I:137:VAL:HG12	1.97	0.46
10:X:21:VAL:HG11	11:Y:122:LEU:HD11	1.98	0.46
1:A:68:THR:HB	1:A:69:PRO:HD2	1.97	0.46
6:F:197:TYR:HB3	6:F:243:ILE:HD12	1.97	0.46
9:I:52:ILE:HB	9:I:59:VAL:HG13	1.98	0.46
10:J:184:VAL:HG22	10:J:189:ILE:HG12	1.98	0.46
7:U:195:GLU:HG3	7:U:235:ARG:HG3	1.98	0.46
5:E:87:LEU:HD11	5:E:107:ALA:HB1	1.98	0.45
11:Y:201:LYS:HG3	11:Y:207:PHE:HB2	1.98	0.45
3:C:155:SER:HB2	4:D:51:LEU:HD21	1.98	0.45
4:D:161:ALA:HB1	4:D:175:LEU:HD22	1.96	0.45
8:H:22:GLN:HG3	8:H:27:ALA:HB2	1.98	0.45
6:F:205:GLU:HG3	6:F:206:LYS:HG3	1.99	0.45
7:G:19:VAL:HG21	7:G:120:THR:HG23	1.99	0.45
1:A:222:LEU:HD13	1:A:232:GLY:HA2	1.97	0.45
6:F:216:SER:HB3	6:F:219:GLU:HB2	1.98	0.45
11:K:19:ARG:HH21	11:K:29:GLN:HE22	1.64	0.45
2:P:50:LYS:HG2	2:P:51:VAL:HG23	1.97	0.45
11:Y:1:THR:HG22	11:Y:130:GLY:HA3	1.98	0.45
8:V:22:GLN:HG3	8:V:27:ALA:HB2	1.99	0.45
12:Z:124:SER:HB3	12:Z:137:ARG:HG2	1.98	0.45
4:D:30:ILE:HD12	4:D:196:LEU:HG	1.98	0.45
10:J:21:VAL:HG11	11:K:122:LEU:HD11	1.99	0.45
10:X:184:VAL:HG22	10:X:189:ILE:HG12	1.98	0.45
15:Y:301:1G5:C39	15:Y:301:1G5:C18	2.93	0.45
8:H:8:PHE:HB3	8:H:151:ALA:HB2	1.99	0.45
10:J:174:MET:HE1	10:X:173:PRO:HB2	1.98	0.45
7:U:106:ASP:HB3	7:U:146:TYR:CZ	2.52	0.45
15:Y:301:1G5:C19	15:Y:301:1G5:H28	2.47	0.45
12:Z:13:LEU:HD11	12:Z:150:LEU:HD21	1.98	0.45
7:G:106:ASP:HB3	7:G:146:TYR:CZ	2.52	0.45
11:K:158:LYS:HB2	11:K:177:LEU:HD11	1.99	0.45
6:T:216:SER:HB3	6:T:219:GLU:HB2	1.99	0.45
8:H:50:ALA:HB2	9:I:128:CYS:HB2	1.99	0.45
1:O:75:TYR:HB3	1:O:82:TYR:CD1	2.52	0.45
2:B:151:ASN:HB2	2:B:152:PRO:CD	2.44	0.44
1:A:75:TYR:HB3	1:A:82:TYR:CD1	2.51	0.44
2:B:236:ASP:O	2:B:240:LYS:HG2	2.16	0.44
3:C:29:THR:HB	3:C:45:GLU:HG3	1.99	0.44
2:P:136:TYR:HB2	2:P:148:TYR:HB2	1.98	0.44
4:R:155:THR:HG22	5:S:77:ALA:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:Y:38:ASN:HB2	11:Y:39:PRO:HD2	1.99	0.44
10:J:139:TYR:OH	10:X:25:ILE:HG12	2.17	0.44
7:U:19:VAL:HG21	7:U:120:THR:HG23	1.98	0.44
9:W:94:LEU:HD11	9:W:106:PRO:HG2	2.00	0.44
4:D:113:LEU:HD12	5:E:78:PRO:HB2	2.00	0.44
4:D:138:GLY:HA2	4:D:214:ILE:HG12	1.99	0.44
13:M:96:LEU:O	13:M:100:MET:HG2	2.18	0.44
4:R:138:GLY:HA2	4:R:214:ILE:HG12	1.99	0.44
10:J:15:LEU:HD12	10:J:43:LEU:HD23	1.99	0.44
3:Q:149:GLU:HB2	3:Q:150:PRO:HD2	2.00	0.44
4:D:161:ALA:HB3	5:E:55:LEU:HD23	1.99	0.44
11:Y:176:ASN:HD21	11:Y:190:ASN:HD22	1.66	0.44
11:K:176:ASN:HD21	11:K:190:ASN:HD22	1.66	0.44
12:L:124:SER:HB3	12:L:137:ARG:HG2	1.99	0.44
13:M:97:ALA:HA	13:M:130:VAL:HG21	2.00	0.44
2:P:236:ASP:O	2:P:240:LYS:HG2	2.17	0.44
10:J:39:SER:HB2	10:J:40:PRO:HD2	1.99	0.43
2:P:149:THR:HG22	2:P:159:TRP:HE1	1.82	0.43
11:Y:35:ILE:HB	11:Y:45:MET:HE3	1.99	0.43
7:G:7:ILE:HG13	7:G:9:ILE:HG12	2.00	0.43
3:Q:41:VAL:HG22	3:Q:212:VAL:HG22	2.00	0.43
6:T:31:THR:HG21	6:T:47:GLU:O	2.18	0.43
7:G:195:GLU:HG3	7:G:235:ARG:HG3	2.00	0.43
12:Z:30:ILE:HG22	12:Z:35:ILE:HA	2.00	0.43
11:Y:158:LYS:HB2	11:Y:177:LEU:HD11	2.00	0.43
4:R:20:LEU:HA	4:R:23:ILE:HD12	2.01	0.43
13:M:193:ARG:HG3	13:M:214:VAL:HB	2.00	0.43
4:R:159:TYR:CE2	5:S:56:SER:HB3	2.54	0.43
9:W:12:VAL:HG23	9:W:137:VAL:HG12	1.99	0.43
7:G:149:ASP:HB2	7:G:150:PRO:HD2	2.00	0.43
3:Q:108:THR:HG21	3:Q:146:TYR:HB3	2.00	0.43
9:W:62:LEU:HD11	9:W:104:VAL:HG21	2.00	0.43
13:M:129:TYR:HE1	13:M:144:THR:HG22	1.83	0.43
4:R:113:LEU:HD12	5:S:78:PRO:HB2	2.01	0.43
6:T:154:TRP:CZ3	7:U:60:VAL:HA	2.54	0.43
5:E:193:VAL:HG13	5:E:205:LEU:HD11	2.01	0.43
3:Q:186:VAL:HG21	3:Q:214:LYS:HE2	2.00	0.43
5:S:131:LEU:HB2	5:S:146:PHE:HB3	2.00	0.43
12:Z:126:ASP:HB2	12:Z:130:SER:HB3	2.00	0.43
1:A:42:GLY:HA3	1:A:185:LEU:HD13	2.01	0.42
2:B:176:GLN:HG3	3:C:52:LEU:HD13	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:H:301:1G5:H12	9:I:124:ASP:HB3	2.01	0.42
9:I:120:ILE:HD12	9:I:136:ILE:HG12	2.01	0.42
4:R:190:LEU:HB3	4:R:235:LEU:HD23	2.01	0.42
8:V:8:PHE:HB3	8:V:151:ALA:HB2	2.01	0.42
1:A:30:GLN:HE21	1:A:30:GLN:HA	1.83	0.42
3:C:204:GLY:HA3	3:C:207:ASN:HB2	2.01	0.42
6:F:32:THR:HA	6:F:162:GLY:HA3	2.02	0.42
6:F:201:GLU:HG3	6:F:204:LYS:HD2	2.01	0.42
11:K:14:VAL:HB	11:K:178:TYR:HB2	2.00	0.42
1:A:49:LYS:HG3	1:A:210:GLU:HB2	2.01	0.42
6:F:31:THR:HG21	6:F:47:GLU:O	2.19	0.42
1:O:26:THR:O	1:O:30:GLN:HG2	2.19	0.42
10:X:119:ILE:HG12	10:X:125:LYS:HG3	2.01	0.42
9:I:10:ILE:HG21	9:I:141:ALA:HB3	2.02	0.42
1:O:49:LYS:HG3	1:O:210:GLU:HB2	2.02	0.42
8:V:112:SER:HB3	8:V:125:LEU:HD13	2.01	0.42
10:X:39:SER:HB2	10:X:40:PRO:HD2	2.02	0.42
6:T:197:TYR:HB3	6:T:243:ILE:HD12	2.01	0.42
9:W:120:ILE:HD12	9:W:136:ILE:HG12	2.02	0.42
15:Y:301:1G5:H33	15:Y:301:1G5:H23	1.80	0.42
5:E:62:ILE:HG21	5:E:213:ALA:HB2	2.01	0.42
13:M:227:GLY:HA3	13:M:231:GLN:HB3	2.02	0.42
4:R:161:ALA:HB1	4:R:175:LEU:HD22	2.01	0.42
6:T:123:ASN:N	6:T:123:ASN:HD22	2.18	0.42
6:T:205:GLU:HG3	6:T:206:LYS:HG3	2.02	0.42
7:U:7:ILE:HG13	7:U:9:ILE:HG12	2.02	0.42
5:E:131:LEU:HB2	5:E:146:PHE:HB3	2.00	0.41
2:P:69:ASN:HD22	2:P:69:ASN:HA	1.70	0.41
6:T:39:ASN:HD22	6:T:40:ASP:N	2.18	0.41
11:Y:1:THR:HB	15:Y:301:1G5:H27	1.05	0.41
11:Y:18:SER:HB2	11:Y:31:VAL:H	1.85	0.41
2:P:57:GLU:O	2:P:61:SER:HB2	2.20	0.41
12:Z:27:THR:HB	12:Z:39:TYR:HA	2.02	0.41
13:M:15:LYS:HB3	13:M:20:VAL:HG12	2.01	0.41
3:Q:155:SER:HB2	4:R:51:LEU:HD21	2.03	0.41
4:R:186:LYS:O	4:R:190:LEU:HD22	2.20	0.41
2:B:136:TYR:HB2	2:B:148:TYR:HB2	2.03	0.41
4:R:176:LEU:HD22	5:S:55:LEU:HD13	2.02	0.41
4:D:159:TYR:CE2	5:E:56:SER:HB3	2.56	0.41
9:I:10:ILE:HD11	9:I:174:ALA:HB2	2.03	0.41
1:O:42:GLY:HA3	1:O:185:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:176:LEU:HD22	5:E:55:LEU:HD13	2.02	0.41
7:G:52:ASP:HB3	7:G:55:LEU:HG	2.03	0.41
11:K:7:ARG:HD2	11:K:110:PRO:HB2	2.03	0.41
13:M:43:ILE:HG12	13:M:64:GLU:HG3	2.03	0.41
4:R:30:ILE:HD12	4:R:196:LEU:HG	2.02	0.41
5:S:193:VAL:HG13	5:S:205:LEU:HD11	2.02	0.41
7:U:149:ASP:HB2	7:U:150:PRO:HD2	2.02	0.41
7:U:166:GLN:HE21	7:U:166:GLN:HB3	1.70	0.41
9:W:10:ILE:HG21	9:W:141:ALA:HB3	2.03	0.41
11:Y:7:ARG:HD2	11:Y:110:PRO:HB2	2.03	0.41
4:D:83:HIS:CG	4:D:111:LEU:HD11	2.56	0.41
4:R:83:HIS:CG	4:R:111:LEU:HD11	2.56	0.41
11:Y:37:ILE:HG23	11:Y:60:GLY:HA2	2.02	0.41
4:D:186:LYS:O	4:D:190:LEU:HD22	2.21	0.40
6:F:154:TRP:CZ3	7:G:60:VAL:HA	2.57	0.40
7:G:105:CYS:HB2	7:G:136:SER:OG	2.21	0.40
3:C:186:VAL:HG21	3:C:214:LYS:HE2	2.02	0.40
4:D:190:LEU:HB3	4:D:235:LEU:HD23	2.03	0.40
6:F:39:ASN:HD22	6:F:40:ASP:N	2.19	0.40
4:R:59:ILE:HG22	4:R:220:PHE:HZ	1.85	0.40
6:T:32:THR:HA	6:T:162:GLY:HA3	2.03	0.40
10:X:172:MET:HA	10:X:173:PRO:HD3	1.87	0.40
2:B:50:LYS:HG2	2:B:51:VAL:HG23	2.02	0.40
2:B:139:TYR:CD1	2:B:224:VAL:HG21	2.56	0.40
4:D:229:ALA:HA	4:D:232:ILE:HD12	2.04	0.40
5:E:205:LEU:HA	5:E:209:ASN:HD22	1.85	0.40
12:L:49:ASN:HD22	12:L:49:ASN:HA	1.79	0.40
3:C:41:VAL:HG22	3:C:212:VAL:HG22	2.02	0.40
5:E:134:ILE:HD12	5:E:215:VAL:HG12	2.03	0.40
8:H:104:ASP:HB2	8:H:105:PRO:CD	2.51	0.40
4:R:229:ALA:HA	4:R:232:ILE:HD12	2.02	0.40
11:Y:31:VAL:HG11	15:Y:301:1G5:H34	2.02	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%)	240 (97%)	7 (3%)	1 (0%)	34	66
1	O	248/250 (99%)	240 (97%)	7 (3%)	1 (0%)	34	66
2	B	242/258 (94%)	235 (97%)	6 (2%)	1 (0%)	34	66
2	P	242/258 (94%)	235 (97%)	6 (2%)	1 (0%)	34	66
3	C	239/254 (94%)	231 (97%)	5 (2%)	3 (1%)	12	37
3	Q	239/254 (94%)	230 (96%)	6 (2%)	3 (1%)	12	37
4	D	240/260 (92%)	233 (97%)	4 (2%)	3 (1%)	12	37
4	R	240/260 (92%)	233 (97%)	4 (2%)	3 (1%)	12	37
5	E	231/234 (99%)	225 (97%)	6 (3%)	0	100	100
5	S	231/234 (99%)	224 (97%)	7 (3%)	0	100	100
6	F	242/288 (84%)	231 (96%)	11 (4%)	0	100	100
6	T	242/288 (84%)	232 (96%)	10 (4%)	0	100	100
7	G	241/252 (96%)	235 (98%)	6 (2%)	0	100	100
7	U	241/252 (96%)	235 (98%)	6 (2%)	0	100	100
8	H	220/232 (95%)	213 (97%)	7 (3%)	0	100	100
8	V	220/232 (95%)	212 (96%)	8 (4%)	0	100	100
9	I	202/205 (98%)	194 (96%)	8 (4%)	0	100	100
9	W	202/205 (98%)	194 (96%)	8 (4%)	0	100	100
10	J	196/198 (99%)	188 (96%)	7 (4%)	1 (0%)	29	61
10	X	196/198 (99%)	188 (96%)	7 (4%)	1 (0%)	29	61
11	K	210/212 (99%)	204 (97%)	5 (2%)	1 (0%)	29	61
11	Y	210/212 (99%)	203 (97%)	6 (3%)	1 (0%)	29	61
12	L	220/222 (99%)	215 (98%)	5 (2%)	0	100	100
12	Z	220/222 (99%)	215 (98%)	5 (2%)	0	100	100
13	M	231/233 (99%)	219 (95%)	11 (5%)	1 (0%)	34	66
13	a	231/233 (99%)	221 (96%)	9 (4%)	1 (0%)	34	66
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	6312/6588 (96%)	6101 (97%)	189 (3%)	22 (0%)	41	71

