



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 5, 2023 – 11:30 pm GMT

PDB ID : 4Y74  
Title : Yeast 20S proteasome in complex with Ac-LAL-ep  
Authors : Groll, M.; Huber, E.M.  
Deposited on : 2015-02-13  
Resolution : 2.70 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

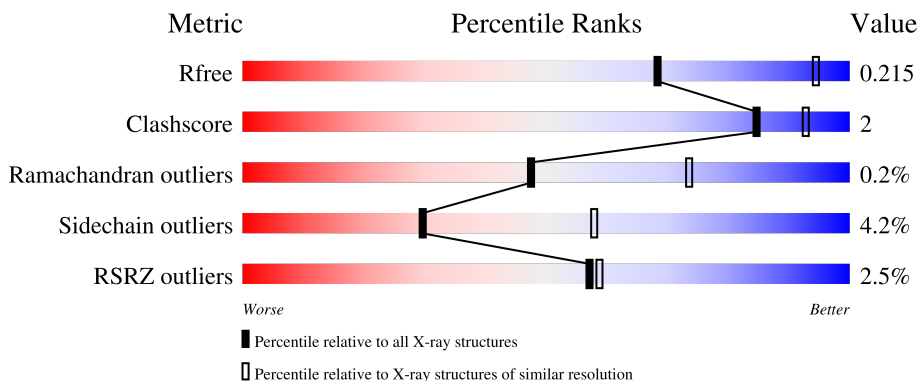
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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

Mol	Chain	Length	Quality of chain
1	A	250	
1	O	250	
2	B	258	
2	P	258	
3	C	254	





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Mol	Chain	Length	Quality of chain
3	Q	254	8% 85% 8% • 6%
4	D	260	% 81% 9% • 10%
4	R	260	2% 80% 10% • 10%
5	E	234	4% 87% 11% ..
5	S	234	5% 85% 13% ..
6	F	288	2% 80% • 16%
6	T	288	4% 79% 5% 16%
7	G	252	4% 89% 6% •
7	U	252	2% 87% 8% •
8	H	232	% 89% 6% •
8	V	232	% 88% 7% •
9	I	205	% 91% 8%
9	W	205	% 92% 7% •
10	J	198	2% 89% 8% ..
10	X	198	2% 89% 8% ..
11	K	212	92% 7%
11	Y	212	93% 6%
12	L	222	93% 6% •
12	Z	222	92% 7% •
13	M	246	2% 87% 7% 5%
13	a	246	91% • 5%
14	N	196	% 96% •
14	b	196	% 97% •
15	c	5	80% 20%
15	d	5	80% 20%

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Mol	Chain	Length	Quality of chain
15	e	5	 80% 20%
15	f	5	 80% 20%
15	g	5	 80% 20%
15	h	5	 80% 20%

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
18	MES	V	301	-	-	-	X

## 2 Entry composition

There are 19 unique types of molecules in this entry. The entry contains 50026 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	1915	1219	315	377	4	0	0	0
1	O	250	1915	1219	315	377	4	0	0	0

- 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	1904	1201	321	379	3	0	0	0
2	P	244	1904	1201	321	379	3	0	0	0

- 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	1881	1176	329	372	4	0	0	0
3	Q	240	1881	1176	329	372	4	0	0	0

- 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	1813	1136	304	366	7	0	0	0
4	R	235	1813	1136	304	366	7	0	0	0

- 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	Total 1773	C 1114	N 307	O 348	S 4	0	0	0
5	S	231	Total 1773	C 1114	N 307	O 348	S 4	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	243	Total 1892	C 1203	N 329	O 356	S 4	0	0	0
6	T	243	Total 1892	C 1203	N 329	O 356	S 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	Total 1907	C 1214	N 320	O 365	S 8	0	0	0
7	U	241	Total 1907	C 1214	N 320	O 365	S 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	Total 1684	C 1061	N 293	O 323	S 7	0	0	0
8	V	222	Total 1691	C 1066	N 295	O 323	S 7	0	1	0

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

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

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

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
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 subunit beta type-6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
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 subunit beta type-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
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 subunit beta type-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
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 a protein called Ac-LAL-ep.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
15	c	5	Total	C	N	O	0	0	0
			28	20	3	5			
15	d	5	Total	C	N	O	0	0	0
			28	20	3	5			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
15	e	5	Total	C	N	O	0	0	0
			28	20	3	5			
15	f	5	Total	C	N	O	0	0	0
			28	20	3	5			
15	g	5	Total	C	N	O	0	0	0
			28	20	3	5			
15	h	5	Total	C	N	O	0	0	0
			28	20	3	5			

- 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	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		
16	Z	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	N	1	Total	Cl	0	0
			1	1		
17	U	1	Total	Cl	0	0
			1	1		
17	b	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	12	6	1	4	1	0	0
18	K	1	12	6	1	4	1	0	0
18	V	1	12	6	1	4	1	0	0
18	Y	1	12	6	1	4	1	0	0

- Molecule 19 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
19	A	19	Total	O	0	0
			19	19		
19	B	16	Total	O	0	0
			16	16		
19	C	14	Total	O	0	0
			14	14		
19	D	10	Total	O	0	0
			10	10		
19	E	3	Total	O	0	0
			3	3		
19	F	18	Total	O	0	0
			18	18		
19	G	14	Total	O	0	0
			14	14		
19	H	25	Total	O	0	0
			25	25		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	I	24	Total O 24 24	0	0
19	J	25	Total O 25 25	0	0
19	K	21	Total O 21 21	0	0
19	L	19	Total O 19 19	0	0
19	M	31	Total O 31 31	0	0
19	N	18	Total O 18 18	0	0
19	O	9	Total O 9 9	0	0
19	P	11	Total O 11 11	0	0
19	Q	10	Total O 10 10	0	0
19	R	13	Total O 13 13	0	0
19	S	4	Total O 4 4	0	0
19	T	12	Total O 12 12	0	0
19	U	14	Total O 14 14	0	0
19	V	22	Total O 22 22	0	0
19	W	23	Total O 23 23	0	0
19	X	27	Total O 27 27	0	0
19	Y	20	Total O 20 20	0	0
19	Z	22	Total O 22 22	0	0
19	a	28	Total O 28 28	0	0
19	b	20	Total O 20 20	0	0
19	e	1	Total O 1 1	0	0

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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
19	g	1	Total O 1 1	0	0
19	h	2	Total O 2 2	0	0

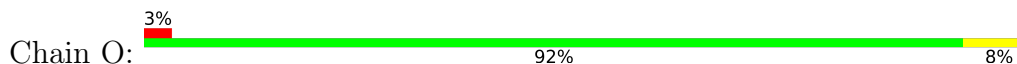
### 3 Residue-property plots [i](#)

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

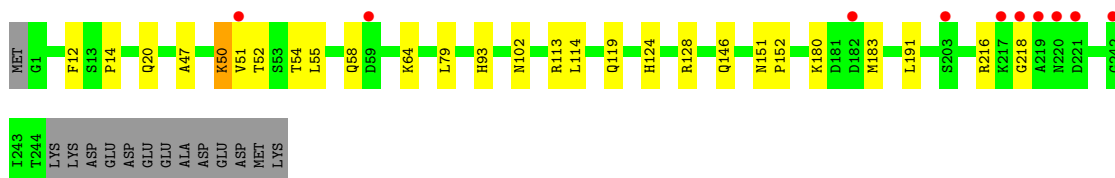
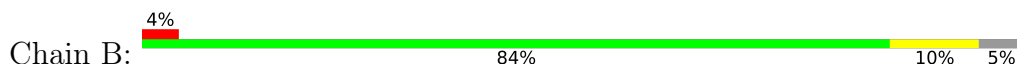
- Molecule 1: Proteasome subunit alpha type-2



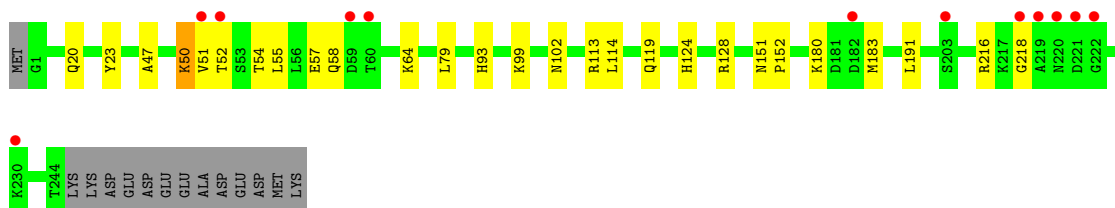
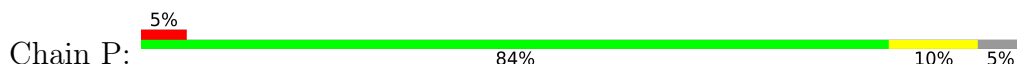
- Molecule 1: Proteasome subunit alpha type-2



