



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 6, 2023 – 07:59 am GMT

PDB ID : 4Y9Z  
Title : Yeast 20S proteasome beta2-H116E mutant in complex with Ac-LAE-ep  
Authors : Huber, E.M.; Groll, M.  
Deposited on : 2015-02-17  
Resolution : 2.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

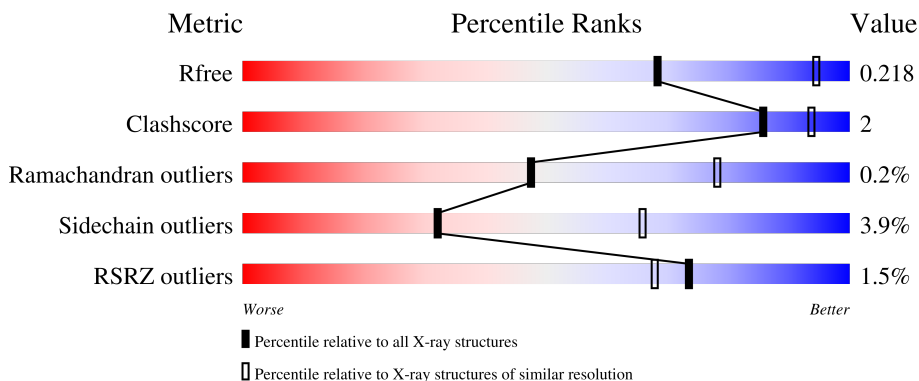
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	250	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 94%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 6%; height: 10px; background-color: yellow; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">2%      94%      6%</p>
1	O	250	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 94%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 6%; height: 10px; background-color: yellow; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">2%      94%      6%</p>
2	B	258	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 84%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 10%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">3%      84%      10%      5%</p>
2	P	258	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 86%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 9%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 5%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">3%      86%      9%      5%</p>
3	C	254	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 87%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 6%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 6%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">4%      87%      6% • 6%</p>



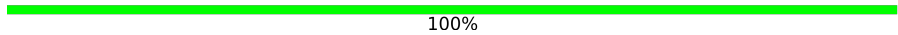
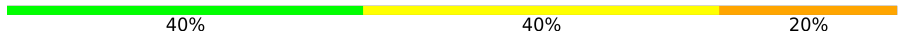
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Mol	Chain	Length	Quality of chain
3	Q	254	5% 87% 7% 6%
4	D	260	% 83% 7% 10%
4	R	260	% 82% 8% 10%
5	E	234	% 88% 9% ..
5	S	234	2% 87% 11% ..
6	F	288	% 80% 5% 16%
6	T	288	2% 79% 5% 16%
7	G	252	% 90% 6% .
7	U	252	% 88% 7% .
8	H	232	% 88% 7% .
8	V	232	% 88% 7% .
9	I	205	93% 6%
9	W	205	% 93% 6%
10	J	198	% 89% 8% ..
10	X	198	2% 89% 8% ..
11	K	212	90% 9%
11	Y	212	91% 9%
12	L	222	92% 7%
12	Z	222	91% 8% .
13	M	246	% 87% 7% 5%
13	a	246	91% . 5%
14	N	196	% 95% 5%
14	b	196	% 97% .
15	1	5	40% 40% 20%
15	2	5	40% 40% 20%

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Mol	Chain	Length	Quality of chain
15	3	5	 80% 20%
15	4	5	 60% 20% 20%
15	5	5	 100%
15	6	5	 40% 40% 20%

## 2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 49850 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Proteasome subunit alpha type-2.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	222	1683	1060	291	325	7	0	0	0
8	V	222	1683	1060	291	325	7	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	116	GLU	HIS	engineered mutation	UNP P25043
V	116	GLU	HIS	engineered mutation	UNP P25043

- 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	1581	1010	258	305	8	0	0	0
9	W	204	1581	1010	258	305	8	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	195	Total 1561	C 992	N 264	O 299	S 6	0	0	0
10	X	195	Total 1561	C 992	N 264	O 299	S 6	0	0	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	212	Total 1644	C 1045	N 280	O 312	S 7	0	0	0
11	Y	212	Total 1644	C 1045	N 280	O 312	S 7	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	222	Total 1757	C 1115	N 303	O 335	S 4	0	0	0
12	Z	222	Total 1764	C 1120	N 305	O 335	S 4	0	1	0

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

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

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

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

- Molecule 15 is a protein called Ac-LAE-ep.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
15	1	5	Total	C	N	O	0	0	0
			29	19	3	7			
15	2	5	Total	C	N	O	0	0	0
			29	19	3	7			
15	3	5	Total	C	N	O	0	0	0
			29	19	3	7			
15	4	5	Total	C	N	O	0	0	0
			29	19	3	7			
15	5	5	Total	C	N	O	0	0	0
			29	19	3	7			
15	6	5	Total	C	N	O	0	0	0
			29	19	3	7			

- Molecule 16 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
16	G	1	Total	Mg	0	0
			1	1		
16	H	1	Total	Mg	0	0
			1	1		
16	I	2	Total	Mg	0	0
			2	2		
16	K	1	Total	Mg	0	0
			1	1		
16	L	1	Total	Mg	0	0
			1	1		
16	N	1	Total	Mg	0	0
			1	1		

- Molecule 17 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	G	1	Total	Cl	0	0
			1	1		
17	U	1	Total	Cl	0	0
			1	1		

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





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

- Molecule 19 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
19	A	13	Total 13	O 13	0	0
19	B	12	Total 12	O 12	0	0
19	C	12	Total 12	O 12	0	0
19	D	10	Total 10	O 10	0	0
19	E	4	Total 4	O 4	0	0
19	F	12	Total 12	O 12	0	0
19	G	13	Total 13	O 13	0	0
19	H	19	Total 19	O 19	0	0

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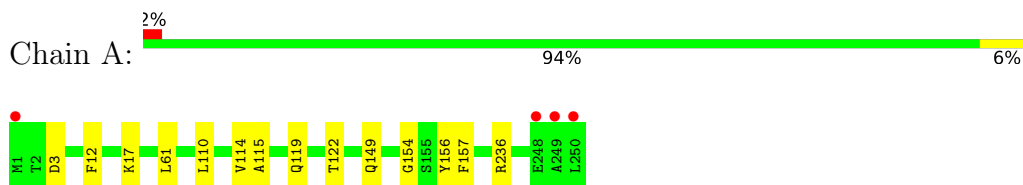
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	I	7	Total O 7 7	0	0
19	J	15	Total O 15 15	0	0
19	K	12	Total O 12 12	0	0
19	L	16	Total O 16 16	0	0
19	M	14	Total O 14 14	0	0
19	N	9	Total O 9 9	0	0
19	O	6	Total O 6 6	0	0
19	P	9	Total O 9 9	0	0
19	Q	7	Total O 7 7	0	0
19	R	4	Total O 4 4	0	0
19	S	5	Total O 5 5	0	0
19	T	8	Total O 8 8	0	0
19	U	16	Total O 16 16	0	0
19	V	12	Total O 12 12	0	0
19	W	5	Total O 5 5	0	0
19	X	18	Total O 18 18	0	0
19	Y	9	Total O 9 9	0	0
19	Z	15	Total O 15 15	0	0
19	a	21	Total O 21 21	0	0
19	b	14	Total O 14 14	0	0
19	2	1	Total O 1 1	0	0

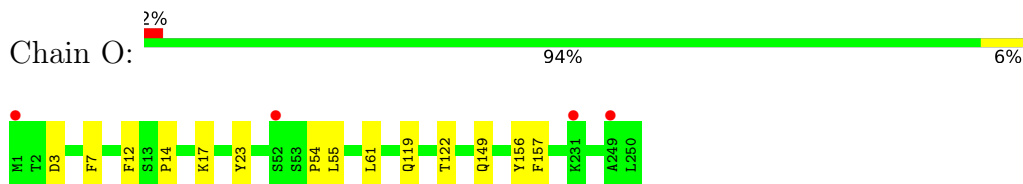
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