All (22) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	52	LEU
4	D	121	GLY
3	Q	52	LEU
4	R	121	GLY
1	A	2	THR
4	D	118	GLY
1	O	2	THR
4	R	118	GLY
11	Y	39	PRO
2	B	51	VAL
3	C	183	PRO
3	C	203	THR
11	K	39	PRO
2	P	51	VAL
3	Q	183	PRO
3	Q	203	THR
4	D	122	GLU
4	R	122	GLU
10	J	9	VAL
13	M	229	GLY
10	X	9	VAL
13	a	229	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	209/209 (100%)	206 (99%)	3 (1%)	67 89
1	O	209/209 (100%)	206 (99%)	3 (1%)	67 89
2	B	203/216 (94%)	194 (96%)	9 (4%)	28 61
2	P	203/216 (94%)	194 (96%)	9 (4%)	28 61
3	C	213/226 (94%)	206 (97%)	7 (3%)	38 72
3	Q	213/226 (94%)	207 (97%)	6 (3%)	43 76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	D	198/215 (92%)	193 (98%)	5 (2%)	47	78
4	R	198/215 (92%)	193 (98%)	5 (2%)	47	78
5	E	192/193 (100%)	186 (97%)	6 (3%)	40	74
5	S	192/193 (100%)	186 (97%)	6 (3%)	40	74
6	F	201/239 (84%)	191 (95%)	10 (5%)	24	57
6	T	201/239 (84%)	192 (96%)	9 (4%)	27	61
7	G	207/210 (99%)	203 (98%)	4 (2%)	57	84
7	U	207/210 (99%)	203 (98%)	4 (2%)	57	84
8	H	181/190 (95%)	179 (99%)	2 (1%)	73	92
8	V	181/190 (95%)	178 (98%)	3 (2%)	60	86
9	I	172/173 (99%)	170 (99%)	2 (1%)	71	91
9	W	172/173 (99%)	169 (98%)	3 (2%)	60	86
10	J	175/175 (100%)	174 (99%)	1 (1%)	86	96
10	X	175/175 (100%)	174 (99%)	1 (1%)	86	96
11	K	169/169 (100%)	165 (98%)	4 (2%)	49	79
11	Y	169/169 (100%)	164 (97%)	5 (3%)	41	75
12	L	185/185 (100%)	183 (99%)	2 (1%)	73	92
12	Z	185/185 (100%)	184 (100%)	1 (0%)	88	96
13	M	199/199 (100%)	192 (96%)	7 (4%)	36	70
13	a	199/199 (100%)	192 (96%)	7 (4%)	36	70
14	N	162/162 (100%)	162 (100%)	0	100	100
14	b	162/162 (100%)	162 (100%)	0	100	100
All	All	5332/5522 (97%)	5208 (98%)	124 (2%)	50	80