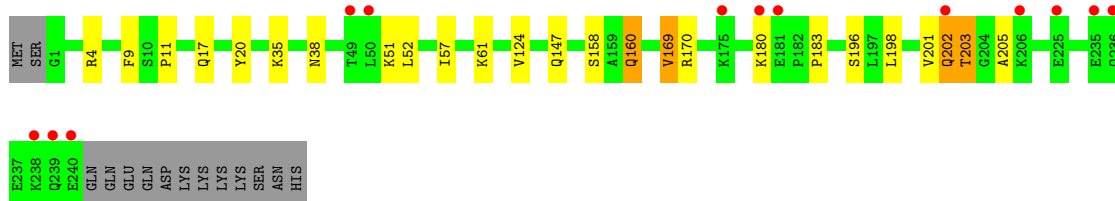
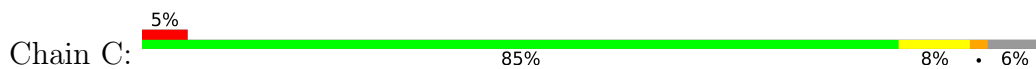
- Molecule 2: Proteasome subunit alpha type-3



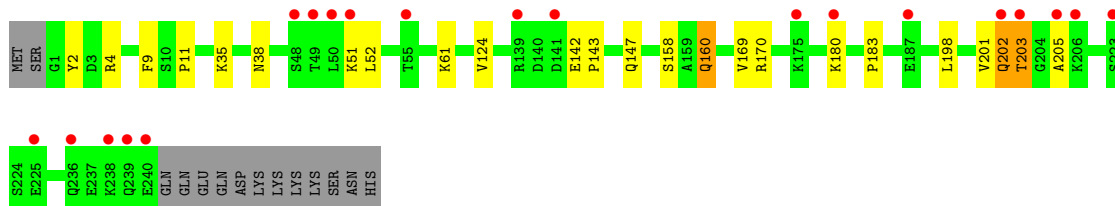
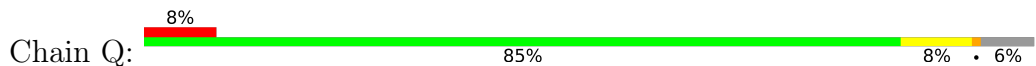
- Molecule 2: Proteasome subunit alpha type-3



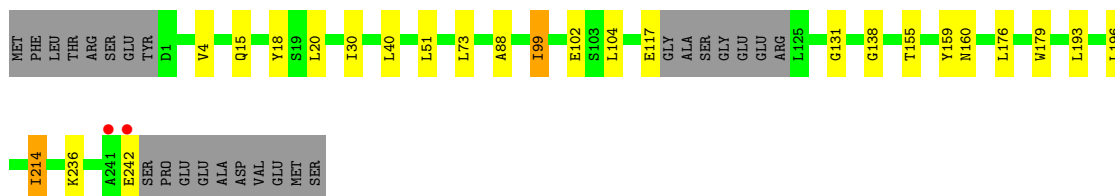
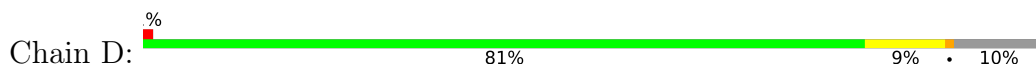
- Molecule 3: Proteasome subunit alpha type-4



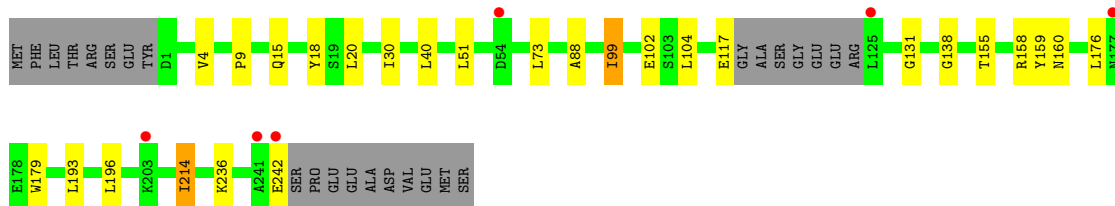
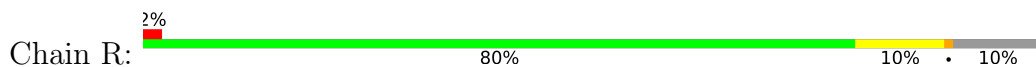
- Molecule 3: Proteasome subunit alpha type-4



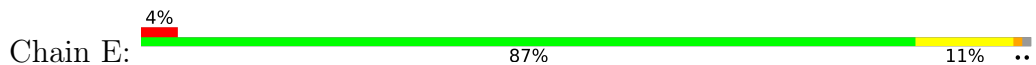
- Molecule 4: Proteasome subunit alpha type-5

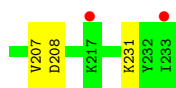


- Molecule 4: Proteasome subunit alpha type-5

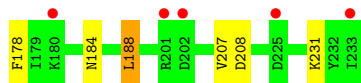
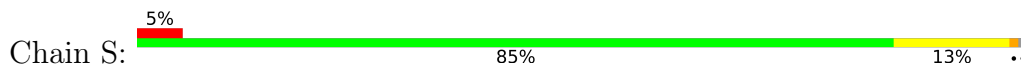


- Molecule 5: Proteasome subunit alpha type-6

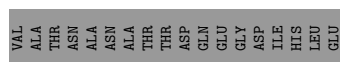
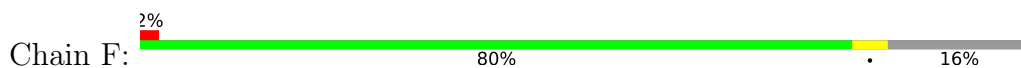




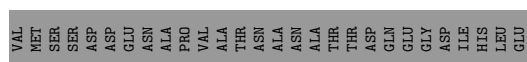
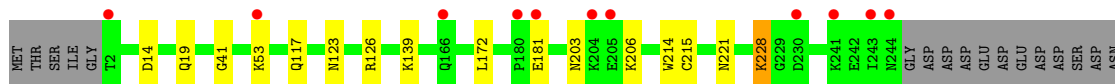
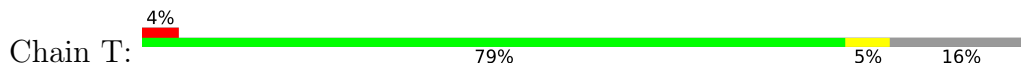
- Molecule 5: Proteasome subunit alpha type-6



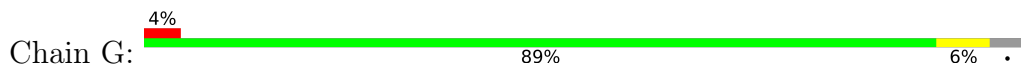
- Molecule 6: Probable proteasome subunit alpha type-7



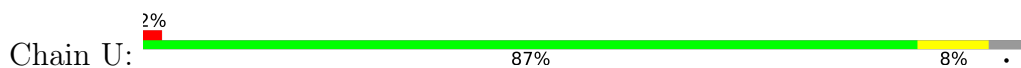
- Molecule 6: Probable proteasome subunit alpha type-7



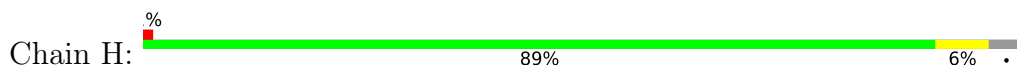
- Molecule 7: Proteasome subunit alpha type-1



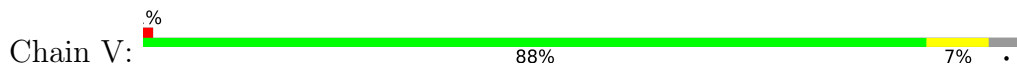
- Molecule 7: Proteasome subunit alpha type-1



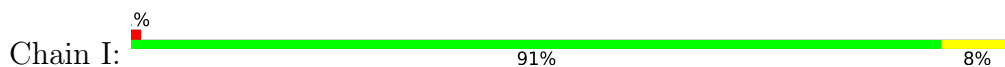
- Molecule 8: Proteasome subunit beta type-2



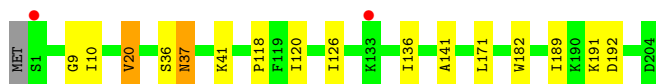
- Molecule 8: Proteasome subunit beta type-2