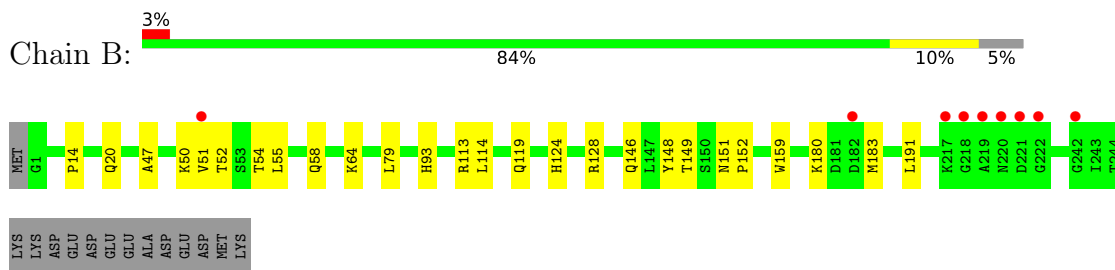
- Molecule 1: Proteasome subunit alpha type-2



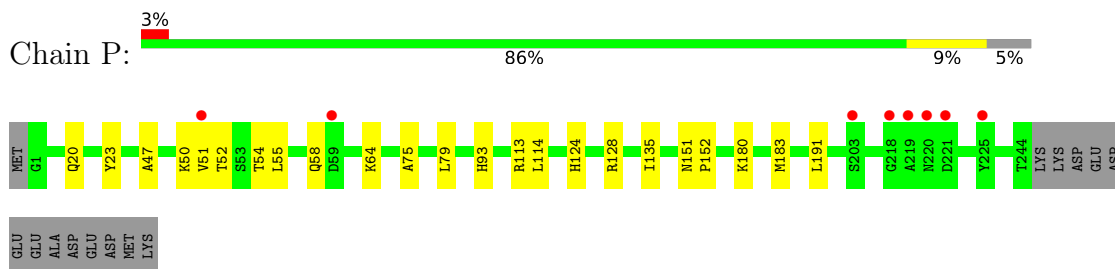
- Molecule 1: Proteasome subunit alpha type-2



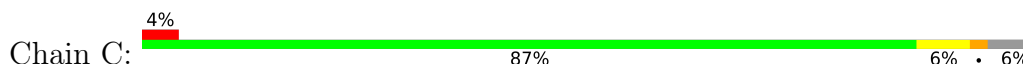
- Molecule 2: Proteasome subunit alpha type-3

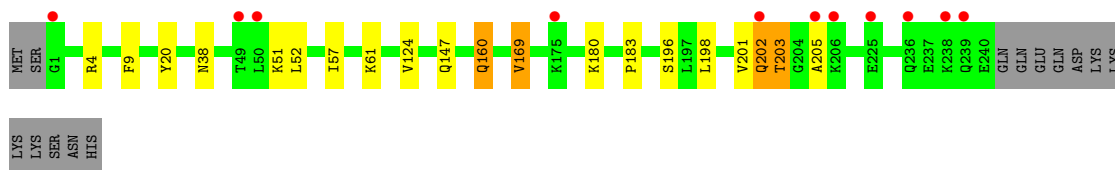


- Molecule 2: Proteasome subunit alpha type-3

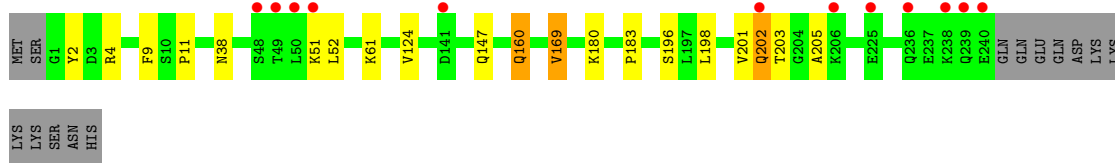
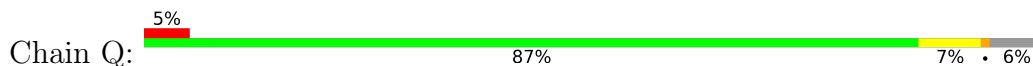


- Molecule 3: Proteasome subunit alpha type-4

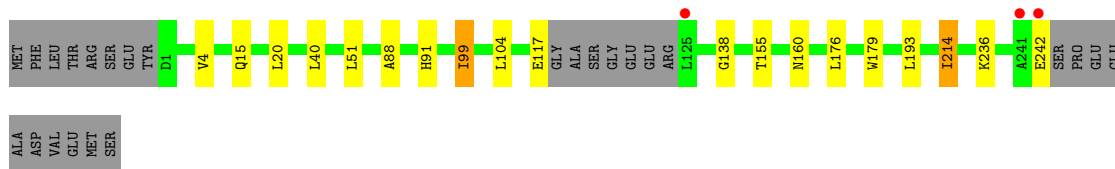
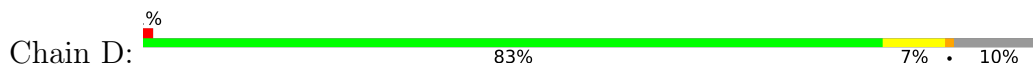




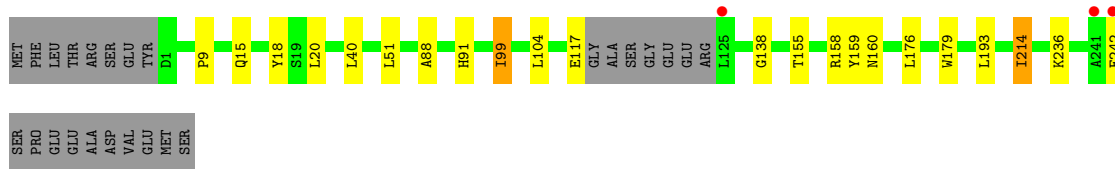
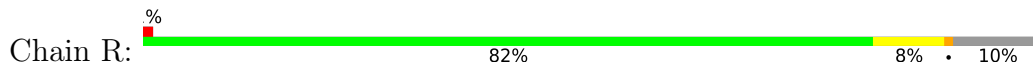
• Molecule 3: Proteasome subunit alpha type-4



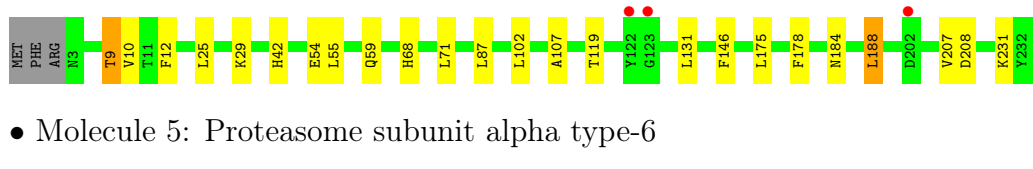
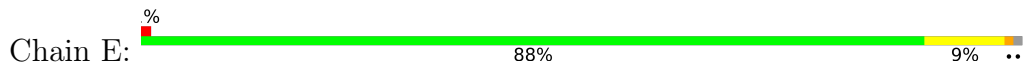
• Molecule 4: Proteasome subunit alpha type-5



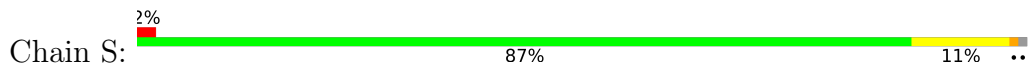
• Molecule 4: Proteasome subunit alpha type-5



• Molecule 5: Proteasome subunit alpha type-6



• Molecule 5: Proteasome subunit alpha type-6



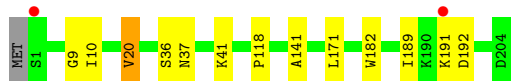




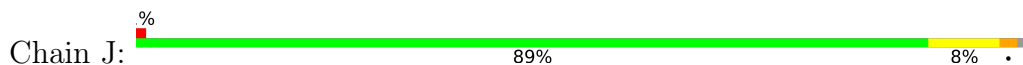
- Molecule 9: Proteasome subunit beta type-3



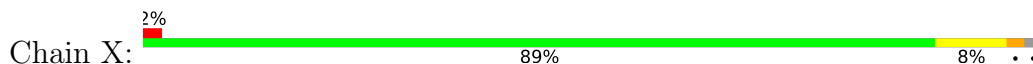
- Molecule 9: Proteasome subunit beta type-3



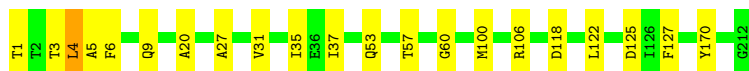
- Molecule 10: Proteasome subunit beta type-4