All (124) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	GLN
1	A	132	VAL
1	A	157	PHE
2	B	59	ASP
2	B	60	THR
2	B	69	ASN
2	B	119	GLN

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Mol	Chain	Res	Type
2	B	184	LYS
2	B	186	ASP
2	B	191	LEU
2	B	212	PHE
2	B	244	THR
3	C	4	ARG
3	C	51	LYS
3	C	147	GLN
3	C	160	GLN
3	C	169	VAL
3	C	171	GLU
3	C	206	LYS
4	D	102	GLU
4	D	124	ARG
4	D	176	LEU
4	D	190	LEU
4	D	193	LEU
5	E	9	THR
5	E	29	LYS
5	E	116	GLN
5	E	184	ASN
5	E	188	LEU
5	E	231	LYS
6	F	39	ASN
6	F	117	GLN
6	F	123	ASN
6	F	130	VAL
6	F	181	GLU
6	F	186	ARG
6	F	201	GLU
6	F	202	ASP
6	F	203	ASN
6	F	214	TRP
7	G	117	GLN
7	G	166	GLN
7	G	221	LYS
7	G	235	ARG
8	H	34	LEU
8	H	196	ARG
9	I	37	ASN
9	I	171	LEU
10	J	71	GLU

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Mol	Chain	Res	Type
11	K	4	LEU
11	K	9	GLN
11	K	65	LEU
11	K	104	TYR
12	L	49	ASN
12	L	109	THR
13	M	48	ASN
13	M	70	LEU
13	M	104	ARG
13	M	146	PHE
13	M	159	VAL
13	M	161	ARG
13	M	226	LYS
1	O	30	GLN
1	O	132	VAL
1	O	157	PHE
2	P	59	ASP
2	P	60	THR
2	P	69	ASN
2	P	119	GLN
2	P	184	LYS
2	P	186	ASP
2	P	191	LEU
2	P	212	PHE
2	P	244	THR
3	Q	4	ARG
3	Q	51	LYS
3	Q	147	GLN
3	Q	160	GLN
3	Q	171	GLU
3	Q	206	LYS
4	R	102	GLU
4	R	124	ARG
4	R	176	LEU
4	R	190	LEU
4	R	193	LEU
5	S	9	THR
5	S	29	LYS
5	S	116	GLN
5	S	184	ASN
5	S	188	LEU
5	S	231	LYS

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Mol	Chain	Res	Type
6	T	39	ASN
6	T	117	GLN
6	T	123	ASN
6	T	130	VAL
6	T	181	GLU
6	T	186	ARG
6	T	201	GLU
6	T	203	ASN
6	T	214	TRP
7	U	117	GLN
7	U	166	GLN
7	U	221	LYS
7	U	235	ARG
8	V	30	ASN
8	V	34	LEU
8	V	196	ARG
9	W	37	ASN
9	W	125	LEU
9	W	171	LEU
10	X	71	GLU
11	Y	1	THR
11	Y	4	LEU
11	Y	9	GLN
11	Y	35	ILE
11	Y	104	TYR
12	Z	49	ASN
13	a	48	ASN
13	a	70	LEU
13	a	104	ARG
13	a	146	PHE
13	a	159	VAL
13	a	161	ARG
13	a	226	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (132) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	GLN
1	A	143	ASN
2	B	20	GLN
2	B	69	ASN
2	B	95	GLN

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Mol	Chain	Res	Type
2	B	119	GLN
2	B	123	GLN
2	B	155	ASN
2	B	176	GLN
2	B	220	ASN
2	B	226	GLN
3	C	17	GLN
3	C	77	ASN
3	C	116	GLN
3	C	120	GLN
3	C	147	GLN
3	C	160	GLN
3	C	241	GLN
4	D	15	GLN
4	D	210	GLN
4	D	225	ASN
5	E	68	HIS
5	E	99	ASN
5	E	116	GLN
5	E	120	GLN
5	E	151	ASN
5	E	184	ASN
5	E	198	GLN
5	E	209	ASN
6	F	19	GLN
6	F	39	ASN
6	F	86	ASN
6	F	117	GLN
6	F	123	ASN
6	F	203	ASN
7	G	6	HIS
7	G	75	ASN
7	G	83	ASN
7	G	114	ASN
7	G	117	GLN
7	G	121	GLN
7	G	167	GLN
7	G	175	ASN
7	G	186	ASN
8	H	30	ASN
8	H	141	HIS
8	H	165	ASN

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Mol	Chain	Res	Type
8	H	172	ASN
10	J	55	GLN
10	J	118	GLN
11	K	9	GLN
11	K	85	ASN
11	K	176	ASN
12	L	1	GLN
12	L	3	ASN
12	L	49	ASN
12	L	70	ASN
12	L	80	ASN
12	L	195	HIS
13	M	18	ASN
13	M	48	ASN
13	M	102	GLN
13	M	171	GLN
13	M	179	ASN
13	M	213	GLN
14	N	161	GLN
1	O	30	GLN
1	O	143	ASN
2	P	20	GLN
2	P	69	ASN
2	P	95	GLN
2	P	119	GLN
2	P	123	GLN
2	P	155	ASN
2	P	176	GLN
2	P	220	ASN
2	P	226	GLN
3	Q	17	GLN
3	Q	77	ASN
3	Q	116	GLN
3	Q	120	GLN
3	Q	147	GLN
3	Q	160	GLN
3	Q	241	GLN
4	R	15	GLN
4	R	210	GLN
4	R	225	ASN
5	S	68	HIS
5	S	99	ASN