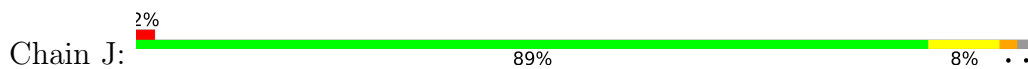
- Molecule 9: Proteasome subunit beta type-3



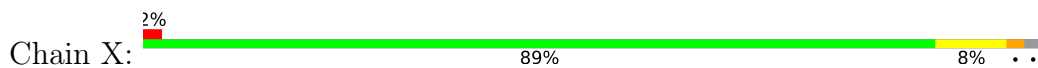
- Molecule 9: Proteasome subunit beta type-3



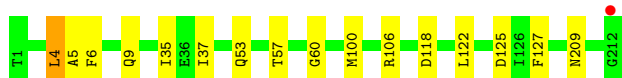
- Molecule 10: Proteasome subunit beta type-4



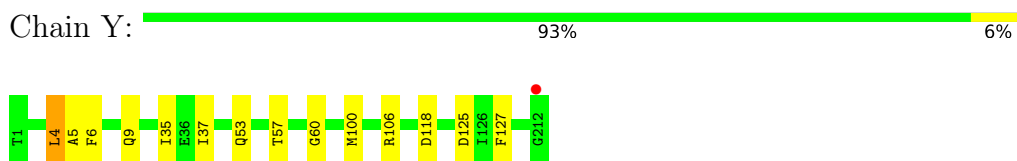
- Molecule 10: Proteasome subunit beta type-4



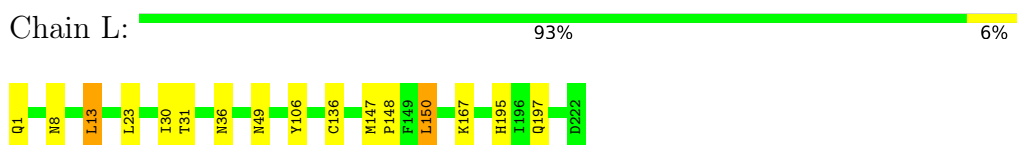
- Molecule 11: Proteasome subunit beta type-5



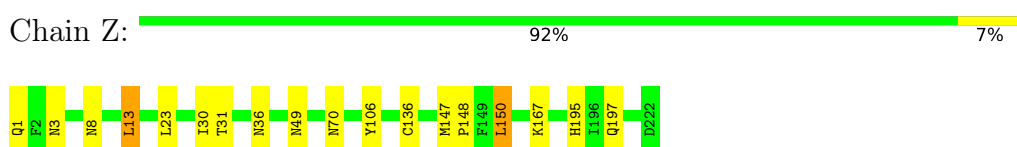
- Molecule 11: Proteasome subunit beta type-5



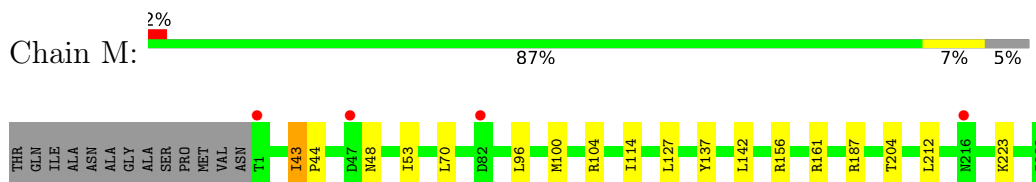
- Molecule 12: Proteasome subunit beta type-6



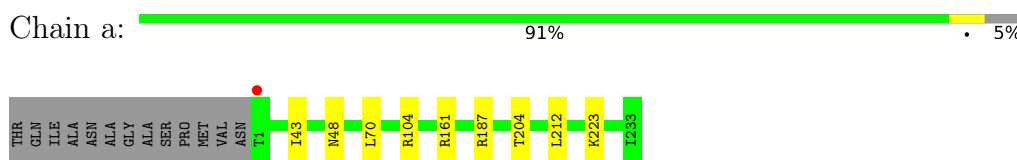
- Molecule 12: Proteasome subunit beta type-6



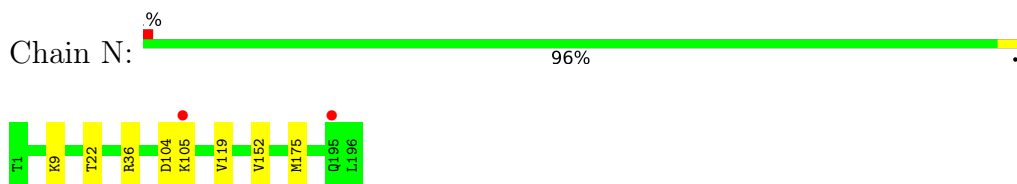
- Molecule 13: Proteasome subunit beta type-7



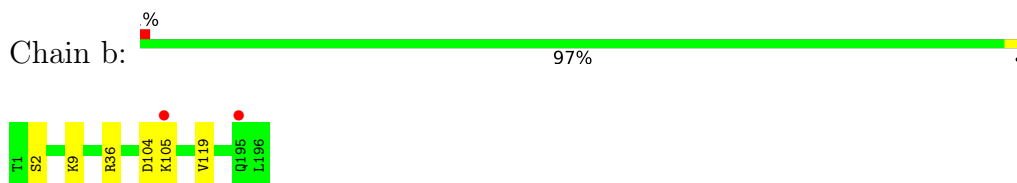
- Molecule 13: Proteasome subunit beta type-7



- Molecule 14: Proteasome subunit beta type-1




- Molecule 14: Proteasome subunit beta type-1







## ● Molecule 15: Ac-LAL-ep

Chain c:  80% 20%


## ● Molecule 15: Ac-LAL-ep

Chain d:  80% 20%


## ● Molecule 15: Ac-LAL-ep

Chain e:  80% 20%


## ● Molecule 15: Ac-LAL-ep

Chain f:  80% 20%

## ● Molecule 15: Ac-LAL-ep

Chain g:  80% 20%

## ● Molecule 15: Ac-LAL-ep

Chain h:  80% 20%

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	135.62Å 300.45Å 145.56Å 90.00° 112.88° 90.00°	Depositor
Resolution (Å)	15.00 – 2.70 15.00 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.5 (15.00-2.70) 98.5 (15.00-2.70)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.55 (at 2.69Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, $R_{free}$	0.199 , 0.214 0.201 , 0.215	Depositor DCC
$R_{free}$ test set	14333 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	55.5	Xtrriage
Anisotropy	0.044	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 39.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	50026	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	60.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.44% 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, MES, MG, DCL, ACE

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	0.29	0/1952	0.49	0/2642
1	O	0.29	0/1952	0.49	0/2642
2	B	0.29	0/1934	0.52	0/2618
2	P	0.29	0/1934	0.52	0/2618
3	C	0.30	0/1910	0.52	0/2586
3	Q	0.30	0/1910	0.52	0/2586
4	D	0.29	0/1837	0.50	0/2475
4	R	0.29	0/1837	0.50	0/2475
5	E	0.29	0/1800	0.50	0/2433
5	S	0.29	0/1800	0.49	0/2433
6	F	0.29	0/1932	0.48	0/2609
6	T	0.30	0/1932	0.48	0/2609
7	G	0.29	0/1945	0.49	0/2634
7	U	0.29	0/1945	0.49	0/2634
8	H	0.31	0/1715	0.51	0/2326
8	V	0.31	0/1726	0.51	0/2341
9	I	0.29	0/1611	0.49	0/2174
9	W	0.30	0/1611	0.51	0/2174
10	J	0.28	0/1589	0.50	0/2142
10	X	0.28	0/1589	0.50	0/2142
11	K	0.31	0/1681	0.51	1/2274 (0.0%)
11	Y	0.30	0/1681	0.52	1/2274 (0.0%)
12	L	0.36	0/1795	0.49	0/2420
12	Z	0.33	0/1795	0.50	0/2420
13	M	0.31	0/1855	0.53	0/2514
13	a	0.31	0/1855	0.53	0/2514
14	N	0.33	0/1541	0.51	0/2087
14	b	0.44	0/1541	0.53	0/2087
15	c	1.14	0/13	1.29	0/17
15	d	1.22	0/13	1.35	0/17
15	e	1.02	0/13	1.14	0/17
15	f	0.86	0/13	1.10	0/17