- Molecule 10: Proteasome subunit beta type-4



- Molecule 11: Proteasome subunit beta type-5



- Molecule 11: Proteasome subunit beta type-5




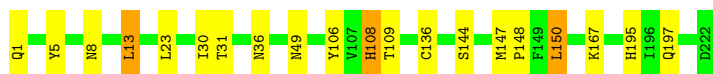
- Molecule 12: Proteasome subunit beta type-6

Chain L:  92% 7%




- Molecule 12: Proteasome subunit beta type-6

Chain Z:  91% 8%



- Molecule 13: Proteasome subunit beta type-7

Chain M:  87% 7% 5%



- Molecule 13: Proteasome subunit beta type-7

Chain a:  91% 5%



- Molecule 14: Proteasome subunit beta type-1

Chain N:  95% 5%



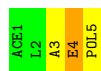
- Molecule 14: Proteasome subunit beta type-1

Chain b:  97%



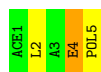
- Molecule 15: Ac-LAE-ep

Chain 1:  40% 40% 20%




- Molecule 15: Ac-LAE-ep

Chain 2:  40% 40% 20%



- Molecule 15: Ac-LAE-ep

Chain 3:  80% 20%



- Molecule 15: Ac-LAE-ep

Chain 4:  60% 20% 20%



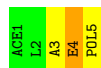
- Molecule 15: Ac-LAE-ep

Chain 5:  100%

There are no outlier residues recorded for this chain.

- Molecule 15: Ac-LAE-ep

Chain 6:  40% 40% 20%





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	135.35Å 299.22Å 145.14Å 90.00° 113.20° 90.00°	Depositor
Resolution (Å)	15.00 – 2.80 14.98 – 2.80	Depositor EDS
% Data completeness (in resolution range)	96.4 (15.00-2.80) 96.4 (14.98-2.80)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.60 (at 2.81Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, $R_{free}$	0.195 , 0.218 0.196 , 0.218	Depositor DCC
$R_{free}$ test set	12433 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	63.0	Xtrriage
Anisotropy	0.065	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 35.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	49850	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	70.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.28% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality i

### 5.1 Standard geometry i

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.27	0/1952	0.49	0/2642
1	O	0.27	0/1952	0.48	0/2642
2	B	0.27	0/1934	0.51	0/2618
2	P	0.26	0/1934	0.51	0/2618
3	C	0.27	0/1910	0.52	0/2586
3	Q	0.27	0/1910	0.51	0/2586
4	D	0.26	0/1837	0.49	0/2475
4	R	0.26	0/1837	0.49	0/2475
5	E	0.26	0/1800	0.49	0/2433
5	S	0.26	0/1800	0.49	0/2433
6	F	0.27	0/1932	0.47	0/2609
6	T	0.27	0/1932	0.47	0/2609
7	G	0.27	0/1945	0.49	0/2634
7	U	0.27	0/1945	0.49	0/2634
8	H	0.26	0/1713	0.50	0/2323
8	V	0.27	0/1713	0.50	0/2323
9	I	0.27	0/1611	0.50	0/2174
9	W	0.28	0/1611	0.50	0/2174
10	J	0.26	0/1589	0.49	0/2142
10	X	0.26	0/1589	0.49	0/2142
11	K	0.27	0/1681	0.51	1/2274 (0.0%)
11	Y	0.26	0/1681	0.51	1/2274 (0.0%)
12	L	0.27	0/1795	0.49	0/2420
12	Z	0.36	2/1806 (0.1%)	0.57	4/2435 (0.2%)
13	M	0.32	0/1855	0.52	0/2514
13	a	0.27	0/1855	0.52	0/2514
14	N	0.31	0/1541	0.49	0/2087
14	b	0.30	0/1541	0.49	0/2087
15	1	1.06	0/13	1.31	0/17
15	2	0.84	0/13	1.12	0/17
15	3	1.11	0/13	1.43	0/17
15	4	1.09	0/13	1.27	0/17

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
15	5	0.78	0/13	1.14	0/17
15	6	1.03	0/13	1.41	0/17
All	All	0.28	2/50279 (0.0%)	0.50	6/67979 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	Z	108[A]	HIS	CA-C	6.68	1.70	1.52
12	Z	108[B]	HIS	CA-C	6.68	1.70	1.52

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
12	Z	108[A]	HIS	CA-C-O	7.21	135.24	120.10
12	Z	108[B]	HIS	CA-C-O	7.21	135.24	120.10
12	Z	108[A]	HIS	CA-C-N	-5.10	105.97	117.20
12	Z	108[B]	HIS	CA-C-N	-5.10	105.97	117.20
11	K	4	LEU	CA-CB-CG	5.04	126.90	115.30
11	Y	4	LEU	CA-CB-CG	5.03	126.88	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	7	0
1	O	1915	0	1929	9	0
2	B	1904	0	1904	13	0
2	P	1904	0	1904	10	0
3	C	1881	0	1895	14	0
3	Q	1881	0	1895	11	0
4	D	1813	0	1797	8	0
4	R	1813	0	1797	11	0
5	E	1773	0	1775	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	S	1773	0	1775	11	0
6	F	1892	0	1883	3	0
6	T	1892	0	1883	3	0
7	G	1907	0	1901	5	0
7	U	1907	0	1901	8	0
8	H	1683	0	1684	7	0
8	V	1683	0	1684	6	0
9	I	1581	0	1574	6	0
9	W	1581	0	1574	5	0
10	J	1561	0	1569	11	0
10	X	1561	0	1569	11	0
11	K	1644	0	1593	12	0
11	Y	1644	0	1592	11	0
12	L	1757	0	1711	6	0
12	Z	1764	0	1718	10	0
13	M	1824	0	1832	5	0
13	a	1824	0	1832	0	0
14	N	1512	0	1478	5	0
14	b	1512	0	1478	0	0
15	1	29	0	30	3	0
15	2	29	0	30	3	0
15	3	29	0	30	6	0
15	4	29	0	30	2	0
15	5	29	0	30	0	0
15	6	29	0	30	2	0
16	G	1	0	0	0	0
16	H	1	0	0	0	0
16	I	2	0	0	0	0
16	K	1	0	0	0	0
16	L	1	0	0	0	0
16	N	1	0	0	0	0
17	G	1	0	0	0	0
17	U	1	0	0	0	0
18	H	12	0	13	0	0
18	K	12	0	13	0	0
18	V	12	0	13	1	0
18	Y	12	0	13	0	0
19	2	1	0	0	0	0
19	A	13	0	0	1	0
19	B	12	0	0	0	0
19	C	12	0	0	0	0
19	D	10	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	E	4	0	0	0	0
19	F	12	0	0	1	0
19	G	13	0	0	0	0
19	H	19	0	0	0	0
19	I	7	0	0	0	0
19	J	15	0	0	0	0
19	K	12	0	0	0	0
19	L	16	0	0	0	0
19	M	14	0	0	0	0
19	N	9	0	0	0	0
19	O	6	0	0	0	0
19	P	9	0	0	0	0
19	Q	7	0	0	0	0
19	R	4	0	0	0	0
19	S	5	0	0	0	0
19	T	8	0	0	0	0
19	U	16	0	0	0	0
19	V	12	0	0	0	0
19	W	5	0	0	0	0
19	X	18	0	0	0	0
19	Y	9	0	0	0	0
19	Z	15	0	0	0	0
19	a	21	0	0	0	0
19	b	14	0	0	0	0
All	All	49850	0	49288	192	0