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Mol	Chain	Res	Type
5	S	116	GLN
5	S	120	GLN
5	S	151	ASN
5	S	184	ASN
5	S	198	GLN
5	S	209	ASN
6	T	19	GLN
6	T	39	ASN
6	T	86	ASN
6	T	117	GLN
6	T	123	ASN
6	T	203	ASN
7	U	6	HIS
7	U	75	ASN
7	U	83	ASN
7	U	114	ASN
7	U	117	GLN
7	U	121	GLN
7	U	166	GLN
7	U	167	GLN
7	U	186	ASN
8	V	30	ASN
8	V	141	HIS
8	V	165	ASN
8	V	172	ASN
8	V	189	ASN
10	X	55	GLN
11	Y	9	GLN
11	Y	85	ASN
11	Y	176	ASN
12	Z	1	GLN
12	Z	3	ASN
12	Z	49	ASN
12	Z	70	ASN
12	Z	80	ASN
12	Z	195	HIS
13	a	18	ASN
13	a	48	ASN
13	a	102	GLN
13	a	171	GLN
13	a	179	ASN
13	a	213	GLN

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Mol	Chain	Res	Type
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](#)

4 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
15	1G5	V	301	8	41,41,41	1.24	3 (7%)	53,57,57	1.89	12 (22%)
15	1G5	H	301	8	41,41,41	1.26	3 (7%)	53,57,57	1.93	11 (20%)
15	1G5	K	301	11	41,41,41	1.22	3 (7%)	53,57,57	1.82	10 (18%)
15	1G5	Y	301	11	41,41,41	3.37	6 (14%)	53,57,57	5.98	17 (32%)

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
15	1G5	V	301	8	-	13/42/42/42	0/2/2/2
15	1G5	H	301	8	-	14/42/42/42	0/2/2/2
15	1G5	K	301	11	-	16/42/42/42	0/2/2/2
15	1G5	Y	301	11	-	15/42/42/42	0/2/2/2

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	Y	301	1G5	O37-S36	15.96	1.79	1.44
15	Y	301	1G5	O38-S36	8.66	1.63	1.44
15	Y	301	1G5	C39-S36	-8.10	1.45	1.75
15	Y	301	1G5	C23-C35	4.48	1.57	1.52
15	H	301	1G5	C23-C35	4.44	1.57	1.52
15	K	301	1G5	C23-C35	4.09	1.56	1.52
15	Y	301	1G5	C35-S36	4.08	1.83	1.78
15	V	301	1G5	C23-C35	3.82	1.56	1.52
15	V	301	1G5	C35-S36	2.99	1.82	1.78
15	H	301	1G5	C35-S36	2.85	1.82	1.78
15	K	301	1G5	C35-S36	2.46	1.81	1.78
15	K	301	1G5	O8-C2	2.13	1.40	1.36
15	H	301	1G5	O8-C2	2.08	1.40	1.36
15	V	301	1G5	O8-C2	2.04	1.40	1.36
15	Y	301	1G5	O8-C2	2.01	1.40	1.36

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	Y	301	1G5	O38-S36-C39	26.58	135.62	108.91
15	Y	301	1G5	O38-S36-C35	-22.34	92.70	108.34
15	Y	301	1G5	O37-S36-O38	-16.56	81.68	117.09
15	Y	301	1G5	O37-S36-C35	11.56	116.44	108.34
15	Y	301	1G5	O37-S36-C39	-9.42	99.44	108.91
15	H	301	1G5	C23-C21-N20	6.20	119.27	110.54
15	V	301	1G5	C18-C19-N20	5.97	129.80	116.70
15	Y	301	1G5	C18-C19-N20	5.97	129.79	116.70
15	V	301	1G5	C23-C21-N20	5.92	118.87	110.54
15	K	301	1G5	C18-C19-N20	5.89	129.61	116.70
15	H	301	1G5	C18-C19-N20	5.82	129.47	116.70
15	Y	301	1G5	C23-C21-N20	5.51	118.30	110.54
15	H	301	1G5	C21-N20-C19	5.20	131.49	123.20
15	K	301	1G5	C23-C21-N20	5.05	117.66	110.54
15	Y	301	1G5	C39-S36-C35	4.94	124.25	105.21

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	Y	301	1G5	C40-C18-N17	4.66	121.05	110.56
15	K	301	1G5	C21-N20-C19	4.52	130.41	123.20
15	V	301	1G5	C21-N20-C19	4.38	130.18	123.20
15	V	301	1G5	C40-C18-N17	4.22	120.06	110.56
15	H	301	1G5	C40-C18-N17	4.17	119.95	110.56
15	K	301	1G5	C40-C18-N17	4.14	119.88	110.56
15	Y	301	1G5	O33-C19-N20	-3.60	116.26	122.93
15	K	301	1G5	O33-C19-N20	-3.58	116.30	122.93
15	H	301	1G5	O33-C19-N20	-3.48	116.49	122.93
15	V	301	1G5	O33-C19-N20	-3.37	116.69	122.93
15	V	301	1G5	O33-C19-C18	-3.30	113.50	120.45
15	Y	301	1G5	O33-C19-C18	-3.09	113.95	120.45
15	H	301	1G5	O33-C19-C18	-3.05	114.04	120.45
15	K	301	1G5	O37-S36-C35	-3.04	106.22	108.34
15	K	301	1G5	O33-C19-C18	-3.03	114.09	120.45
15	H	301	1G5	O38-S36-C35	2.91	110.38	108.34
15	Y	301	1G5	C21-N20-C19	2.78	127.62	123.20
15	H	301	1G5	O37-S36-C39	-2.68	106.21	108.91
15	Y	301	1G5	C23-C21-C22	2.68	115.50	111.14
15	Y	301	1G5	C4-C9-N10	2.66	121.72	116.80
15	Y	301	1G5	O32-C9-C4	-2.42	116.58	121.01
15	H	301	1G5	C40-C18-C19	2.42	116.10	110.21
15	V	301	1G5	O38-S36-C35	2.41	110.03	108.34
15	V	301	1G5	C5-C4-C3	-2.28	119.08	120.72
15	H	301	1G5	C5-C4-C3	-2.26	119.10	120.72
15	K	301	1G5	C40-C18-C19	2.24	115.68	110.21
15	K	301	1G5	O32-C9-C4	-2.21	116.98	121.01
15	H	301	1G5	C4-C9-N10	2.16	120.81	116.80
15	V	301	1G5	C40-C18-C19	2.16	115.47	110.21
15	V	301	1G5	O37-S36-C35	-2.14	106.85	108.34
15	K	301	1G5	C5-C4-C3	-2.09	119.22	120.72
15	Y	301	1G5	C5-C4-C3	-2.03	119.26	120.72
15	V	301	1G5	O32-C9-C4	-2.03	117.31	121.01
15	V	301	1G5	C4-C9-N10	2.02	120.54	116.80
15	Y	301	1G5	C40-C18-C19	2.01	115.11	110.21

There are no chirality outliers.

All (58) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
15	H	301	1G5	C4-C9-N10-C11
15	H	301	1G5	O32-C9-N10-C11

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Mol	Chain	Res	Type	Atoms
15	H	301	1G5	C19-C18-C40-O41
15	H	301	1G5	C22-C21-C23-C35
15	H	301	1G5	N20-C21-C23-C35
15	K	301	1G5	C23-C35-S36-O38
15	K	301	1G5	C23-C35-S36-O37
15	K	301	1G5	C23-C35-S36-C39
15	V	301	1G5	C19-C18-C40-O41
15	V	301	1G5	N20-C21-C23-C35
15	V	301	1G5	C23-C21-C22-C24
15	Y	301	1G5	N17-C18-C40-O41
15	Y	301	1G5	C23-C35-S36-O38
15	Y	301	1G5	C22-C21-C23-C35
15	Y	301	1G5	N20-C21-C23-C35
15	Y	301	1G5	C23-C21-C22-C24
15	H	301	1G5	C18-C19-N20-C21
15	H	301	1G5	O33-C19-N20-C21
15	V	301	1G5	C21-C23-C35-S36
15	Y	301	1G5	C21-C23-C35-S36
15	V	301	1G5	N17-C18-C40-O41
15	K	301	1G5	C22-C21-C23-C35
15	V	301	1G5	C21-C22-C24-C25
15	V	301	1G5	C4-C9-N10-C11
15	K	301	1G5	C23-C21-C22-C24
15	V	301	1G5	C21-C22-C24-C29
15	H	301	1G5	N17-C18-C40-O41
15	K	301	1G5	C21-C22-C24-C29
15	V	301	1G5	O32-C9-N10-C11
15	K	301	1G5	C21-C22-C24-C25
15	H	301	1G5	C21-C22-C24-C29
15	H	301	1G5	C21-C22-C24-C25
15	Y	301	1G5	C21-C22-C24-C25
15	Y	301	1G5	C21-C22-C24-C29
15	H	301	1G5	C23-C21-N20-C19
15	K	301	1G5	N17-C18-C19-O33
15	K	301	1G5	C40-C18-C19-O33
15	H	301	1G5	C22-C21-N20-C19
15	K	301	1G5	C40-C18-C19-N20
15	K	301	1G5	N17-C18-C19-N20
15	K	301	1G5	C21-C23-C35-S36
15	V	301	1G5	N20-C21-C22-C24
15	K	301	1G5	C5-C4-C9-O32
15	V	301	1G5	C5-C4-C9-O32