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
15	g	1.09	0/13	1.22	0/17
15	h	0.93	0/13	1.15	0/17
All	All	0.31	0/50283	0.51	2/67985 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
11	K	4	LEU	CA-CB-CG	5.30	127.49	115.30
11	Y	4	LEU	CA-CB-CG	5.29	127.46	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	8	0
1	O	1915	0	1929	13	0
2	B	1904	0	1904	13	0
2	P	1904	0	1904	13	0
3	C	1881	0	1895	17	0
3	Q	1881	0	1895	15	0
4	D	1813	0	1797	11	0
4	R	1813	0	1797	13	0
5	E	1773	0	1775	9	0
5	S	1773	0	1775	16	0
6	F	1892	0	1883	2	0
6	T	1892	0	1883	5	0
7	G	1907	0	1901	6	0
7	U	1907	0	1901	10	0
8	H	1684	0	1685	5	0
8	V	1691	0	1692	7	0
9	I	1581	0	1574	8	0
9	W	1581	0	1574	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	J	1561	0	1569	11	0
10	X	1561	0	1569	11	0
11	K	1644	0	1592	9	0
11	Y	1644	0	1592	7	0
12	L	1757	0	1711	6	0
12	Z	1757	0	1711	9	0
13	M	1824	0	1832	6	0
13	a	1824	0	1832	0	0
14	N	1512	0	1479	1	0
14	b	1512	0	1479	0	0
15	c	28	0	35	0	0
15	d	28	0	35	0	0
15	e	28	0	35	0	0
15	f	28	0	35	0	0
15	g	28	0	35	0	0
15	h	28	0	35	0	0
16	G	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
16	Z	1	0	0	0	0
17	G	1	0	0	0	0
17	N	1	0	0	0	0
17	U	1	0	0	0	0
17	b	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	A	19	0	0	0	0
19	B	16	0	0	0	0
19	C	14	0	0	0	0
19	D	10	0	0	0	0
19	E	3	0	0	0	0
19	F	18	0	0	0	0
19	G	14	0	0	0	0
19	H	25	0	0	0	0
19	I	24	0	0	0	0
19	J	25	0	0	0	0
19	K	21	0	0	0	0
19	L	19	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	M	31	0	0	0	0
19	N	18	0	0	0	0
19	O	9	0	0	0	0
19	P	11	0	0	0	0
19	Q	10	0	0	0	0
19	R	13	0	0	0	0
19	S	4	0	0	0	0
19	T	12	0	0	0	0
19	U	14	0	0	0	0
19	V	22	0	0	0	0
19	W	23	0	0	0	0
19	X	27	0	0	0	0
19	Y	20	0	0	0	0
19	Z	22	0	0	0	0
19	a	28	0	0	0	0
19	b	20	0	0	0	0
19	e	1	0	0	0	0
19	g	1	0	0	0	0
19	h	2	0	0	0	0
All	All	50026	0	49321	198	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 (198) 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)
11:Y:100:MET:HE3	11:Y:127:PHE:HB2	1.59	0.82
4:R:99:ILE:HD11	4:R:104:LEU:HB2	1.61	0.81
4:D:99:ILE:HD11	4:D:104:LEU:HB2	1.61	0.81
10:X:1:MET:O	10:X:2:ASP:HB2	1.84	0.77
11:K:100:MET:HE3	11:K:127:PHE:HB2	1.67	0.77
10:J:1:MET:O	10:J:2:ASP:HB2	1.85	0.75
12:Z:13:LEU:HD13	12:Z:150:LEU:HD21	1.69	0.75
12:L:13:LEU:HD13	12:L:150:LEU:HD21	1.68	0.73
5:S:12:PHE:H	6:T:19:GLN:HE22	1.37	0.71
1:O:122:THR:HG22	2:P:128:ARG:HH21	1.59	0.67
11:K:100:MET:CE	11:K:127:PHE:HB2	2.24	0.67
3:C:51:LYS:O	3:C:52:LEU:HB2	1.94	0.66
1:A:122:THR:HG22	2:B:128:ARG:HH21	1.60	0.66
3:Q:51:LYS:O	3:Q:52:LEU:HB2	1.94	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:Y:100:MET:CE	11:Y:127:PHE:HB2	2.24	0.65
9:W:36:SER:HB2	10:X:126:VAL:HG11	1.78	0.65
5:E:12:PHE:H	6:F:19:GLN:HE22	1.42	0.65
2:P:93:HIS:HB3	2:P:113:ARG:HH21	1.63	0.63
2:B:93:HIS:HB3	2:B:113:ARG:HH21	1.63	0.62
9:I:98:ARG:O	9:I:126:ILE:HD11	2.02	0.60
3:Q:9:PHE:H	4:R:15:GLN:HE22	1.47	0.60
11:Y:53:GLN:O	11:Y:57:THR:HG23	2.02	0.59
14:N:152:VAL:HA	14:N:175:MET:HE1	1.84	0.59
11:K:5:ALA:HB3	11:K:100:MET:HE2	1.85	0.59
3:C:9:PHE:H	4:D:15:GLN:HE22	1.50	0.58
3:C:160:GLN:HE21	3:C:160:GLN:HA	1.68	0.58
11:K:53:GLN:O	11:K:57:THR:HG23	2.03	0.58
2:P:124:HIS:HB3	3:Q:124:VAL:HG12	1.84	0.58
3:Q:160:GLN:HA	3:Q:160:GLN:HE21	1.68	0.58
7:G:23:PHE:O	7:G:26:THR:HB	2.04	0.57
7:U:23:PHE:O	7:U:26:THR:HB	2.04	0.57
12:Z:31:THR:HG23	12:Z:36:ASN:HD21	1.69	0.57
12:L:31:THR:HG23	12:L:36:ASN:HD21	1.70	0.56
8:V:47:GLY:HA2	18:V:301:MES:H81	1.87	0.56
8:H:104:ASP:HB2	8:H:105:PRO:HD2	1.88	0.56
8:H:52:THR:O	8:H:56:THR:HB	2.06	0.56
4:R:88:ALA:HA	4:R:99:ILE:HG21	1.88	0.56
4:D:88:ALA:HA	4:D:99:ILE:HG21	1.88	0.55
8:V:52:THR:O	8:V:56:THR:HB	2.07	0.55
9:I:36:SER:HB2	10:J:126:VAL:HG11	1.88	0.55
8:V:104:ASP:HB2	8:V:105:PRO:HD2	1.88	0.54
10:J:16:ALA:HB2	10:J:161:LEU:HD21	1.89	0.54
2:B:124:HIS:HB3	3:C:124:VAL:HG12	1.90	0.54
1:O:12:PHE:H	2:P:20:GLN:HE22	1.55	0.54
5:S:9:THR:HG21	5:S:119:THR:HA	1.90	0.54
10:X:16:ALA:HB2	10:X:161:LEU:HD21	1.90	0.54
5:E:9:THR:HG21	5:E:119:THR:HA	1.90	0.54
10:J:1:MET:HA	10:J:34:LYS:HE3	1.90	0.53
12:Z:195:HIS:HD2	12:Z:197:GLN:H	1.57	0.53
1:A:12:PHE:H	2:B:20:GLN:HE22	1.56	0.53
10:J:174:MET:HA	10:X:174:MET:HA	1.91	0.52
10:X:1:MET:HA	10:X:34:LYS:HE3	1.91	0.52
4:R:159:TYR:CE2	5:S:56:SER:HB3	2.44	0.52
9:I:10:ILE:HG21	9:I:141:ALA:HB3	1.92	0.52
10:X:119:ILE:HG12	10:X:125:LYS:HG3	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:119:ILE:HG12	10:J:125:LYS:HG3	1.92	0.51
9:W:9:GLY:HA3	9:W:41:LYS:HE2	1.93	0.51
10:X:1:MET:O	10:X:2:ASP:CB	2.57	0.51
9:W:10:ILE:HG21	9:W:141:ALA:HB3	1.92	0.51
10:J:1:MET:O	10:J:2:ASP:CB	2.58	0.51
1:O:119:GLN:O	1:O:122:THR:HB	2.11	0.51
2:P:151:ASN:HB2	2:P:152:PRO:HD2	1.93	0.51
3:C:201:VAL:HG13	3:C:202:GLN:N	2.26	0.51
9:I:9:GLY:HA3	9:I:41:LYS:HE2	1.93	0.50
2:P:216:ARG:HB3	2:P:218:GLY:H	1.76	0.50
9:I:20:VAL:HG13	9:I:118:PRO:HB3	1.93	0.50
9:W:20:VAL:HG13	9:W:118:PRO:HB3	1.93	0.50
11:Y:5:ALA:HB3	11:Y:100:MET:HE2	1.93	0.50
3:Q:201:VAL:HG13	3:Q:202:GLN:N	2.27	0.50
2:B:146:GLN:HG2	3:C:57:ILE:HG21	1.94	0.50
2:B:151:ASN:HB2	2:B:152:PRO:HD2	1.93	0.50
2:B:216:ARG:HB3	2:B:218:GLY:H	1.76	0.50
3:Q:201:VAL:O	3:Q:202:GLN:CB	2.60	0.49
12:L:195:HIS:HD2	12:L:197:GLN:H	1.58	0.49
5:S:92:ASN:HD21	12:Z:70:ASN:ND2	2.10	0.49
3:C:201:VAL:O	3:C:202:GLN:CB	2.60	0.49
4:R:155:THR:HG23	5:S:59:GLN:HE22	1.76	0.49
13:M:127:LEU:HG	13:M:142:LEU:HD12	1.95	0.49
1:O:149:GLN:O	1:O:156:TYR:HA	2.12	0.49
3:C:201:VAL:O	3:C:202:GLN:HB2	2.13	0.49
4:D:155:THR:HG23	5:E:59:GLN:HE22	1.78	0.49
5:S:87:LEU:HD21	5:S:107:ALA:HB1	1.95	0.49
1:A:119:GLN:O	1:A:122:THR:HB	2.12	0.49
3:C:202:GLN:HG3	3:C:203:THR:N	2.28	0.49
1:A:149:GLN:O	1:A:156:TYR:HA	2.12	0.48
2:B:47:ALA:HB1	2:B:64:LYS:HD2	1.96	0.48
3:C:202:GLN:HG3	3:C:203:THR:H	1.78	0.48
7:G:195:GLU:HG3	7:G:235:ARG:HG3	1.94	0.48
1:O:7:PHE:HB3	3:Q:2:TYR:CE1	2.48	0.48
7:U:195:GLU:HG3	7:U:235:ARG:HG3	1.94	0.48
3:Q:201:VAL:O	3:Q:202:GLN:HB2	2.12	0.48
3:Q:202:GLN:HG3	3:Q:203:THR:N	2.28	0.48
2:P:47:ALA:HB1	2:P:64:LYS:HD2	1.96	0.48
12:L:8:ASN:HA	12:L:30:ILE:O	2.14	0.47
4:R:9:PRO:HA	5:S:23:TYR:CD1	2.48	0.47
5:E:87:LEU:HD21	5:E:107:ALA:HB1	1.94	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:U:26:THR:HG21	7:U:131:ILE:HD12	1.97	0.47
4:R:138:GLY:HA2	4:R:214:ILE:HG12	1.96	0.47
7:U:187:GLU:HG2	7:U:192:LYS:HB2	1.95	0.47
7:G:187:GLU:HG2	7:G:192:LYS:HB2	1.95	0.47
1:O:14:PRO:HA	2:P:23:TYR:CD1	2.50	0.46
4:D:138:GLY:HA2	4:D:214:ILE:HG12	1.96	0.46
2:B:12:PHE:H	3:C:17:GLN:HE22	1.62	0.46
2:B:151:ASN:HB2	2:B:152:PRO:CD	2.45	0.46
7:G:26:THR:HG21	7:G:131:ILE:HD12	1.97	0.46
2:P:151:ASN:HB2	2:P:152:PRO:CD	2.45	0.46
12:Z:8:ASN:HA	12:Z:30:ILE:O	2.15	0.46
2:B:180:LYS:O	2:B:183:MET:HB2	2.16	0.46
3:Q:202:GLN:HG3	3:Q:203:THR:H	1.79	0.46
5:S:68:HIS:HE1	5:S:102:LEU:O	1.97	0.46
5:E:68:HIS:HE1	5:E:102:LEU:O	1.97	0.46
3:Q:198:LEU:HA	3:Q:201:VAL:HG12	1.98	0.46
9:W:120:ILE:HD12	9:W:136:ILE:HG12	1.98	0.46
9:I:120:ILE:HD12	9:I:136:ILE:HG12	1.98	0.45
3:Q:11:PRO:HA	4:R:18:TYR:CD1	2.52	0.45
3:C:198:LEU:HA	3:C:201:VAL:HG12	1.99	0.45
6:F:228:LYS:HB2	6:F:228:LYS:HE3	1.61	0.45
1:A:222:LEU:HD13	1:A:232:GLY:HA2	1.99	0.45
2:P:180:LYS:O	2:P:183:MET:HB2	2.16	0.45
3:Q:160:GLN:HE22	3:Q:170:ARG:HE	1.65	0.45
9:I:101:PRO:HB3	9:I:126:ILE:HD12	1.99	0.45
10:X:19:LYS:HD3	10:X:180:ILE:HG13	1.98	0.45
12:Z:147:MET:N	12:Z:148:PRO:HD2	2.32	0.45
1:O:158:PRO:HB2	2:P:57:GLU:HB3	1.99	0.45
12:L:36:ASN:HB3	13:M:137:TYR:CD1	2.52	0.45
11:K:209:ASN:O	9:W:37:ASN:ND2	2.49	0.44
1:O:222:LEU:HD13	1:O:232:GLY:HA2	1.99	0.44
10:J:1:MET:HA	10:J:34:LYS:CE	2.48	0.44
5:E:42:HIS:HB2	5:E:188:LEU:HD12	1.99	0.44
5:S:131:LEU:HB2	5:S:146:PHE:HB3	1.99	0.44
9:W:20:VAL:HG23	9:W:189:ILE:HB	1.99	0.44
5:E:175:LEU:HA	5:E:178:PHE:CE2	2.53	0.44
1:O:23:TYR:CD1	7:U:12:PRO:HA	2.52	0.44
2:P:50:LYS:HE3	2:P:50:LYS:HA	2.00	0.44
12:L:147:MET:N	12:L:148:PRO:HD2	2.32	0.44
13:M:43:ILE:HA	13:M:44:PRO:HD3	1.91	0.44
5:S:175:LEU:HA	5:S:178:PHE:CE2	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:14:PRO:HA	3:C:20:TYR:CD1	2.53	0.44
5:S:92:ASN:HD21	12:Z:70:ASN:HD21	1.65	0.44
9:I:20:VAL:HG23	9:I:189:ILE:HB	1.99	0.43
4:R:4:VAL:HG13	4:R:15:GLN:HG3	2.00	0.43
5:E:131:LEU:HB2	5:E:146:PHE:HB3	1.99	0.43
8:H:148:LYS:HE3	8:H:177:VAL:HG11	2.00	0.43
10:J:19:LYS:HD3	10:J:180:ILE:HG13	1.98	0.43
8:V:50:ALA:HB3	9:W:126:ILE:HD12	2.01	0.43
5:S:42:HIS:HB2	5:S:188:LEU:HD12	1.99	0.43
8:H:113:ILE:HG12	8:H:119:THR:HG22	2.00	0.43
11:K:6:PHE:HA	11:K:125:ASP:O	2.19	0.43
1:O:1:MET:CG	1:O:2:THR:H	2.32	0.43
3:C:160:GLN:HE22	3:C:170:ARG:HE	1.65	0.43
11:Y:5:ALA:HB3	11:Y:100:MET:CE	2.49	0.43
8:V:113:ILE:HG12	8:V:119:THR:HG22	2.00	0.43
2:B:50:LYS:HE3	2:B:50:LYS:HA	2.00	0.42
10:X:1:MET:HA	10:X:34:LYS:CE	2.48	0.42
4:D:4:VAL:HG13	4:D:15:GLN:HG3	1.99	0.42
11:K:37:ILE:HG23	11:K:60:GLY:HA2	2.01	0.42
11:Y:6:PHE:HA	11:Y:125:ASP:O	2.19	0.42
2:P:99:LYS:HE3	10:X:86:GLN:NE2	2.34	0.42
8:V:148:LYS:HE3	8:V:177:VAL:HG11	2.01	0.42
6:T:228:LYS:HB2	6:T:228:LYS:HE3	1.61	0.42
7:G:68:ARG:O	7:G:223:LYS:HA	2.20	0.42
7:G:78:ILE:N	7:G:79:PRO:CD	2.82	0.42
1:O:83:ARG:HE	7:U:114:ASN:ND2	2.18	0.42
4:R:160:ASN:HB3	4:R:179:TRP:CE2	2.55	0.42
5:S:18:LEU:HD21	6:T:126:ARG:HD2	2.01	0.42
1:O:55:LEU:HB3	7:U:159:ALA:O	2.20	0.42
7:U:78:ILE:N	7:U:79:PRO:CD	2.83	0.42
1:A:110:LEU:O	1:A:114:VAL:HG23	2.20	0.42
11:K:5:ALA:HB3	11:K:100:MET:CE	2.49	0.42
13:M:156:ARG:HH11	8:V:165:ASN:HD22	1.68	0.42
11:Y:37:ILE:HG23	11:Y:60:GLY:HA2	2.01	0.42
3:C:35:LYS:HG2	3:C:158:SER:O	2.20	0.41
10:J:67:TYR:CE1	10:J:75:LEU:HD13	2.55	0.41
13:M:53:ILE:HG12	13:M:114:ILE:HG12	2.02	0.41
4:R:73:LEU:HD12	4:R:131:GLY:HA3	2.02	0.41
1:A:1:MET:CG	1:A:2:THR:H	2.32	0.41
4:D:73:LEU:HD12	4:D:131:GLY:HA3	2.02	0.41
13:M:96:LEU:O	13:M:100:MET:HG2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:160:ASN:HB3	4:D:179:TRP:CE2	2.55	0.41
5:S:92:ASN:ND2	12:Z:70:ASN:HD21	2.19	0.41
10:X:67:TYR:CE1	10:X:75:LEU:HD13	2.55	0.41
8:H:84:LYS:HG3	8:H:85:GLN:N	2.36	0.41
4:R:158:ARG:HB3	5:S:57:SER:HB3	2.01	0.41
3:C:169:VAL:HG23	3:C:196:SER:HB2	2.03	0.41
3:C:11:PRO:HA	4:D:18:TYR:CD1	2.55	0.41
1:A:115:ALA:HB1	1:A:154:GLY:O	2.21	0.41
10:J:21:VAL:HG11	11:K:122:LEU:HD11	2.02	0.41
4:R:30:ILE:HD12	4:R:196:LEU:HG	2.03	0.41
7:U:63:ILE:HD12	7:U:215:GLU:HG2	2.03	0.41
5:S:172:GLU:HG3	6:T:53:LYS:HB2	2.03	0.40
4:D:30:ILE:HD12	4:D:196:LEU:HG	2.03	0.40
3:Q:35:LYS:HG2	3:Q:158:SER:O	2.22	0.40
3:Q:142:GLU:HA	3:Q:143:PRO:HD3	1.96	0.40
7:U:68:ARG:O	7:U:223:LYS:HA	2.22	0.40
1:O:115:ALA:HB1	1:O:154:GLY:O	2.21	0.40
6:T:41:GLY:HA3	6:T:215:CYS:O	2.22	0.40
12:Z:13:LEU:CD1	12:Z:150:LEU:HD21	2.46	0.40
4:D:159:TYR:CE2	5:E:56:SER:HB3	2.57	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%)	6 (2%)	2 (1%)	19 43
1	O	248/250 (99%)	240 (97%)	6 (2%)	2 (1%)	19 43
2	B	242/258 (94%)	234 (97%)	7 (3%)	1 (0%)	34 60
2	P	242/258 (94%)	234 (97%)	7 (3%)	1 (0%)	34 60