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

All (192) 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)
15:4:4:GAU:N	15:4:5:POL:O	2.13	0.81
11:K:170:TYR:O	15:2:5:POL:H33	1.81	0.80
10:J:1:MET:O	10:J:2:ASP:HB2	1.83	0.78
10:X:1:MET:O	10:X:2:ASP:HB2	1.83	0.77
8:H:168:GLY:O	15:1:5:POL:H33	1.84	0.77
11:Y:100:MET:HE3	11:Y:127:PHE:HB2	1.68	0.75
4:D:99:ILE:HD11	4:D:104:LEU:HB2	1.69	0.74
4:R:99:ILE:HD11	4:R:104:LEU:HB2	1.69	0.73
12:Z:13:LEU:HD13	12:Z:150:LEU:HD21	1.71	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:13:LEU:HD13	12:L:150:LEU:HD21	1.70	0.72
8:V:168:GLY:O	15:4:5:POL:H33	1.91	0.71
11:K:100:MET:HE3	11:K:127:PHE:HB2	1.73	0.70
3:Q:51:LYS:O	3:Q:52:LEU:HB2	1.99	0.63
3:C:51:LYS:O	3:C:52:LEU:HB2	2.00	0.62
1:O:122:THR:HG22	2:P:128:ARG:HH21	1.65	0.62
15:6:4:GAU:O	15:6:5:POL:O	2.07	0.62
15:3:3:ALA:C	15:3:4:GAU:HG2	2.20	0.62
8:H:52:THR:O	8:H:56:THR:HB	2.01	0.60
15:3:4:GAU:O	15:3:5:POL:O	2.17	0.60
11:K:5:ALA:HB3	11:K:100:MET:HE2	1.84	0.60
14:N:22:THR:HG23	14:N:22:THR:O	2.01	0.59
8:V:52:THR:O	8:V:56:THR:HB	2.03	0.59
15:2:4:GAU:N	15:2:5:POL:O	2.36	0.59
11:K:100:MET:CE	11:K:127:PHE:HB2	2.33	0.58
11:Y:100:MET:CE	11:Y:127:PHE:HB2	2.32	0.58
14:N:168:SER:O	15:3:5:POL:H33	2.03	0.58
1:A:122:THR:HG22	2:B:128:ARG:HH21	1.68	0.57
9:W:36:SER:HB2	10:X:126:VAL:HG11	1.87	0.57
3:Q:160:GLN:HA	3:Q:160:GLN:HE21	1.70	0.57
7:G:23:PHE:O	7:G:26:THR:HB	2.04	0.57
14:N:152:VAL:HA	14:N:175:MET:HE1	1.87	0.57
7:U:23:PHE:O	7:U:26:THR:HB	2.05	0.57
3:C:160:GLN:HE21	3:C:160:GLN:HA	1.70	0.56
12:Z:108[B]:HIS:HD2	12:Z:109:THR:N	2.03	0.56
5:E:12:PHE:H	6:F:19:GLN:HE22	1.53	0.55
9:I:36:SER:HB2	10:J:126:VAL:HG11	1.88	0.55
10:J:174:MET:HA	10:X:174:MET:HA	1.88	0.55
10:J:16:ALA:HB2	10:J:161:LEU:HD21	1.89	0.55
5:S:12:PHE:H	6:T:19:GLN:HE22	1.54	0.55
10:X:16:ALA:HB2	10:X:161:LEU:HD21	1.90	0.54
11:Y:5:ALA:HB3	11:Y:100:MET:HE2	1.89	0.54
2:B:124:HIS:HB3	3:C:124:VAL:HG12	1.89	0.53
15:6:3:ALA:C	15:6:4:GAU:HG2	2.29	0.53
2:P:124:HIS:HB3	3:Q:124:VAL:HG12	1.90	0.52
9:W:9:GLY:HA3	9:W:41:LYS:HE2	1.92	0.52
9:W:20:VAL:HG13	9:W:118:PRO:HB3	1.91	0.52
8:H:104:ASP:HB2	8:H:105:PRO:HD2	1.92	0.52
9:I:20:VAL:HG13	9:I:118:PRO:HB3	1.92	0.52
4:R:159:TYR:CE2	5:S:56:SER:HB3	2.44	0.52
9:I:9:GLY:HA3	9:I:41:LYS:HE2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:10:ILE:HG21	9:I:141:ALA:HB3	1.92	0.51
1:O:23:TYR:CD1	7:U:12:PRO:HA	2.45	0.51
4:R:88:ALA:HA	4:R:99:ILE:HG21	1.92	0.51
8:V:104:ASP:HB2	8:V:105:PRO:HD2	1.92	0.51
2:P:93:HIS:HB3	2:P:113:ARG:HH21	1.75	0.51
8:V:47:GLY:HA2	18:V:301:MES:H81	1.93	0.51
4:D:88:ALA:HA	4:D:99:ILE:HG21	1.92	0.51
2:B:146:GLN:HG2	3:C:57:ILE:HG21	1.92	0.50
9:W:10:ILE:HG21	9:W:141:ALA:HB3	1.93	0.50
10:J:1:MET:O	10:J:2:ASP:CB	2.57	0.50
5:S:87:LEU:HD21	5:S:107:ALA:HB1	1.94	0.50
3:C:201:VAL:O	3:C:202:GLN:CB	2.60	0.50
2:B:93:HIS:HB3	2:B:113:ARG:HH21	1.75	0.50
5:E:9:THR:HG21	5:E:119:THR:HA	1.94	0.50
3:Q:9:PHE:H	4:R:15:GLN:HE22	1.60	0.50
3:Q:201:VAL:O	3:Q:202:GLN:CB	2.60	0.50
5:S:9:THR:HG21	5:S:119:THR:HA	1.94	0.50
3:C:201:VAL:HG13	3:C:202:GLN:N	2.27	0.49
11:Y:53:GLN:O	11:Y:57:THR:HG23	2.13	0.49
3:Q:201:VAL:HG13	3:Q:202:GLN:N	2.27	0.49
12:L:8:ASN:HA	12:L:30:ILE:O	2.13	0.49
3:Q:201:VAL:O	3:Q:202:GLN:HB2	2.13	0.49
12:Z:5:TYR:CE1	12:Z:106:TYR:CD1	3.00	0.49
5:E:87:LEU:HD21	5:E:107:ALA:HB1	1.94	0.48
11:Y:1:THR:CG2	11:Y:3:THR:HG23	2.43	0.48
13:M:127:LEU:HG	13:M:142:LEU:HD12	1.96	0.48
1:O:149:GLN:O	1:O:156:TYR:HA	2.14	0.48
3:C:201:VAL:O	3:C:202:GLN:HB2	2.13	0.48
6:T:228:LYS:HB2	6:T:228:LYS:HE3	1.72	0.48
11:K:53:GLN:O	11:K:57:THR:HG23	2.13	0.48
12:L:5:TYR:CE1	12:L:106:TYR:CD1	3.02	0.48
4:R:155:THR:HG23	5:S:59:GLN:HE22	1.79	0.48
12:Z:8:ASN:HA	12:Z:30:ILE:O	2.13	0.48
10:J:1:MET:HA	10:J:34:LYS:HE3	1.96	0.47
1:A:236:ARG:NH2	19:A:301:HOH:O	2.47	0.47
10:X:1:MET:O	10:X:2:ASP:CB	2.58	0.47
1:O:14:PRO:HA	2:P:23:TYR:CD1	2.50	0.47
3:Q:11:PRO:HA	4:R:18:TYR:CD1	2.50	0.47
10:J:119:ILE:HG12	10:J:125:LYS:HG3	1.96	0.47
2:P:151:ASN:HB2	2:P:152:PRO:HD2	1.97	0.47
10:X:1:MET:HA	10:X:34:LYS:HE3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:X:119:ILE:HG12	10:X:125:LYS:HG3	1.96	0.47
1:A:149:GLN:O	1:A:156:TYR:HA	2.14	0.46
7:U:26:THR:HG21	7:U:131:ILE:HD12	1.98	0.46
2:B:151:ASN:HB2	2:B:152:PRO:HD2	1.97	0.46
12:Z:147:MET:N	12:Z:148:PRO:HD2	2.31	0.46
12:L:31:THR:HG23	12:L:36:ASN:HD21	1.81	0.46
2:B:180:LYS:O	2:B:183:MET:HB2	2.16	0.46
7:G:187:GLU:HG2	7:G:192:LYS:HB2	1.97	0.45
7:G:26:THR:HG21	7:G:131:ILE:HD12	1.98	0.45
10:J:21:VAL:HG11	11:K:122:LEU:HD11	1.99	0.45
4:R:158:ARG:HB3	5:S:57:SER:HB3	1.97	0.45
11:Y:25:TRP:CH2	12:Z:144:SER:HA	2.50	0.45
2:P:180:LYS:O	2:P:183:MET:HB2	2.16	0.45
12:L:147:MET:N	12:L:148:PRO:HD2	2.31	0.45
3:C:198:LEU:HA	3:C:201:VAL:HG12	1.99	0.45
5:E:175:LEU:HA	5:E:178:PHE:CE2	2.52	0.45
3:Q:198:LEU:HA	3:Q:201:VAL:HG12	1.99	0.45
4:R:138:GLY:HA2	4:R:214:ILE:HG12	1.99	0.45
5:S:175:LEU:HA	5:S:178:PHE:CE2	2.52	0.45
1:A:119:GLN:O	1:A:122:THR:HB	2.17	0.44
7:U:187:GLU:HG2	7:U:192:LYS:HB2	1.97	0.44
11:Y:5:ALA:HB3	11:Y:100:MET:CE	2.47	0.44
1:O:55:LEU:HB3	7:U:159:ALA:O	2.18	0.44
5:S:68:HIS:HE1	5:S:102:LEU:O	2.00	0.44
5:E:68:HIS:HE1	5:E:102:LEU:O	1.99	0.44
8:H:84:LYS:HG3	8:H:85:GLN:N	2.32	0.44
10:J:67:TYR:CE1	10:J:75:LEU:HD13	2.53	0.44
3:C:169:VAL:HG23	3:C:196:SER:HB2	1.99	0.44
12:Z:31:THR:HG23	12:Z:36:ASN:HD21	1.81	0.44
3:C:9:PHE:H	4:D:15:GLN:HE22	1.64	0.44
11:K:37:ILE:HG23	11:K:60:GLY:HA2	1.99	0.44
2:P:151:ASN:HB2	2:P:152:PRO:CD	2.47	0.44
4:R:160:ASN:HB3	4:R:179:TRP:CE2	2.53	0.44
15:1:4:GAU:HA	15:1:5:POL:H32	1.81	0.44
2:B:151:ASN:HB2	2:B:152:PRO:CD	2.47	0.44
4:D:138:GLY:HA2	4:D:214:ILE:HG12	1.99	0.44
1:O:7:PHE:HB3	3:Q:2:TYR:CE1	2.53	0.44
9:W:20:VAL:HG23	9:W:189:ILE:HB	2.00	0.44
2:B:14:PRO:HA	3:C:20:TYR:CD1	2.53	0.44
9:I:20:VAL:HG23	9:I:189:ILE:HB	1.99	0.44
3:Q:169:VAL:HG23	3:Q:196:SER:HB2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:1:MET:HA	10:J:34:LYS:CE	2.48	0.44
11:K:5:ALA:HB3	11:K:100:MET:CE	2.47	0.44
4:R:9:PRO:HA	5:S:23:TYR:CD1	2.52	0.44
8:V:84:LYS:HG3	8:V:85:GLN:N	2.32	0.44
10:X:67:TYR:CE1	10:X:75:LEU:HD13	2.53	0.43
1:O:12:PHE:H	2:P:20:GLN:HE22	1.66	0.43
5:S:131:LEU:HB2	5:S:146:PHE:HB3	2.00	0.43
10:X:21:VAL:HG11	11:Y:122:LEU:HD11	2.00	0.43
8:V:112:SER:OG	8:V:120:ASP:OD1	2.29	0.43
10:X:19:LYS:HD3	10:X:180:ILE:HG13	2.00	0.43
11:Y:37:ILE:HG23	11:Y:60:GLY:HA2	1.99	0.43
4:D:160:ASN:HB3	4:D:179:TRP:CE2	2.53	0.43
1:O:119:GLN:O	1:O:122:THR:HB	2.18	0.43
2:B:149:THR:HG1	2:B:159:TRP:HE1	1.67	0.43
13:M:27:LEU:HD21	13:M:34:LEU:HD22	2.00	0.43
10:X:1:MET:HA	10:X:34:LYS:CE	2.48	0.43
12:Z:108[B]:HIS:CD2	12:Z:109:THR:N	2.84	0.43
4:D:91:HIS:HB3	4:D:99:ILE:CG2	2.49	0.43
5:E:131:LEU:HB2	5:E:146:PHE:HB3	1.99	0.43
13:M:96:LEU:O	13:M:100:MET:HG2	2.19	0.43
7:G:78:ILE:N	7:G:79:PRO:CD	2.82	0.42
8:H:112:SER:OG	8:H:120:ASP:OD1	2.28	0.42
11:K:1:THR:CG2	11:K:3:THR:HG23	2.50	0.42
14:N:22:THR:HB	15:3:2:LEU:HD23	2.01	0.42
5:E:42:HIS:HB2	5:E:188:LEU:HD12	2.02	0.42
12:L:195:HIS:HD2	12:L:197:GLN:H	1.67	0.42
4:R:91:HIS:HB3	4:R:99:ILE:CG2	2.49	0.42
7:U:78:ILE:N	7:U:79:PRO:CD	2.82	0.42
10:J:19:LYS:HD3	10:J:180:ILE:HG13	2.00	0.42
1:O:54:PRO:HG2	7:U:174:GLU:HG2	2.02	0.42
8:H:218:VAL:CG2	9:I:196:LYS:HB2	2.50	0.42
11:K:6:PHE:HA	11:K:125:ASP:O	2.20	0.42
14:N:168:SER:HB3	15:3:5:POL:H12	2.01	0.42
5:S:42:HIS:HB2	5:S:188:LEU:HD12	2.01	0.42
7:G:195:GLU:HG3	7:G:235:ARG:HG3	2.01	0.42
7:U:195:GLU:HG3	7:U:235:ARG:HG3	2.01	0.42
12:Z:195:HIS:HD2	12:Z:197:GLN:H	1.67	0.41
1:A:12:PHE:H	2:B:20:GLN:HE22	1.67	0.41
6:F:228:LYS:HB2	6:F:228:LYS:HE3	1.72	0.41
11:K:27:ALA:CB	15:2:2:LEU:HD22	2.51	0.41
2:B:47:ALA:HB1	2:B:64:LYS:HD2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:155:THR:HG23	5:E:59:GLN:HE22	1.85	0.41
2:P:47:ALA:HB1	2:P:64:LYS:HD2	2.02	0.41
11:Y:20:ALA:HB2	11:Y:31:VAL:HG21	2.02	0.41
1:A:115:ALA:HB1	1:A:154:GLY:O	2.21	0.41
6:F:65:VAL:HG12	19:F:306:HOH:O	2.20	0.41
8:H:114:HIS:NE2	15:3:1:ACE:H2	2.36	0.41
11:K:20:ALA:HB2	11:K:31:VAL:HG21	2.02	0.41
15:1:3:ALA:O	15:1:4:GAU:HG2	2.20	0.41
11:Y:6:PHE:HA	11:Y:125:ASP:O	2.21	0.40
13:M:165:ILE:HB	13:M:166:PRO:HD3	2.03	0.40
1:A:110:LEU:O	1:A:114:VAL:HG23	2.21	0.40
2:B:14:PRO:HA	3:C:20:TYR:CE1	2.55	0.40
3:C:202:GLN:HG3	3:C:203:THR:N	2.37	0.40
13:M:226:LYS:HD3	13:M:232:LYS:O	2.21	0.40
2:P:75:ALA:HB3	2:P:135:ILE:HB	2.03	0.40
2:B:148:TYR:OH	3:C:57:ILE:HB	2.21	0.40
6:T:175:LEU:HD21	6:T:191:GLN:NE2	2.36	0.40
4:D:4:VAL:HG13	4:D:15:GLN:HG3	2.03	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%)	242 (98%)	5 (2%)	1 (0%)	34 66
1	O	248/250 (99%)	242 (98%)	5 (2%)	1 (0%)	34 66
2	B	242/258 (94%)	234 (97%)	7 (3%)	1 (0%)	34 66
2	P	242/258 (94%)	234 (97%)	7 (3%)	1 (0%)	34 66
3	C	238/254 (94%)	228 (96%)	7 (3%)	3 (1%)	12 36
3	Q	238/254 (94%)	228 (96%)	7 (3%)	3 (1%)	12 36