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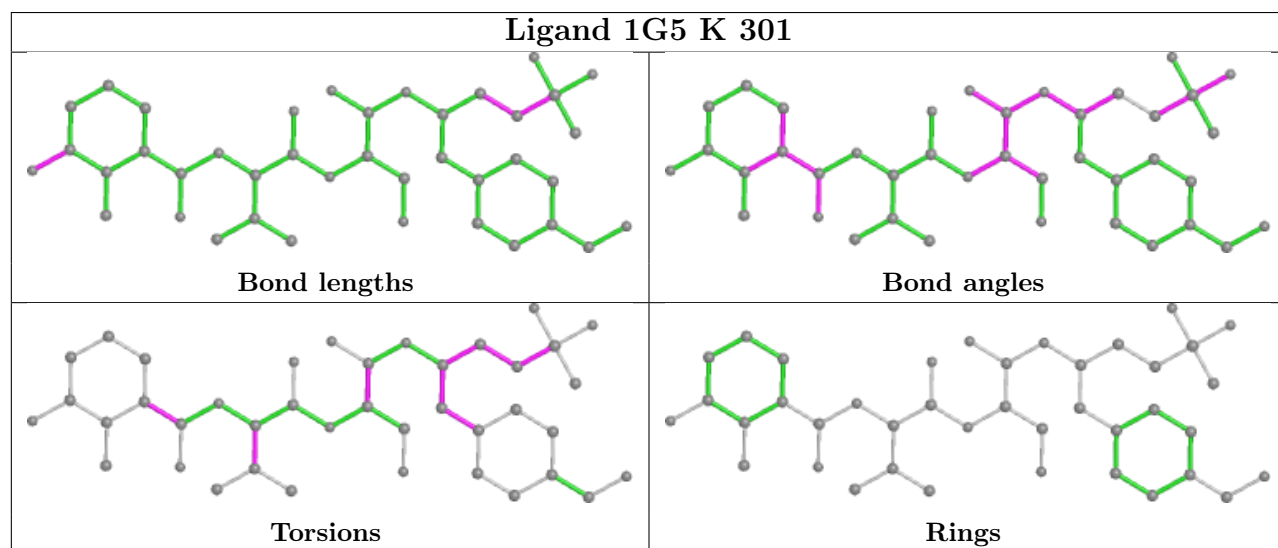
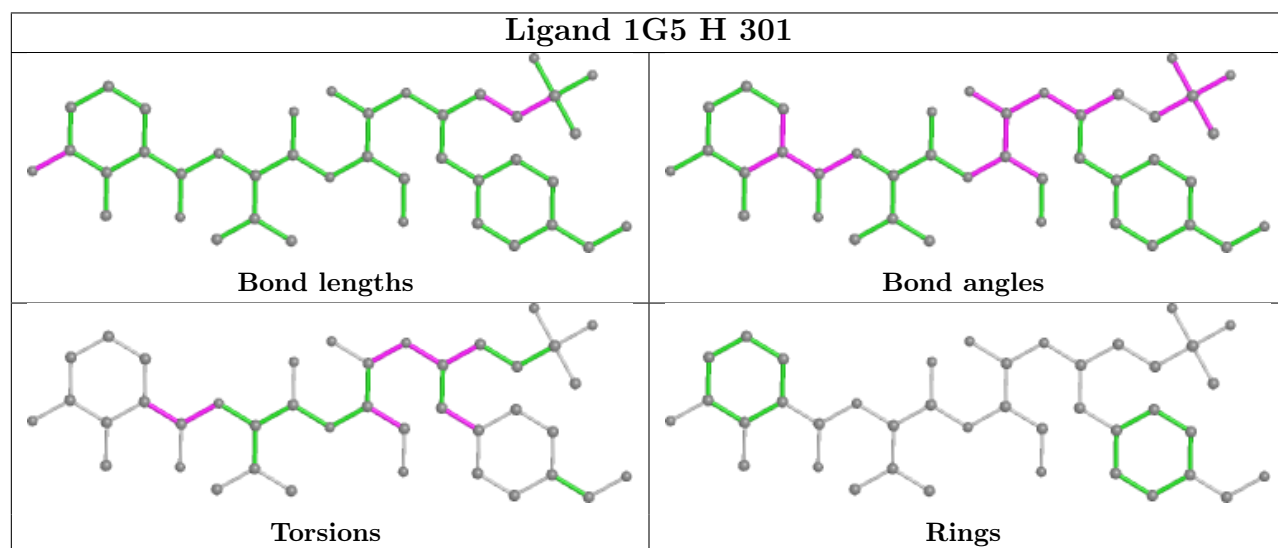
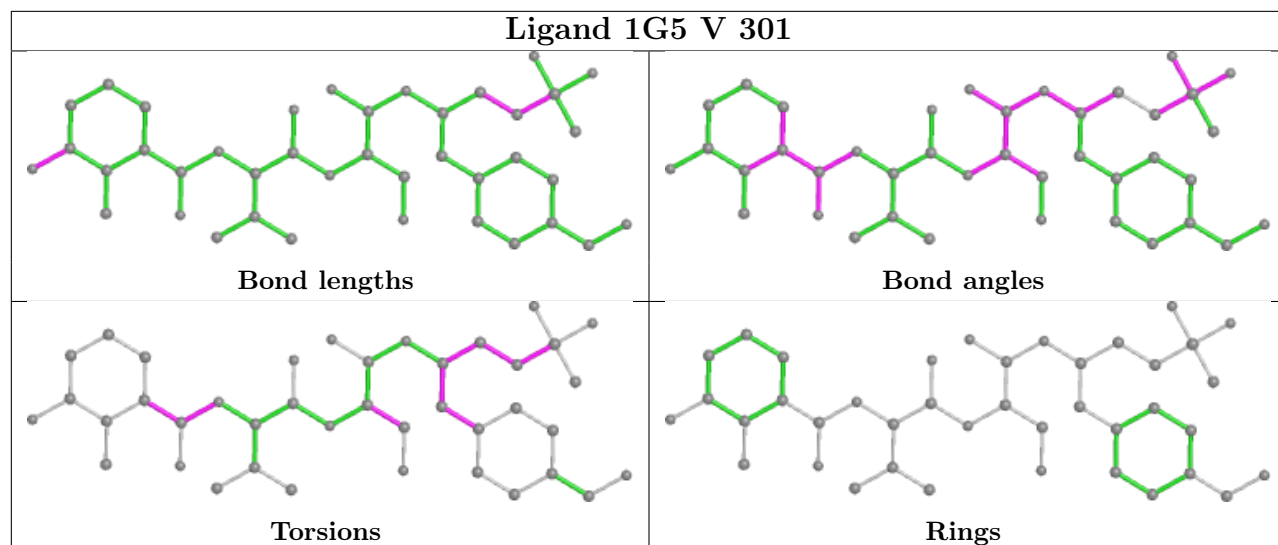
Mol	Chain	Res	Type	Atoms
15	Y	301	1G5	C5-C4-C9-O32
15	V	301	1G5	C5-C4-C9-N10
15	K	301	1G5	C15-C11-C12-C14
15	K	301	1G5	C5-C4-C9-N10
15	H	301	1G5	C5-C4-C9-O32
15	Y	301	1G5	C40-C18-C19-O33
15	Y	301	1G5	C5-C4-C9-N10
15	Y	301	1G5	C4-C9-N10-C11
15	H	301	1G5	C5-C4-C9-N10
15	Y	301	1G5	C40-C18-C19-N20
15	K	301	1G5	C15-C11-C12-C13
15	V	301	1G5	C23-C35-S36-O38
15	Y	301	1G5	O32-C9-N10-C11
15	Y	301	1G5	C23-C35-S36-C39