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	238/254 (94%)	228 (96%)	7 (3%)	3 (1%)	12	30
3	Q	238/254 (94%)	228 (96%)	7 (3%)	3 (1%)	12	30
4	D	231/260 (89%)	227 (98%)	4 (2%)	0	100	100
4	R	231/260 (89%)	227 (98%)	4 (2%)	0	100	100
5	E	229/234 (98%)	224 (98%)	5 (2%)	0	100	100
5	S	229/234 (98%)	224 (98%)	5 (2%)	0	100	100
6	F	241/288 (84%)	234 (97%)	7 (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%)	212 (96%)	8 (4%)	0	100	100
8	V	221/232 (95%)	214 (97%)	7 (3%)	0	100	100
9	I	202/205 (98%)	196 (97%)	6 (3%)	0	100	100
9	W	202/205 (98%)	196 (97%)	6 (3%)	0	100	100
10	J	193/198 (98%)	186 (96%)	6 (3%)	1 (0%)	29	54
10	X	193/198 (98%)	187 (97%)	5 (3%)	1 (0%)	29	54
11	K	210/212 (99%)	207 (99%)	3 (1%)	0	100	100
11	Y	210/212 (99%)	207 (99%)	3 (1%)	0	100	100
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	231/246 (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%)	188 (97%)	6 (3%)	0	100	100
14	b	194/196 (99%)	187 (96%)	7 (4%)	0	100	100
15	c	2/5 (40%)	2 (100%)	0	0	100	100
15	d	2/5 (40%)	2 (100%)	0	0	100	100
15	e	2/5 (40%)	2 (100%)	0	0	100	100
15	f	2/5 (40%)	2 (100%)	0	0	100	100
15	g	2/5 (40%)	2 (100%)	0	0	100	100
15	h	2/5 (40%)	2 (100%)	0	0	100	100
All	All	6289/6644 (95%)	6114 (97%)	161 (3%)	14 (0%)	47	73