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	D	231/260 (89%)	226 (98%)	5 (2%)	0	100	100
4	R	231/260 (89%)	226 (98%)	5 (2%)	0	100	100
5	E	229/234 (98%)	224 (98%)	5 (2%)	0	100	100
5	S	229/234 (98%)	224 (98%)	5 (2%)	0	100	100
6	F	241/288 (84%)	233 (97%)	8 (3%)	0	100	100
6	T	241/288 (84%)	234 (97%)	7 (3%)	0	100	100
7	G	239/252 (95%)	235 (98%)	4 (2%)	0	100	100
7	U	239/252 (95%)	235 (98%)	4 (2%)	0	100	100
8	H	220/232 (95%)	213 (97%)	7 (3%)	0	100	100
8	V	220/232 (95%)	214 (97%)	6 (3%)	0	100	100
9	I	202/205 (98%)	195 (96%)	7 (4%)	0	100	100
9	W	202/205 (98%)	195 (96%)	7 (4%)	0	100	100
10	J	193/198 (98%)	189 (98%)	3 (2%)	1 (0%)	29	61
10	X	193/198 (98%)	189 (98%)	3 (2%)	1 (0%)	29	61
11	K	210/212 (99%)	206 (98%)	4 (2%)	0	100	100
11	Y	210/212 (99%)	207 (99%)	3 (1%)	0	100	100
12	L	220/222 (99%)	216 (98%)	4 (2%)	0	100	100
12	Z	221/222 (100%)	217 (98%)	4 (2%)	0	100	100
13	M	231/246 (94%)	224 (97%)	7 (3%)	0	100	100
13	a	231/246 (94%)	224 (97%)	7 (3%)	0	100	100
14	N	194/196 (99%)	187 (96%)	7 (4%)	0	100	100
14	b	194/196 (99%)	188 (97%)	6 (3%)	0	100	100
15	1	2/5 (40%)	2 (100%)	0	0	100	100
15	2	2/5 (40%)	2 (100%)	0	0	100	100
15	3	2/5 (40%)	2 (100%)	0	0	100	100
15	4	2/5 (40%)	2 (100%)	0	0	100	100
15	5	2/5 (40%)	2 (100%)	0	0	100	100
15	6	2/5 (40%)	2 (100%)	0	0	100	100
All	All	6289/6644 (95%)	6121 (97%)	156 (2%)	12 (0%)	47	78