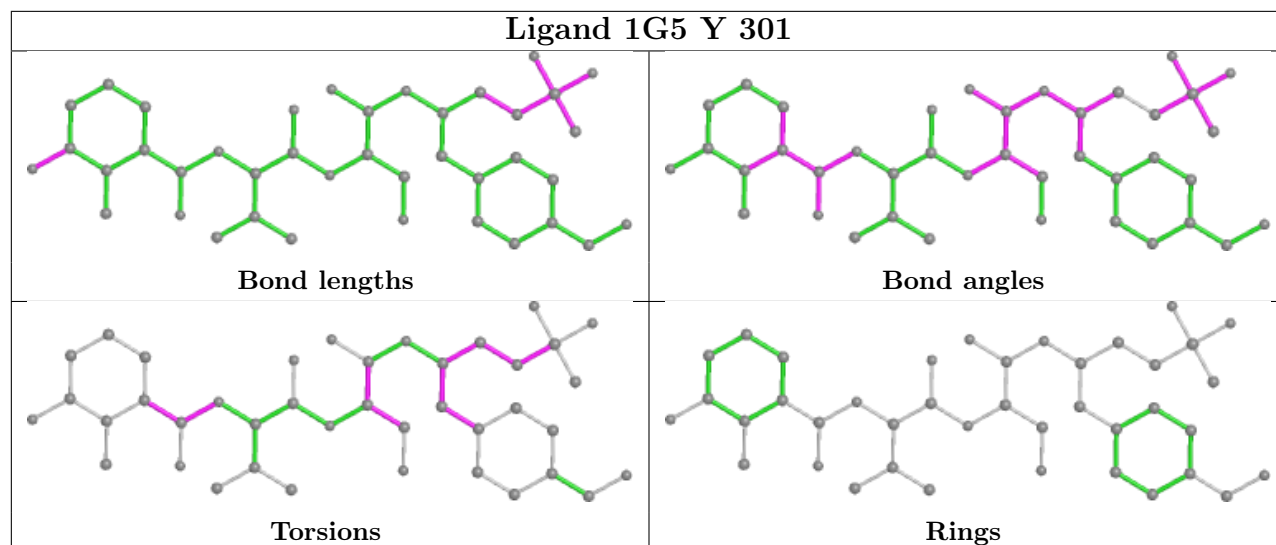
There are no ring outliers.

3 monomers are involved in 28 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
15	V	301	1G5	3	0
15	H	301	1G5	1	0
15	Y	301	1G5	24	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, 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	250/250 (100%)	0.00	9 (3%) 42 37	59, 74, 97, 114	0
1	O	250/250 (100%)	-0.03	8 (3%) 47 43	56, 72, 99, 116	0
2	B	244/258 (94%)	0.22	18 (7%) 14 11	54, 73, 113, 122	0
2	P	244/258 (94%)	0.28	21 (8%) 10 8	57, 76, 109, 124	0
3	C	241/254 (94%)	0.14	16 (6%) 18 14	55, 73, 112, 151	0
3	Q	241/254 (94%)	0.36	25 (10%) 6 5	65, 91, 137, 179	0
4	D	242/260 (93%)	0.12	11 (4%) 33 29	59, 78, 106, 127	0
4	R	242/260 (93%)	0.21	17 (7%) 16 12	62, 83, 113, 135	0
5	E	233/234 (99%)	0.15	16 (6%) 16 13	67, 86, 110, 119	0
5	S	233/234 (99%)	0.21	19 (8%) 11 9	66, 89, 120, 133	0
6	F	244/288 (84%)	0.13	19 (7%) 13 10	61, 79, 110, 130	0
6	T	244/288 (84%)	0.10	15 (6%) 21 17	58, 78, 116, 142	0
7	G	243/252 (96%)	0.11	11 (4%) 33 29	60, 77, 104, 137	0
7	U	243/252 (96%)	0.01	9 (3%) 41 37	55, 70, 95, 122	0
8	H	222/232 (95%)	-0.09	3 (1%) 75 75	57, 70, 85, 98	0
8	V	222/232 (95%)	-0.12	5 (2%) 60 58	54, 67, 84, 102	0
9	I	204/205 (99%)	-0.32	2 (0%) 82 82	52, 63, 80, 86	0
9	W	204/205 (99%)	-0.28	2 (0%) 82 82	54, 63, 81, 88	0
10	J	198/198 (100%)	-0.04	8 (4%) 38 33	51, 63, 81, 119	0
10	X	198/198 (100%)	-0.04	8 (4%) 38 33	55, 66, 84, 120	0
11	K	212/212 (100%)	-0.08	8 (3%) 40 36	50, 64, 83, 90	0
11	Y	212/212 (100%)	-0.01	11 (5%) 27 23	53, 65, 86, 96	0
12	L	222/222 (100%)	-0.16	5 (2%) 60 58	52, 68, 91, 99	0
12	Z	222/222 (100%)	-0.12	6 (2%) 54 50	55, 69, 92, 103	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
13	M	233/233 (100%)	-0.21	4 (1%) 70 69	54, 67, 81, 86	0
13	a	233/233 (100%)	-0.22	3 (1%) 77 77	52, 67, 83, 85	0
14	N	196/196 (100%)	-0.20	3 (1%) 73 73	58, 65, 81, 91	0
14	b	196/196 (100%)	-0.21	1 (0%) 91 91	54, 63, 80, 91	0
All	All	6368/6588 (96%)	0.01	283 (4%) 34 30	50, 72, 108, 179	0

All (283) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	R	119	ALA	10.8
2	P	220	ASN	10.5
10	J	198	GLN	10.5
2	B	220	ASN	9.0
4	D	119	ALA	8.9
4	R	121	GLY	8.1
4	D	118	GLY	8.1
7	U	243	ASP	8.1
4	D	120	SER	7.8
4	R	120	SER	7.8
2	P	219	ALA	7.6
10	X	198	GLN	7.5
3	Q	49	THR	7.4
10	J	197	ALA	7.4
3	C	49	THR	7.3
7	G	243	ASP	7.2
5	E	1	PHE	7.1
2	B	219	ALA	6.7
3	Q	240	GLU	6.6
4	D	121	GLY	6.6
2	B	218	GLY	6.5
2	B	221	ASP	6.2
5	S	202	ASP	6.1
3	Q	48	SER	6.1
10	X	197	ALA	6.0
3	Q	50	LEU	6.0
5	E	202	ASP	5.8
7	U	1	ALA	5.8
4	D	122	GLU	5.7
3	C	241	GLN	5.6
2	P	221	ASP	5.6
6	F	202	ASP	5.5

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Mol	Chain	Res	Type	RSRZ
3	C	50	LEU	5.5
5	S	1	PHE	5.5
11	Y	104	TYR	5.4
9	W	1	SER	5.3
3	Q	203	THR	5.2
11	Y	212	GLY	5.2
12	L	174	TYR	5.1
4	R	118	GLY	5.1
7	G	242	GLN	5.0
13	M	1	THR	5.0
4	D	125	LEU	5.0
7	G	1	ALA	4.9
8	H	222	ASP	4.8
8	H	221	CYS	4.8
12	Z	173	LYS	4.8
1	A	250	LEU	4.7
4	R	1	ASP	4.7
1	O	2	THR	4.6
2	P	50	LYS	4.6
8	V	221	CYS	4.5
1	A	201	GLU	4.5
1	O	250	LEU	4.5
2	B	51	VAL	4.5
8	V	222	ASP	4.5
2	P	61	SER	4.5
6	T	1	GLY	4.5
11	K	104	TYR	4.5
5	S	2	ARG	4.4
12	L	173	LYS	4.4
1	A	1	MET	4.3
3	Q	241	GLN	4.2
4	D	124	ARG	4.2
6	T	2	THR	4.2
2	P	223	GLU	4.2
2	P	218	GLY	4.2
10	J	196	GLN	4.1
11	K	212	GLY	4.0
2	P	225	TYR	4.0
10	X	194	ASP	4.0
1	A	2	THR	4.0
4	R	122	GLU	4.0
12	Z	174	TYR	3.9