All (14) 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	2	THR
1	A	3	ASP
1	O	2	THR
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 86
1	O	209/209 (100%)	206 (99%)	3 (1%)	67 86
2	B	203/216 (94%)	193 (95%)	10 (5%)	25 52
2	P	203/216 (94%)	193 (95%)	10 (5%)	25 52
3	C	212/226 (94%)	204 (96%)	8 (4%)	33 62
3	Q	212/226 (94%)	204 (96%)	8 (4%)	33 62
4	D	194/215 (90%)	183 (94%)	11 (6%)	20 44
4	R	194/215 (90%)	183 (94%)	11 (6%)	20 44
5	E	190/193 (98%)	176 (93%)	14 (7%)	13 32
5	S	190/193 (98%)	176 (93%)	14 (7%)	13 32
6	F	201/239 (84%)	189 (94%)	12 (6%)	19 42
6	T	201/239 (84%)	190 (94%)	11 (6%)	21 46

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
7	G	206/210 (98%)	199 (97%)	7 (3%)	37	66
7	U	206/210 (98%)	199 (97%)	7 (3%)	37	66
8	H	181/190 (95%)	174 (96%)	7 (4%)	32	61
8	V	182/190 (96%)	175 (96%)	7 (4%)	33	62
9	I	172/173 (99%)	166 (96%)	6 (4%)	36	65
9	W	172/173 (99%)	166 (96%)	6 (4%)	36	65
10	J	173/175 (99%)	167 (96%)	6 (4%)	36	65
10	X	173/175 (99%)	167 (96%)	6 (4%)	36	65
11	K	169/169 (100%)	164 (97%)	5 (3%)	41	70
11	Y	169/169 (100%)	164 (97%)	5 (3%)	41	70
12	L	185/185 (100%)	177 (96%)	8 (4%)	29	57
12	Z	185/185 (100%)	176 (95%)	9 (5%)	25	52
13	M	199/208 (96%)	190 (96%)	9 (4%)	27	55
13	a	199/208 (96%)	190 (96%)	9 (4%)	27	55
14	N	162/162 (100%)	156 (96%)	6 (4%)	34	63
14	b	162/162 (100%)	156 (96%)	6 (4%)	34	63
15	c	1/1 (100%)	1 (100%)	0	100	100
15	d	1/1 (100%)	1 (100%)	0	100	100
15	e	1/1 (100%)	1 (100%)	0	100	100
15	f	1/1 (100%)	1 (100%)	0	100	100
15	g	1/1 (100%)	1 (100%)	0	100	100
15	h	1/1 (100%)	1 (100%)	0	100	100
All	All	5319/5546 (96%)	5095 (96%)	224 (4%)	30	58

All (224) 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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	58	GLN
2	B	79	LEU
2	B	102	ASN
2	B	114	LEU
2	B	119	GLN
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	102	GLU
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	8	ASP
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	99	ASN
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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
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	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	13	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
12	L	23	LEU
12	L	49	ASN
12	L	106	TYR
12	L	136	CYS
12	L	150	LEU
12	L	167	LYS
13	M	43	ILE
13	M	48	ASN
13	M	70	LEU
13	M	104	ARG
13	M	161	ARG
13	M	187	ARG
13	M	204	THR
13	M	212	LEU
13	M	223	LYS
14	N	9	LYS
14	N	22	THR
14	N	36	ARG
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	102	ASN
2	P	114	LEU
2	P	119	GLN
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
4	R	20	LEU
4	R	40	LEU
4	R	51	LEU
4	R	99	ILE
4	R	102	GLU
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	8	ASP
5	S	9	THR
5	S	10	VAL
5	S	25	LEU
5	S	29	LYS
5	S	54	GLU
5	S	55	LEU
5	S	71	LEU
5	S	99	ASN
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	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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	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
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	3	ASN
12	Z	13	LEU
12	Z	23	LEU
12	Z	49	ASN
12	Z	106	TYR
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	204	THR
13	a	212	LEU