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	51	VAL
3	C	202	GLN
10	J	2	ASP
2	P	51	VAL
3	Q	202	GLN
10	X	2	ASP
3	C	205	ALA
3	Q	205	ALA
1	A	3	ASP
1	O	3	ASP
3	C	183	PRO
3	Q	183	PRO

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	209/209 (100%)	206 (99%)	3 (1%)	67	90
1	O	209/209 (100%)	206 (99%)	3 (1%)	67	90
2	B	203/216 (94%)	194 (96%)	9 (4%)	28	61
2	P	203/216 (94%)	195 (96%)	8 (4%)	32	66
3	C	212/226 (94%)	204 (96%)	8 (4%)	33	67
3	Q	212/226 (94%)	204 (96%)	8 (4%)	33	67
4	D	194/215 (90%)	184 (95%)	10 (5%)	23	55
4	R	194/215 (90%)	184 (95%)	10 (5%)	23	55
5	E	190/193 (98%)	178 (94%)	12 (6%)	18	46
5	S	190/193 (98%)	178 (94%)	12 (6%)	18	46
6	F	201/239 (84%)	189 (94%)	12 (6%)	19	48
6	T	201/239 (84%)	189 (94%)	12 (6%)	19	48
7	G	206/210 (98%)	199 (97%)	7 (3%)	37	71
7	U	206/210 (98%)	199 (97%)	7 (3%)	37	71
8	H	181/190 (95%)	173 (96%)	8 (4%)	28	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	V	181/190 (95%)	173 (96%)	8 (4%)	28	61
9	I	172/173 (99%)	166 (96%)	6 (4%)	36	70
9	W	172/173 (99%)	166 (96%)	6 (4%)	36	70
10	J	173/175 (99%)	167 (96%)	6 (4%)	36	70
10	X	173/175 (99%)	167 (96%)	6 (4%)	36	70
11	K	169/169 (100%)	164 (97%)	5 (3%)	41	75
11	Y	169/169 (100%)	164 (97%)	5 (3%)	41	75
12	L	185/185 (100%)	179 (97%)	6 (3%)	39	73
12	Z	186/185 (100%)	179 (96%)	7 (4%)	33	67
13	M	199/208 (96%)	191 (96%)	8 (4%)	31	65
13	a	199/208 (96%)	191 (96%)	8 (4%)	31	65
14	N	162/162 (100%)	157 (97%)	5 (3%)	40	74
14	b	162/162 (100%)	157 (97%)	5 (3%)	40	74
15	1	1/1 (100%)	1 (100%)	0	100	100
15	2	1/1 (100%)	1 (100%)	0	100	100
15	3	1/1 (100%)	1 (100%)	0	100	100
15	4	1/1 (100%)	1 (100%)	0	100	100
15	5	1/1 (100%)	1 (100%)	0	100	100
15	6	1/1 (100%)	1 (100%)	0	100	100
All	All	5319/5546 (96%)	5109 (96%)	210 (4%)	32	66

All (210) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	LYS
1	A	61	LEU
1	A	157	PHE
2	B	50	LYS
2	B	52	THR
2	B	54	THR
2	B	55	LEU
2	B	58	GLN
2	B	79	LEU
2	B	114	LEU
2	B	119	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	191	LEU
3	C	4	ARG
3	C	38	ASN
3	C	61	LYS
3	C	147	GLN
3	C	160	GLN
3	C	169	VAL
3	C	180	LYS
3	C	203	THR
4	D	20	LEU
4	D	40	LEU
4	D	51	LEU
4	D	99	ILE
4	D	117	GLU
4	D	176	LEU
4	D	193	LEU
4	D	214	ILE
4	D	236	LYS
4	D	242	GLU
5	E	9	THR
5	E	10	VAL
5	E	25	LEU
5	E	29	LYS
5	E	54	GLU
5	E	55	LEU
5	E	71	LEU
5	E	184	ASN
5	E	188	LEU
5	E	207	VAL
5	E	208	ASP
5	E	231	LYS
6	F	14	ASP
6	F	59	LYS
6	F	117	GLN
6	F	123	ASN
6	F	139	LYS
6	F	172	LEU
6	F	181	GLU
6	F	203	ASN
6	F	206	LYS
6	F	214	TRP
6	F	221	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
6	F	228	LYS
7	G	83	ASN
7	G	115	LEU
7	G	125	MET
7	G	166	GLN
7	G	181	LYS
7	G	235	ARG
7	G	236	LEU
8	H	30	ASN
8	H	34	LEU
8	H	43	CYS
8	H	56	THR
8	H	68	LEU
8	H	118	SER
8	H	127	LEU
8	H	196	ARG
9	I	20	VAL
9	I	37	ASN
9	I	171	LEU
9	I	182	TRP
9	I	191	LYS
9	I	192	ASP
10	J	23	ARG
10	J	35	THR
10	J	75	LEU
10	J	78	GLN
10	J	144	LEU
10	J	174	MET
11	K	4	LEU
11	K	9	GLN
11	K	35	ILE
11	K	106	ARG
11	K	118	ASP
12	L	1	GLN
12	L	23	LEU
12	L	49	ASN
12	L	136	CYS
12	L	150	LEU
12	L	167	LYS
13	M	43	ILE
13	M	48	ASN
13	M	70	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
13	M	104	ARG
13	M	161	ARG
13	M	187	ARG
13	M	212	LEU
13	M	223	LYS
14	N	9	LYS
14	N	21	THR
14	N	104	ASP
14	N	105	LYS
14	N	119	VAL
1	O	17	LYS
1	O	61	LEU
1	O	157	PHE
2	P	50	LYS
2	P	52	THR
2	P	54	THR
2	P	55	LEU
2	P	58	GLN
2	P	79	LEU
2	P	114	LEU
2	P	191	LEU
3	Q	4	ARG
3	Q	38	ASN
3	Q	61	LYS
3	Q	147	GLN
3	Q	160	GLN
3	Q	169	VAL
3	Q	180	LYS
3	Q	203	THR
4	R	20	LEU
4	R	40	LEU
4	R	51	LEU
4	R	99	ILE
4	R	117	GLU
4	R	176	LEU
4	R	193	LEU
4	R	214	ILE
4	R	236	LYS
4	R	242	GLU
5	S	9	THR
5	S	10	VAL
5	S	25	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	S	29	LYS
5	S	54	GLU
5	S	55	LEU
5	S	71	LEU
5	S	184	ASN
5	S	188	LEU
5	S	207	VAL
5	S	208	ASP
5	S	231	LYS
6	T	14	ASP
6	T	59	LYS
6	T	117	GLN
6	T	123	ASN
6	T	139	LYS
6	T	172	LEU
6	T	181	GLU
6	T	203	ASN
6	T	206	LYS
6	T	214	TRP
6	T	221	ASN
6	T	228	LYS
7	U	83	ASN
7	U	115	LEU
7	U	125	MET
7	U	166	GLN
7	U	181	LYS
7	U	235	ARG
7	U	236	LEU
8	V	30	ASN
8	V	34	LEU
8	V	43	CYS
8	V	56	THR
8	V	68	LEU
8	V	118	SER
8	V	127	LEU
8	V	196	ARG
9	W	20	VAL
9	W	37	ASN
9	W	171	LEU
9	W	182	TRP
9	W	191	LYS
9	W	192	ASP