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Mol	Chain	Res	Type	RSRZ
6	F	1	GLY	3.9
1	O	201	GLU	3.9
2	P	51	VAL	3.9
5	E	3	ASN	3.9
2	P	60	THR	3.8
7	G	179	LYS	3.8
5	S	173	ARG	3.8
2	B	60	THR	3.8
6	F	244	ASN	3.8
5	S	52	ALA	3.8
4	R	125	LEU	3.8
1	O	1	MET	3.7
1	O	248	GLU	3.7
11	K	183	ASP	3.7
5	S	225	ASP	3.6
3	Q	239	GLN	3.6
2	B	203	SER	3.6
5	S	3	ASN	3.6
6	T	202	ASP	3.6
7	G	181	LYS	3.5
10	X	196	GLN	3.5
9	I	1	SER	3.4
10	J	1	MET	3.4
5	S	201	ARG	3.4
1	A	249	ALA	3.4
3	C	240	GLU	3.4
5	S	30	GLN	3.3
2	B	223	GLU	3.3
2	B	61	SER	3.3
7	U	222	ASP	3.3
11	K	208	ASN	3.3
2	B	225	TYR	3.2
6	F	2	THR	3.2
5	S	58	TYR	3.2
6	T	181	GLU	3.2
10	X	1	MET	3.2
12	Z	163	GLY	3.2
2	P	59	ASP	3.2
3	C	203	THR	3.2
11	K	182	GLU	3.2
11	Y	182	GLU	3.2
6	F	182	GLY	3.2

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Mol	Chain	Res	Type	RSRZ
3	Q	51	LYS	3.2
6	F	181	GLU	3.2
6	T	244	ASN	3.1
1	O	249	ALA	3.1
7	G	2	GLY	3.1
5	E	203	GLU	3.1
11	Y	183	ASP	3.1
6	F	243	ILE	3.1
5	E	54	GLU	3.1
13	a	1	THR	3.1
3	Q	47	ARG	3.1
3	C	239	GLN	3.1
6	T	178	HIS	3.0
4	D	123	GLU	3.0
6	T	243	ILE	3.0
3	Q	238	LYS	3.0
3	C	51	LYS	3.0
3	Q	206	LYS	3.0
3	C	237	GLU	3.0
4	R	124	ARG	3.0
2	P	203	SER	2.9
4	D	1	ASP	2.9
5	E	204	SER	2.9
12	L	165	ASN	2.9
4	R	242	GLU	2.9
10	J	139	TYR	2.9
11	Y	209	ASN	2.9
3	Q	58	THR	2.8
6	T	241	LYS	2.8
13	M	47	ASP	2.8
8	V	219	ASN	2.8
3	C	202	GLN	2.8
2	P	244	THR	2.8
13	a	233	ILE	2.8
11	K	147	ASP	2.8
5	E	2	ARG	2.8
7	U	242	GLN	2.8
13	M	233	ILE	2.8
12	Z	116	GLU	2.8
1	O	52	SER	2.8
3	Q	60	SER	2.8
3	Q	181	GLU	2.8

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Mol	Chain	Res	Type	RSRZ
11	Y	208	ASN	2.8
1	A	202	GLY	2.8
6	F	205	GLU	2.7
11	Y	106	ARG	2.7
7	U	188	GLU	2.7
2	P	52	THR	2.7
4	R	123	GLU	2.7
3	C	206	LYS	2.7
7	G	58	THR	2.6
5	S	51	ASN	2.6
6	F	228	LYS	2.6
6	T	166	GLN	2.6
6	F	201	GLU	2.6
7	G	188	GLU	2.6
6	F	177	ASP	2.6
6	F	241	LYS	2.6
3	C	235	GLU	2.6
3	Q	59	PRO	2.6
5	E	30	GLN	2.5
2	B	50	LYS	2.5
3	C	47	ARG	2.5
6	F	178	HIS	2.5
11	Y	40	PHE	2.5
6	T	182	GLY	2.5
14	N	104	ASP	2.5
4	R	239	GLU	2.5
3	Q	141	ASP	2.5
5	S	57	SER	2.5
7	G	208	GLU	2.5
11	Y	147	ASP	2.5
6	F	204	LYS	2.5
11	K	209	ASN	2.5
5	E	173	ARG	2.5
5	E	194	GLU	2.4
7	U	179	LYS	2.4
12	Z	162	PRO	2.4
1	A	231	LYS	2.4
6	T	53	LYS	2.4
3	C	48	SER	2.4
8	V	1	THR	2.4
5	S	203	GLU	2.4
11	Y	202	GLU	2.4

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Mol	Chain	Res	Type	RSRZ
4	D	2	ARG	2.4
5	E	29	LYS	2.4
3	Q	52	LEU	2.4
7	U	203	ASP	2.4
3	Q	55	THR	2.4
3	Q	202	GLN	2.4
13	a	204	THR	2.4
10	J	194	ASP	2.3
5	S	180	LYS	2.3
4	R	177	ASN	2.3
3	C	181	GLU	2.3
12	Z	1	GLN	2.3
10	X	151	ASP	2.3
14	b	104	ASP	2.3
2	B	222	GLY	2.3
3	C	238	LYS	2.3
8	V	145	ASP	2.3
3	Q	175	LYS	2.3
5	E	233	ILE	2.3
3	Q	171	GLU	2.3
2	B	235	LYS	2.3
5	E	201	ARG	2.3
6	F	51	THR	2.3
1	O	207	ASP	2.3
2	B	182	ASP	2.3
6	F	203	ASN	2.2
2	P	184	LYS	2.2
4	D	142	ASP	2.2
7	G	178	LYS	2.2
9	W	192	ASP	2.2
5	E	187	GLU	2.2
7	G	241	GLU	2.2
3	Q	53	GLN	2.2
6	F	53	LYS	2.2
14	N	10	ASP	2.2
6	F	240	GLN	2.2
1	A	3	ASP	2.2
10	X	174	MET	2.2
2	P	182	ASP	2.2
5	E	180	LYS	2.2
4	R	202	GLU	2.2
11	K	106	ARG	2.2

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Mol	Chain	Res	Type	RSRZ
5	E	52	ALA	2.2
3	Q	27	ARG	2.2
6	F	207	ASP	2.1
2	B	217	LYS	2.1
5	S	177	THR	2.1
2	P	19	TYR	2.1
9	I	192	ASP	2.1
2	P	235	LYS	2.1
4	R	157	TYR	2.1
2	B	181	ASP	2.1
3	Q	180	LYS	2.1
6	T	203	ASN	2.1
14	N	105	LYS	2.1
6	T	177	ASP	2.1
4	R	54	ASP	2.1
10	J	10	GLN	2.1
5	S	204	SER	2.1
2	P	62	THR	2.1
3	Q	233	GLN	2.1
11	Y	103	GLY	2.1
2	B	63	GLU	2.1
2	P	54	THR	2.1
10	X	11	ASP	2.1
13	M	216	ASN	2.1
12	L	116	GLU	2.1
4	R	217	GLN	2.1
6	T	215	CYS	2.1
12	L	1	GLN	2.1
2	P	209	ARG	2.1
7	U	2	GLY	2.1
3	C	225	GLU	2.1
8	H	198	GLU	2.1
4	R	224	ASP	2.0
10	J	174	MET	2.0
2	B	201	ASP	2.0
5	S	207	VAL	2.0
6	T	230	ASP	2.0
5	S	59	GLN	2.0
5	S	163	ARG	2.0
1	A	248	GLU	2.0
7	U	51	PRO	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](#)