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Mol	Chain	Res	Type
13	a	223	LYS
14	b	2	SER
14	b	9	LYS
14	b	36	ARG
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 (132) 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
3	C	38	ASN
3	C	77	ASN
3	C	147	GLN
3	C	160	GLN
4	D	15	GLN
4	D	100	ASN
4	D	146	GLN
4	D	198	GLN
4	D	225	ASN
5	E	59	GLN
5	E	68	HIS
5	E	99	ASN
5	E	116	GLN
5	E	118	ASN
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
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	30	ASN
8	H	57	GLN
8	H	66	HIS
8	H	165	ASN
8	H	172	ASN
8	H	189	ASN
9	I	37	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	158	ASN
12	L	165	ASN
12	L	195	HIS
13	M	18	ASN
13	M	48	ASN
13	M	102	GLN
13	M	108	ASN
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

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	Q	147	GLN
3	Q	160	GLN
4	R	15	GLN
4	R	100	ASN
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	147	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	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
8	V	30	ASN
8	V	57	GLN
8	V	66	HIS
8	V	116	HIS
8	V	165	ASN
8	V	172	ASN
8	V	189	ASN
8	V	200	GLN
10	X	55	GLN
10	X	78	GLN
10	X	86	GLN
10	X	118	GLN
11	Y	9	GLN
11	Y	85	ASN
11	Y	176	ASN

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Mol	Chain	Res	Type
12	Z	1	GLN
12	Z	3	ASN
12	Z	49	ASN
12	Z	70	ASN
12	Z	79	HIS
12	Z	80	ASN
12	Z	158	ASN
12	Z	165	ASN
12	Z	195	HIS
13	a	18	ASN
13	a	48	ASN
13	a	102	GLN
13	a	108	ASN
13	a	179	ASN
13	a	194	ASN
13	a	213	GLN
14	b	161	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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	DCL	c	4	8,15	7,7,7	0.97	0	6,8,8	1.40	1 (16%)
15	DCL	d	4	11,15	7,7,7	0.93	1 (14%)	6,8,8	1.37	2 (33%)
15	DCL	f	4	8,15	7,7,7	0.80	0	6,8,8	1.50	1 (16%)
15	DCL	e	4	15,14	7,7,7	0.75	0	6,8,8	1.45	1 (16%)
15	DCL	h	4	15,14	7,7,7	0.79	0	6,8,8	1.47	1 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
15	DCL	g	4	11,15	7,7,7	0.51	0	6,8,8	1.42	1 (16%)

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	DCL	c	4	8,15	-	4/6/6/6	-
15	DCL	d	4	11,15	-	2/6/6/6	-
15	DCL	f	4	8,15	-	4/6/6/6	-
15	DCL	e	4	15,14	-	4/6/6/6	-
15	DCL	h	4	15,14	-	4/6/6/6	-
15	DCL	g	4	11,15	-	4/6/6/6	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	d	4	DCL	O-C	-2.29	1.32	1.42

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	h	4	DCL	CB-CA-C	-3.24	106.48	111.79
15	e	4	DCL	CB-CA-C	-3.00	106.87	111.79
15	c	4	DCL	CB-CA-C	-2.73	107.32	111.79
15	f	4	DCL	CB-CA-C	-2.73	107.32	111.79
15	g	4	DCL	CB-CA-C	-2.39	107.87	111.79
15	d	4	DCL	CB-CA-C	-2.32	108.00	111.79
15	d	4	DCL	O-C-CA	-2.05	103.41	111.52

There are no chirality outliers.

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
15	c	4	DCL	N-CA-CB-CG
15	c	4	DCL	C-CA-CB-CG
15	d	4	DCL	N-CA-CB-CG
15	d	4	DCL	C-CA-CB-CG
15	e	4	DCL	N-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
15	e	4	DCL	C-CA-CB-CG
15	f	4	DCL	N-CA-CB-CG
15	f	4	DCL	C-CA-CB-CG
15	g	4	DCL	N-CA-CB-CG
15	h	4	DCL	N-CA-CB-CG
15	h	4	DCL	C-CA-CB-CG
15	e	4	DCL	CA-CB-CG-CD2
15	g	4	DCL	CA-CB-CG-CD2
15	c	4	DCL	CA-CB-CG-CD2
15	f	4	DCL	CA-CB-CG-CD2
15	h	4	DCL	CA-CB-CG-CD2
15	g	4	DCL	C-CA-CB-CG
15	c	4	DCL	CA-CB-CG-CD1
15	f	4	DCL	CA-CB-CG-CD1
15	e	4	DCL	CA-CB-CG-CD1
15	g	4	DCL	CA-CB-CG-CD1
15	h	4	DCL	CA-CB-CG-CD1

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 11 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	K	302	-	12,12,12	2.30	1 (8%)	14,16,16	1.45	3 (21%)
18	MES	V	301	-	12,12,12	2.30	1 (8%)	14,16,16	1.19	2 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
18	MES	Y	301	-	12,12,12	2.31	1 (8%)	14,16,16	1.39	2 (14%)
18	MES	H	301	-	12,12,12	2.19	1 (8%)	14,16,16	1.43	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	K	302	-	-	0/6/14/14	0/1/1/1
18	MES	V	301	-	-	5/6/14/14	0/1/1/1
18	MES	Y	301	-	-	0/6/14/14	0/1/1/1
18	MES	H	301	-	-	4/6/14/14	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	Y	301	MES	C8-S	-7.77	1.66	1.77
18	K	302	MES	C8-S	-7.71	1.66	1.77
18	V	301	MES	C8-S	-7.69	1.66	1.77
18	H	301	MES	C8-S	-7.28	1.67	1.77

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
18	H	301	MES	O2S-S-C8	3.05	110.59	106.92
18	K	302	MES	O3S-S-C8	3.02	110.65	105.77
18	Y	301	MES	O3S-S-C8	2.98	110.59	105.77
18	V	301	MES	O2S-S-C8	2.45	109.87	106.92
18	H	301	MES	O3S-S-C8	2.45	109.73	105.77
18	K	302	MES	O2S-S-C8	2.37	109.77	106.92
18	Y	301	MES	O2S-S-C8	2.33	109.72	106.92
18	H	301	MES	O1S-S-C8	2.33	109.72	106.92
18	K	302	MES	C6-C5-N4	2.13	113.34	110.10
18	V	301	MES	O3S-S-C8	2.09	109.14	105.77

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
18	H	301	MES	C7-C8-S-O1S
18	V	301	MES	C7-C8-S-O1S
18	V	301	MES	C7-C8-S-O2S
18	V	301	MES	C7-C8-S-O3S
18	H	301	MES	N4-C7-C8-S
18	H	301	MES	C7-C8-S-O2S
18	V	301	MES	C8-C7-N4-C5
18	H	301	MES	C7-C8-S-O3S
18	V	301	MES	C8-C7-N4-C3

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%)	-0.27	5 (2%) 65 67	39, 52, 88, 125	0
1	O	250/250 (100%)	-0.20	7 (2%) 53 54	43, 58, 100, 129	0
2	B	244/258 (94%)	-0.13	10 (4%) 37 36	39, 57, 106, 162	0
2	P	244/258 (94%)	-0.12	12 (4%) 29 28	43, 59, 108, 162	0
3	C	240/254 (94%)	-0.04	13 (5%) 25 24	41, 60, 122, 151	0
3	Q	240/254 (94%)	0.25	20 (8%) 11 9	46, 74, 147, 189	0
4	D	235/260 (90%)	-0.28	2 (0%) 84 85	43, 61, 92, 133	0
4	R	235/260 (90%)	-0.13	6 (2%) 56 57	48, 65, 101, 143	0
5	E	231/234 (98%)	-0.11	10 (4%) 35 33	47, 67, 100, 145	0
5	S	231/234 (98%)	0.03	12 (5%) 27 25	48, 72, 112, 148	0
6	F	243/288 (84%)	-0.26	6 (2%) 57 59	45, 63, 108, 139	0
6	T	243/288 (84%)	-0.10	11 (4%) 33 31	44, 65, 111, 145	0
7	G	241/252 (95%)	-0.27	9 (3%) 41 41	39, 54, 97, 147	0
7	U	241/252 (95%)	-0.32	5 (2%) 63 65	41, 55, 87, 132	0
8	H	222/232 (95%)	-0.45	3 (1%) 75 77	38, 48, 74, 110	0
8	V	222/232 (95%)	-0.36	2 (0%) 84 85	38, 52, 76, 117	0
9	I	204/205 (99%)	-0.54	3 (1%) 73 76	35, 47, 71, 98	0
9	W	204/205 (99%)	-0.53	2 (0%) 82 83	36, 48, 75, 101	0
10	J	195/198 (98%)	-0.47	3 (1%) 73 76	37, 48, 71, 123	0
10	X	195/198 (98%)	-0.42	4 (2%) 63 65	40, 50, 72, 128	0
11	K	212/212 (100%)	-0.48	1 (0%) 91 92	37, 49, 71, 87	0
11	Y	212/212 (100%)	-0.43	1 (0%) 91 92	38, 51, 75, 101	0
12	L	222/222 (100%)	-0.49	0 100 100	37, 51, 73, 93	0
12	Z	222/222 (100%)	-0.43	0 100 100	39, 53, 76, 98	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
13	M	233/246 (94%)	-0.46	4 (1%) 70 72	35, 51, 71, 81	0
13	a	233/246 (94%)	-0.49	1 (0%) 92 93	37, 49, 69, 79	0
14	N	196/196 (100%)	-0.51	2 (1%) 82 83	36, 47, 73, 99	0
14	b	196/196 (100%)	-0.48	2 (1%) 82 83	37, 47, 73, 94	0
15	c	2/5 (40%)	-0.87	0 100 100	55, 55, 55, 59	0
15	d	2/5 (40%)	-0.75	0 100 100	65, 65, 65, 69	0
15	e	2/5 (40%)	-0.84	0 100 100	52, 52, 52, 60	0
15	f	2/5 (40%)	-0.58	0 100 100	56, 56, 56, 59	0
15	g	2/5 (40%)	-0.41	0 100 100	66, 66, 66, 72	0
15	h	2/5 (40%)	-0.40	0 100 100	58, 58, 58, 68	0
All	All	6348/6644 (95%)	-0.29	156 (2%) 57 59	35, 55, 98, 189	0