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Mol	Chain	Res	Type
10	X	23	ARG
10	X	35	THR
10	X	75	LEU
10	X	78	GLN
10	X	144	LEU
10	X	174	MET
11	Y	4	LEU
11	Y	9	GLN
11	Y	35	ILE
11	Y	106	ARG
11	Y	118	ASP
12	Z	1	GLN
12	Z	13	LEU
12	Z	23	LEU
12	Z	49	ASN
12	Z	136	CYS
12	Z	150	LEU
12	Z	167	LYS
13	a	43	ILE
13	a	48	ASN
13	a	70	LEU
13	a	104	ARG
13	a	161	ARG
13	a	187	ARG
13	a	212	LEU
13	a	223	LYS
14	b	9	LYS
14	b	21	THR
14	b	104	ASP
14	b	105	LYS
14	b	119	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (112) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	94	HIS
2	B	20	GLN
2	B	95	GLN
2	B	119	GLN
2	B	123	GLN
2	B	155	ASN
2	B	176	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	C	38	ASN
3	C	77	ASN
3	C	147	GLN
3	C	160	GLN
4	D	15	GLN
4	D	146	GLN
4	D	225	ASN
5	E	59	GLN
5	E	68	HIS
5	E	92	ASN
5	E	99	ASN
5	E	116	GLN
5	E	120	GLN
5	E	147	GLN
5	E	184	ASN
6	F	19	GLN
6	F	86	ASN
6	F	117	GLN
6	F	191	GLN
6	F	240	GLN
7	G	6	HIS
7	G	30	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
8	H	57	GLN
8	H	66	HIS
8	H	165	ASN
10	J	55	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	158	ASN
12	L	165	ASN
13	M	18	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
13	M	48	ASN
13	M	102	GLN
13	M	179	ASN
13	M	194	ASN
13	M	213	GLN
14	N	161	GLN
1	O	94	HIS
2	P	20	GLN
2	P	95	GLN
2	P	119	GLN
2	P	123	GLN
2	P	176	GLN
3	Q	38	ASN
3	Q	77	ASN
3	Q	116	GLN
3	Q	120	GLN
3	Q	147	GLN
3	Q	160	GLN
4	R	15	GLN
4	R	146	GLN
4	R	198	GLN
4	R	225	ASN
5	S	59	GLN
5	S	68	HIS
5	S	99	ASN
5	S	116	GLN
5	S	118	ASN
5	S	120	GLN
5	S	184	ASN
6	T	19	GLN
6	T	86	ASN
6	T	117	GLN
6	T	191	GLN
6	T	240	GLN
7	U	6	HIS
7	U	30	ASN
7	U	83	ASN
7	U	114	ASN
7	U	117	GLN
7	U	121	GLN
7	U	167	GLN
7	U	175	ASN

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Mol	Chain	Res	Type
8	V	57	GLN
8	V	66	HIS
8	V	165	ASN
10	X	55	GLN
10	X	86	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	158	ASN
12	Z	165	ASN
13	a	18	ASN
13	a	48	ASN
13	a	102	GLN
13	a	179	ASN
13	a	194	ASN
13	a	213	GLN
14	b	161	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

6 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	$\# Z  > 2$
15	GAU	3	4	15,14	8,8,8	1.22	1 (12%)	8,9,9	1.81	3 (37%)
15	GAU	5	4	15,11	8,8,8	1.21	0	8,9,9	1.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
15	GAU	4	4	8,15	8,8,8	1.00	0	8,9,9	1.55	2 (25%)
15	GAU	6	4	15,14	8,8,8	1.29	1 (12%)	8,9,9	1.54	1 (12%)
15	GAU	1	4	8,15	8,8,8	0.95	0	8,9,9	1.38	1 (12%)
15	GAU	2	4	15,11	8,8,8	1.19	1 (12%)	8,9,9	1.40	1 (12%)

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	GAU	3	4	15,14	-	4/7/7/7	-
15	GAU	5	4	15,11	-	0/7/7/7	-
15	GAU	4	4	8,15	-	0/7/7/7	-
15	GAU	6	4	15,14	-	0/7/7/7	-
15	GAU	1	4	8,15	-	0/7/7/7	-
15	GAU	2	4	15,11	-	1/7/7/7	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	6	4	GAU	OE2-CD	-2.56	1.22	1.30
15	3	4	GAU	OE2-CD	-2.38	1.22	1.30
15	2	4	GAU	OE2-CD	-2.17	1.23	1.30

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	3	4	GAU	CG-CB-CA	-3.23	105.95	112.74
15	3	4	GAU	CB-CA-N	-2.97	100.41	109.03
15	6	4	GAU	CG-CB-CA	-2.43	107.62	112.74
15	4	4	GAU	CB-CA-N	-2.35	102.20	109.03
15	1	4	GAU	CB-CA-N	-2.29	102.39	109.03
15	2	4	GAU	CB-CA-N	-2.12	102.89	109.03
15	3	4	GAU	OE1-CD-CG	-2.07	116.42	123.08
15	4	4	GAU	O-C-CA	-2.02	103.54	111.52

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
15	2	4	GAU	O-C-CA-N
15	3	4	GAU	O-C-CA-N
15	3	4	GAU	O-C-CA-CB
15	3	4	GAU	OE2-CD-CG-CB
15	3	4	GAU	OE1-CD-CG-CB

There are no ring outliers.

5 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
15	3	4	GAU	2	0
15	4	4	GAU	1	0
15	6	4	GAU	2	0
15	1	4	GAU	2	0
15	2	4	GAU	1	0

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 13 ligands modelled in this entry, 9 are monoatomic - leaving 4 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	MES	Y	301	-	12,12,12	2.23	1 (8%)	14,16,16	1.28	2 (14%)
18	MES	H	302	-	12,12,12	2.13	1 (8%)	14,16,16	1.56	2 (14%)
18	MES	K	302	-	12,12,12	2.18	1 (8%)	14,16,16	1.39	3 (21%)
18	MES	V	301	-	12,12,12	2.28	1 (8%)	14,16,16	1.21	3 (21%)

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	MES	Y	301	-	-	0/6/14/14	0/1/1/1
18	MES	H	302	-	-	4/6/14/14	0/1/1/1
18	MES	K	302	-	-	0/6/14/14	0/1/1/1
18	MES	V	301	-	-	3/6/14/14	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	V	301	MES	C8-S	-7.60	1.66	1.77
18	Y	301	MES	C8-S	-7.42	1.67	1.77
18	K	302	MES	C8-S	-7.25	1.67	1.77
18	H	302	MES	C8-S	-7.05	1.67	1.77

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
18	H	302	MES	O2S-S-C8	4.25	112.03	106.92
18	K	302	MES	O3S-S-C8	2.85	110.38	105.77
18	Y	301	MES	O3S-S-C8	2.82	110.33	105.77
18	Y	301	MES	O2S-S-C8	2.48	109.90	106.92
18	V	301	MES	O1S-S-C8	2.30	109.69	106.92
18	V	301	MES	O2S-S-C8	2.19	109.55	106.92
18	H	302	MES	O3S-S-C8	2.17	109.28	105.77
18	K	302	MES	O2S-S-C8	2.16	109.52	106.92
18	V	301	MES	O3S-S-C8	2.16	109.26	105.77
18	K	302	MES	O1S-S-C8	2.02	109.35	106.92

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
18	H	302	MES	N4-C7-C8-S
18	V	301	MES	C7-C8-S-O1S
18	V	301	MES	C7-C8-S-O2S
18	H	302	MES	C7-C8-S-O3S
18	V	301	MES	C7-C8-S-O3S
18	H	302	MES	C7-C8-S-O1S
18	H	302	MES	C7-C8-S-O2S



There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	V	301	MES	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