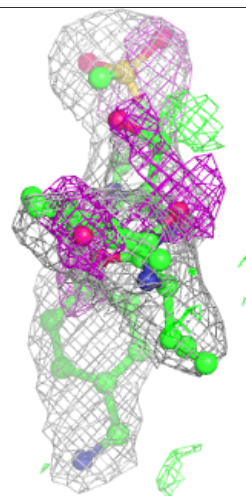
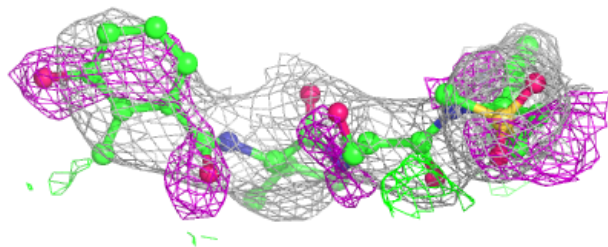
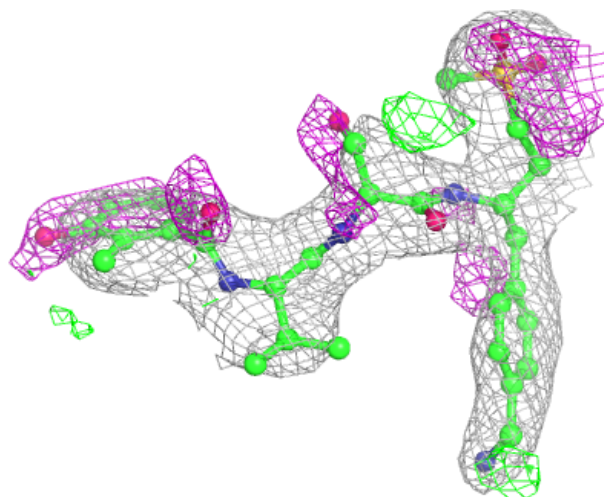
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
15	1G5	V	301	40/40	0.87	0.28	54,59,67,68	0
15	1G5	Y	301	40/40	0.88	0.25	48,50,53,53	0
15	1G5	H	301	40/40	0.89	0.26	57,61,66,66	0
15	1G5	K	301	40/40	0.89	0.25	47,48,52,53	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.

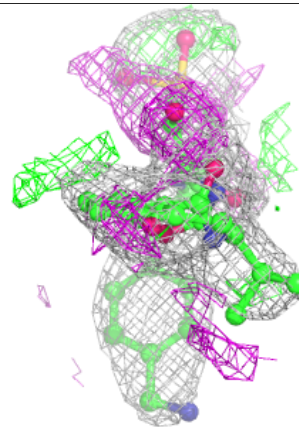
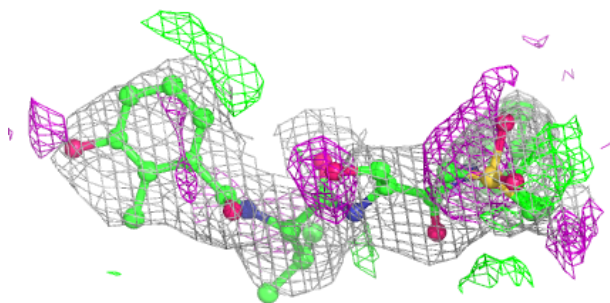
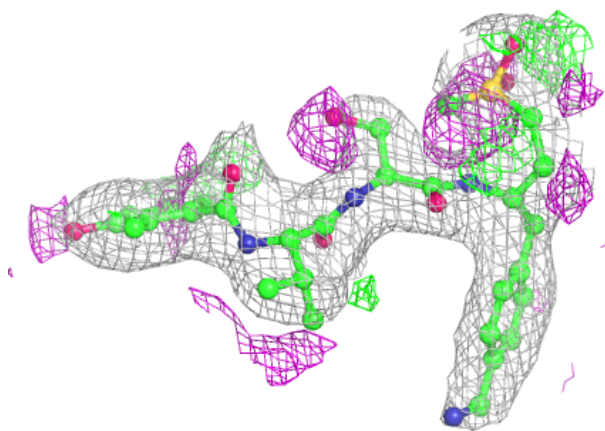
Electron density around 1G5 V 301:

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



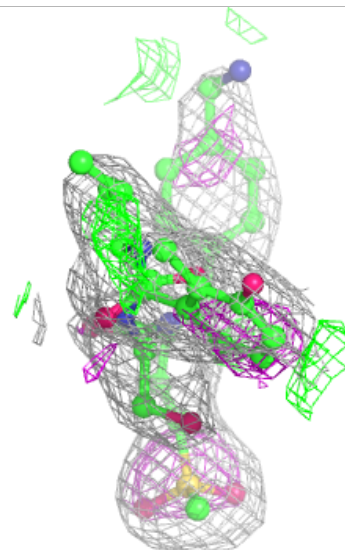
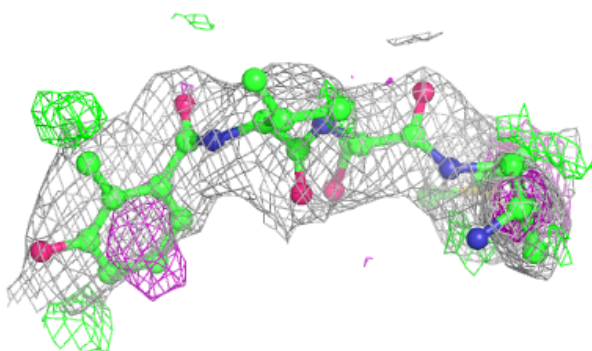
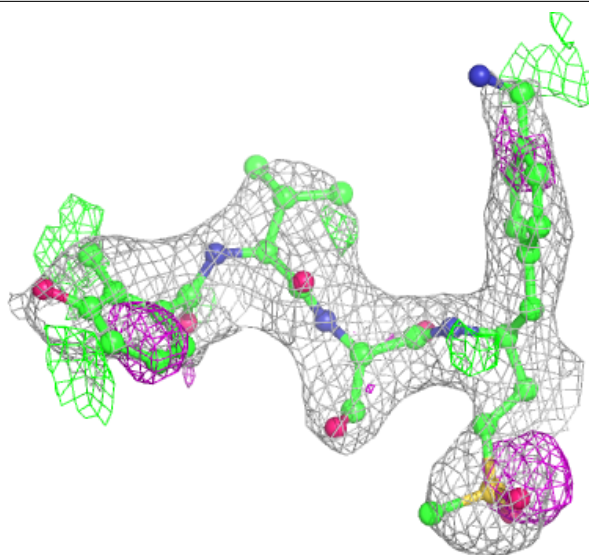
Electron density around 1G5 Y 301:

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



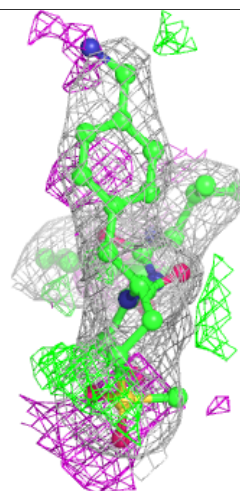
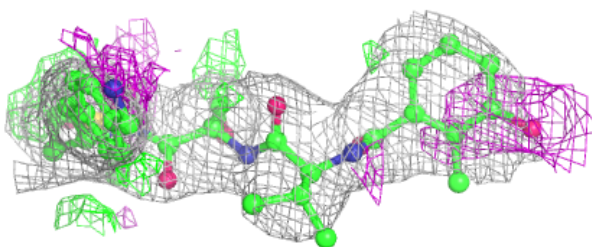
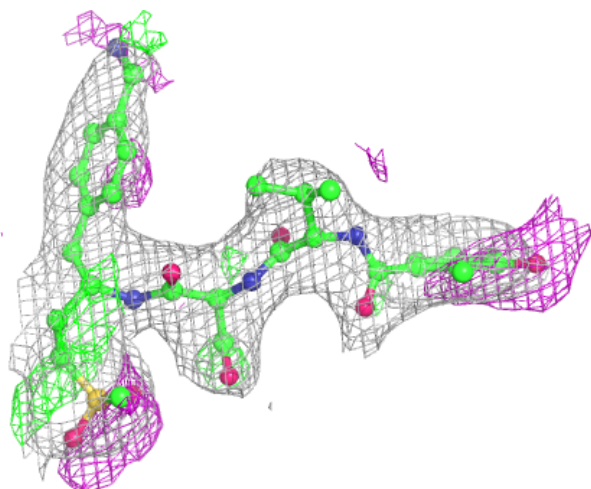
Electron density around 1G5 H 301:

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



Electron density around 1G5 K 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.