All (156) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	218	GLY	7.8
3	C	206	LYS	6.8
3	Q	49	THR	6.5
1	A	1	MET	6.1
3	Q	50	LEU	6.0
2	B	219	ALA	5.8
5	E	202	ASP	5.6
2	P	219	ALA	5.4
3	Q	206	LYS	5.3
2	B	220	ASN	5.1
2	B	242	GLY	5.0
3	Q	48	SER	4.9
3	C	49	THR	4.8
2	B	51	VAL	4.7
10	X	1	MET	4.6
10	J	1	MET	4.6
2	P	51	VAL	4.5
1	O	1	MET	4.5
4	R	241	ALA	4.3
5	S	202	ASP	4.3
3	C	202	GLN	4.2
3	Q	239	GLN	4.2
3	Q	51	LYS	4.1

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	P	59	ASP	4.1
1	O	249	ALA	4.1
4	D	242	GLU	4.0
9	W	1	SER	4.0
13	M	1	THR	3.9
3	Q	236	GLN	3.8
3	Q	240	GLU	3.8
7	G	241	GLU	3.8
2	P	220	ASN	3.7
6	F	244	ASN	3.7
3	C	225	GLU	3.7
10	X	194	ASP	3.7
8	V	222	ASP	3.6
11	Y	212	GLY	3.6
2	B	182	ASP	3.5
3	C	238	LYS	3.5
4	R	125	LEU	3.5
3	C	236	GLN	3.5
5	S	233	ILE	3.5
2	P	222	GLY	3.5
13	a	1	THR	3.4
2	P	218	GLY	3.4
5	E	233	ILE	3.4
6	T	181	GLU	3.3
7	G	2	GLY	3.3
3	Q	238	LYS	3.2
3	C	240	GLU	3.2
6	T	53	LYS	3.1
5	S	180	LYS	3.1
3	Q	223	SER	3.1
1	O	250	LEU	3.0
8	V	221	CYS	3.0
4	R	242	GLU	3.0
10	J	194	ASP	3.0
7	U	241	GLU	3.0
7	G	240	ALA	3.0
5	S	3	ASN	3.0
6	T	2	THR	3.0
1	A	250	LEU	3.0
1	O	201	GLU	3.0
3	Q	205	ALA	2.9
3	C	50	LEU	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	B	59	ASP	2.9
2	P	221	ASP	2.9
4	D	241	ALA	2.9
14	b	105	LYS	2.8
6	F	243	ILE	2.8
3	Q	203	THR	2.8
5	S	54	GLU	2.8
7	U	242	GLN	2.7
6	T	243	ILE	2.7
6	F	181	GLU	2.7
2	P	52	THR	2.7
3	C	181	GLU	2.7
3	Q	187	GLU	2.7
3	Q	175	LYS	2.7
6	T	205	GLU	2.6
6	T	241	LYS	2.6
9	I	1	SER	2.6
3	Q	180	LYS	2.6
3	C	239	GLN	2.6
2	B	221	ASP	2.6
5	S	173	ARG	2.6
9	I	133	LYS	2.5
3	Q	141	ASP	2.5
7	G	208	GLU	2.5
7	G	188	GLU	2.5
11	K	212	GLY	2.5
3	Q	225	GLU	2.5
8	H	222	ASP	2.5
1	A	201	GLU	2.5
5	E	201	ARG	2.5
5	S	163	ARG	2.4
3	C	235	GLU	2.4
6	T	244	ASN	2.4
14	N	195	GLN	2.4
6	T	180	PRO	2.4
2	B	217	LYS	2.4
6	T	204	LYS	2.4
1	O	52	SER	2.4
13	M	47	ASP	2.4
6	T	166	GLN	2.4
3	C	180	LYS	2.4
2	P	60	THR	2.3

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
7	U	222	ASP	2.3
13	M	82	ASP	2.3
6	F	241	LYS	2.3
7	G	3	TYR	2.3
9	I	192	ASP	2.3
1	A	248	GLU	2.3
5	S	52	ALA	2.3
5	S	201	ARG	2.3
8	H	221	CYS	2.3
7	G	68	ARG	2.3
1	A	249	ALA	2.3
5	E	217	LYS	2.3
13	M	216	ASN	2.3
3	Q	202	GLN	2.3
14	N	105	LYS	2.3
5	S	51	ASN	2.2
7	G	181	LYS	2.2
5	E	122	TYR	2.2
8	H	198	GLU	2.2
4	R	203	LYS	2.2
2	P	203	SER	2.2
2	B	203	SER	2.2
6	T	230	ASP	2.2
3	Q	55	THR	2.2
2	P	182	ASP	2.1
9	W	133	LYS	2.1
4	R	54	ASP	2.1
5	E	123	GLY	2.1
6	F	202	ASP	2.1
7	G	179	LYS	2.1
10	X	193	ASP	2.1
3	C	175	LYS	2.1
7	U	3	TYR	2.1
4	R	177	ASN	2.1
1	O	231	LYS	2.1
3	Q	139	ARG	2.1
10	X	11	ASP	2.1
5	S	225	ASP	2.1
5	E	163	ARG	2.0
5	E	173	ARG	2.0
2	P	230	LYS	2.0
5	E	180	LYS	2.0

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Mol	Chain	Res	Type	RSRZ
5	S	165	GLN	2.0
6	F	2	THR	2.0
7	U	2	GLY	2.0
5	E	3	ASN	2.0
10	J	193	ASP	2.0
14	b	195	GLN	2.0
1	O	248	GLU	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	DCL	c	4	8/8	0.90	0.19	59,64,69,70	0
15	DCL	h	4	8/8	0.92	0.21	61,67,70,73	0
15	DCL	d	4	8/8	0.93	0.23	60,72,74,76	0
15	DCL	e	4	8/8	0.94	0.19	56,59,64,64	0
15	DCL	g	4	8/8	0.95	0.19	66,76,85,86	0
15	DCL	f	4	8/8	0.95	0.18	62,66,78,78	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
18	MES	V	301	12/12	0.80	0.55	86,135,153,156	0
18	MES	H	301	12/12	0.81	0.37	80,125,143,147	0
16	MG	G	301	1/1	0.92	0.14	62,62,62,62	0
18	MES	Y	301	12/12	0.92	0.22	61,87,90,93	0
18	MES	K	302	12/12	0.94	0.21	59,86,92,94	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
16	MG	N	201	1/1	0.95	0.11	53,53,53,53	0
16	MG	Z	301	1/1	0.96	0.20	56,56,56,56	0
17	CL	b	201	1/1	0.96	0.18	30,30,30,30	0
16	MG	L	301	1/1	0.96	0.08	52,52,52,52	0
17	CL	U	301	1/1	0.97	0.21	30,30,30,30	0
16	MG	K	301	1/1	0.97	0.06	50,50,50,50	0
17	CL	N	202	1/1	0.97	0.19	30,30,30,30	0
17	CL	G	302	1/1	0.98	0.23	30,30,30,30	0
16	MG	I	301	1/1	0.98	0.17	55,55,55,55	0
16	MG	I	302	1/1	0.99	0.07	48,48,48,48	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.