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

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	250/250 (100%)	-0.41	4 (1%) 72 66	46, 59, 95, 134	0
1	O	250/250 (100%)	-0.34	4 (1%) 72 66	50, 67, 109, 139	0
2	B	244/258 (94%)	-0.28	9 (3%) 41 31	48, 66, 113, 169	0
2	P	244/258 (94%)	-0.25	8 (3%) 46 36	53, 70, 117, 172	0
3	C	240/254 (94%)	-0.22	11 (4%) 32 22	47, 68, 132, 170	0
3	Q	240/254 (94%)	0.00	12 (5%) 28 19	57, 84, 159, 206	0
4	D	235/260 (90%)	-0.41	3 (1%) 77 72	52, 72, 104, 146	0
4	R	235/260 (90%)	-0.31	3 (1%) 77 72	57, 75, 111, 156	0
5	E	231/234 (98%)	-0.29	3 (1%) 77 72	54, 75, 108, 152	0
5	S	231/234 (98%)	-0.22	4 (1%) 70 63	55, 81, 118, 156	0
6	F	243/288 (84%)	-0.35	4 (1%) 72 66	52, 70, 119, 152	0
6	T	243/288 (84%)	-0.28	5 (2%) 63 54	52, 75, 127, 161	0
7	G	241/252 (95%)	-0.46	3 (1%) 79 73	45, 61, 102, 153	0
7	U	241/252 (95%)	-0.45	3 (1%) 79 73	49, 63, 94, 140	0
8	H	222/232 (95%)	-0.49	2 (0%) 84 80	45, 57, 86, 126	1 (0%)
8	V	222/232 (95%)	-0.45	2 (0%) 84 80	47, 60, 88, 133	1 (0%)
9	I	204/205 (99%)	-0.65	1 (0%) 91 88	44, 58, 86, 109	0
9	W	204/205 (99%)	-0.62	2 (0%) 82 77	45, 59, 87, 114	0
10	J	195/198 (98%)	-0.50	2 (1%) 82 77	46, 60, 84, 134	0
10	X	195/198 (98%)	-0.54	3 (1%) 73 68	48, 61, 87, 138	0
11	K	212/212 (100%)	-0.53	0 100 100	47, 62, 90, 104	0
11	Y	212/212 (100%)	-0.44	1 (0%) 91 88	50, 65, 97, 124	0
12	L	222/222 (100%)	-0.56	0 100 100	46, 60, 88, 115	0
12	Z	222/222 (100%)	-0.50	0 100 100	47, 61, 92, 121	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
13	M	233/246 (94%)	-0.58	2 (0%) 84 80	43, 59, 81, 93	0
13	a	233/246 (94%)	-0.62	1 (0%) 92 91	44, 57, 76, 87	0
14	N	196/196 (100%)	-0.61	1 (0%) 91 88	43, 54, 80, 108	0
14	b	196/196 (100%)	-0.61	1 (0%) 91 88	44, 54, 82, 105	0
15	1	2/5 (40%)	-1.20	0 100 100	61, 61, 61, 65	0
15	2	2/5 (40%)	-1.00	0 100 100	77, 77, 77, 82	0
15	3	2/5 (40%)	-0.75	0 100 100	58, 58, 58, 66	0
15	4	2/5 (40%)	-0.68	0 100 100	63, 63, 63, 70	0
15	5	2/5 (40%)	-0.60	0 100 100	83, 83, 83, 92	0
15	6	2/5 (40%)	-0.80	0 100 100	61, 61, 61, 70	0
All	All	6348/6644 (95%)	-0.42	94 (1%) 73 68	43, 64, 108, 206	2 (0%)

All (94) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1	MET	7.1
3	Q	49	THR	6.1
3	C	206	LYS	6.0
2	P	219	ALA	5.8
3	Q	206	LYS	5.1
1	O	1	MET	5.0
2	B	220	ASN	5.0
3	C	49	THR	4.9
2	P	220	ASN	4.8
3	Q	50	LEU	4.8
5	E	202	ASP	4.6
8	V	222	ASP	4.5
8	H	221	CYS	4.5
3	Q	48	SER	4.5
10	J	1	MET	4.3
2	P	221	ASP	4.3
2	B	218	GLY	4.2
2	P	51	VAL	4.0
3	C	202	GLN	3.9
3	C	239	GLN	3.8
10	X	1	MET	3.8
2	P	218	GLY	3.8
10	J	194	ASP	3.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	O	249	ALA	3.7
8	V	221	CYS	3.7
3	Q	236	GLN	3.7
3	C	238	LYS	3.6
4	R	241	ALA	3.5
5	S	202	ASP	3.4
3	Q	239	GLN	3.4
9	W	1	SER	3.4
3	C	236	GLN	3.3
7	U	2	GLY	3.2
13	M	47	ASP	3.2
3	Q	240	GLU	3.2
9	I	1	SER	3.1
4	R	125	LEU	3.1
6	T	244	ASN	3.1
2	B	242	GLY	3.0
3	C	225	GLU	2.9
3	C	205	ALA	2.9
1	O	231	LYS	2.9
13	a	1	THR	2.9
2	B	51	VAL	2.8
10	X	194	ASP	2.7
4	D	242	GLU	2.7
4	D	241	ALA	2.7
6	F	244	ASN	2.7
2	B	221	ASP	2.7
3	C	175	LYS	2.7
1	O	52	SER	2.6
3	Q	141	ASP	2.6
3	Q	202	GLN	2.6
8	H	222	ASP	2.6
5	S	180	LYS	2.6
3	Q	238	LYS	2.6
2	B	217	LYS	2.5
2	P	59	ASP	2.5
13	M	1	THR	2.5
6	T	178	HIS	2.5
3	C	50	LEU	2.5
4	D	125	LEU	2.4
6	T	181	GLU	2.4
7	G	2	GLY	2.4
7	G	179	LYS	2.4

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Mol	Chain	Res	Type	RSRZ
2	B	182	ASP	2.4
6	F	202	ASP	2.4
1	A	250	LEU	2.4
5	E	123	GLY	2.3
7	G	3	TYR	2.3
6	T	215	CYS	2.3
10	X	193	ASP	2.3
6	T	243	ILE	2.3
7	U	241	GLU	2.3
2	P	203	SER	2.3
6	F	178	HIS	2.2
1	A	249	ALA	2.2
3	Q	225	GLU	2.2
14	N	105	LYS	2.2
3	Q	51	LYS	2.2
6	F	241	LYS	2.2
3	C	1	GLY	2.1
7	U	222	ASP	2.1
14	b	195	GLN	2.1
4	R	242	GLU	2.1
5	S	227	GLU	2.1
5	S	3	ASN	2.1
5	E	122	TYR	2.1
9	W	191	LYS	2.1
11	Y	212	GLY	2.1
2	B	222	GLY	2.1
2	B	219	ALA	2.0
1	A	248	GLU	2.0
2	P	225	TYR	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, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
15	GAU	1	4	9/9	0.94	0.13	66,70,78,82	0
15	GAU	5	4	9/9	0.94	0.14	77,88,93,95	0
15	GAU	4	4	9/9	0.95	0.13	68,70,79,80	0
15	GAU	2	4	9/9	0.96	0.15	63,74,83,83	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
15	GAU	6	4	9/9	0.96	0.12	59,67,69,71	0
15	GAU	3	4	9/9	0.98	0.12	59,63,69,69	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, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
16	MG	H	301	1/1	0.81	0.16	64,64,64,64	0
18	MES	V	301	12/12	0.81	0.43	81,123,146,146	0
18	MES	H	302	12/12	0.89	0.30	77,110,126,129	0
18	MES	K	302	12/12	0.90	0.34	88,97,101,103	0
18	MES	Y	301	12/12	0.90	0.34	89,96,98,98	0
16	MG	N	201	1/1	0.92	0.12	56,56,56,56	0
16	MG	K	301	1/1	0.95	0.09	77,77,77,77	0
16	MG	G	301	1/1	0.97	0.07	64,64,64,64	0
17	CL	G	302	1/1	0.97	0.33	30,30,30,30	0
16	MG	I	301	1/1	0.98	0.32	70,70,70,70	0
17	CL	U	301	1/1	0.98	0.25	30,30,30,30	0
16	MG	I	302	1/1	0.98	0.13	63,63,63,63	0
16	MG	L	301	1/1	0.99	0.06	64,64,64,64	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.