



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 10:04 PM EDT

PDB ID : 5JWE
Title : Crystal structure of H-2Db in complex with the LCMV-derived GP92-101 peptide
Authors : Buratto, J.; Badia-Martinez, D.; Norstrom, M.; Sandalova, T.; Achour, A.
Deposited on : 2016-05-12
Resolution : 2.40 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.37.1
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) : 2.37.1

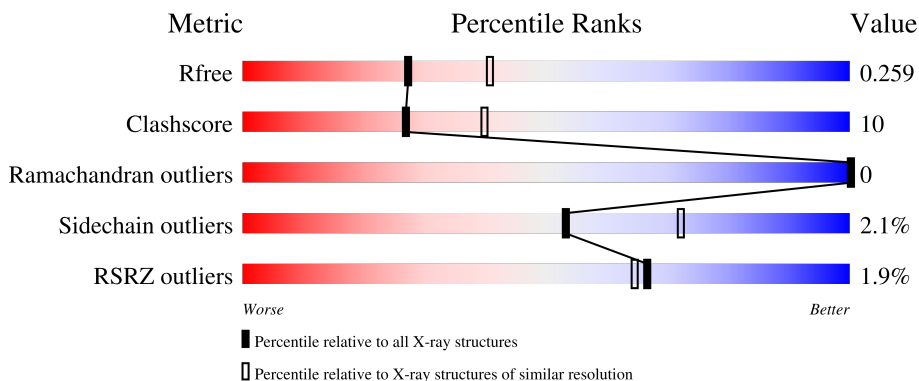
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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

Mol	Chain	Length	Quality of chain
1	A	276	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 77%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 23%; height: 10px; background-color: yellow; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">2% 77% 23%</p>
1	C	276	<div style="display: flex; align-items: center;"> <div style="width: 0%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 77%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 21%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 3%; height: 10px; background-color: orange; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">% 77% 21% .</p>
1	E	276	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 78%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 18%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: grey; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">2% 78% 18% ..</p>
1	G	276	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 77%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 21%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 3%; height: 10px; background-color: orange; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">4% 77% 21% ..</p>
2	B	99	<div style="display: flex; align-items: center;"> <div style="width: 0%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 77%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 23%; height: 10px; background-color: yellow; margin-right: 2px;"></div> </div> <p style="margin-left: 20px;">% 77% 23%</p>

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Mol	Chain	Length	Quality of chain
2	D	99	 <p>% 68% 30% .</p>
2	F	99	 <p>% 72% 25% .</p>
2	H	99	 <p>81% 18% .</p>
3	P	10	 <p>90% 10%</p>
3	Q	10	 <p>80% 20%</p>
3	R	10	 <p>80% 20%</p>
3	S	10	 <p>70% 30%</p>

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 12734 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 H-2 class I histocompatibility antigen, D-B alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	276	Total 2243	C 1420	N 397	O 417	S 9	0	1	0
1	C	276	Total 2234	C 1414	N 396	O 416	S 8	0	1	0
1	E	268	Total 2098	C 1337	N 363	O 389	S 9	0	2	0
1	G	273	Total 2156	C 1364	N 378	O 405	S 9	0	0	0

- Molecule 2 is a protein called Beta-2-microglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	99	Total 803	C 513	N 133	O 150	S 7	0	0	0
2	D	99	Total 814	C 521	N 135	O 150	S 8	0	1	0
2	F	99	Total 817	C 522	N 138	O 150	S 7	0	1	0
2	H	99	Total 821	C 524	N 138	O 152	S 7	0	0	0

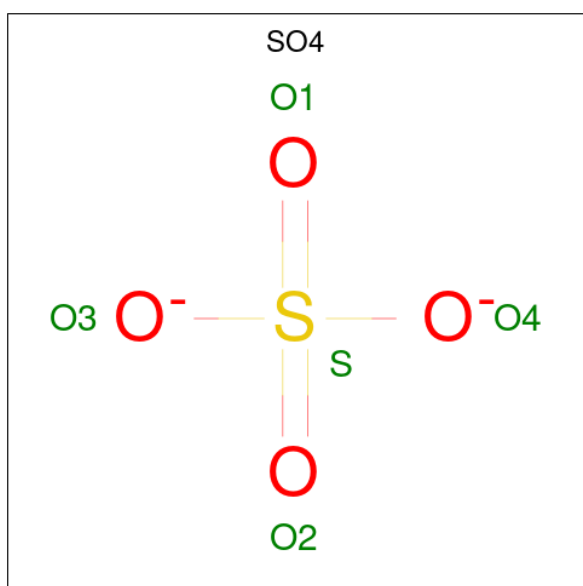
There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	85	ASP	ALA	conflict	UNP P01887
D	85	ASP	ALA	conflict	UNP P01887
F	85	ASP	ALA	conflict	UNP P01887
H	85	ASP	ALA	conflict	UNP P01887

- Molecule 3 is a protein called Pre-glycoprotein polyprotein GP complex.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace	
3	P	10	Total	C	N	O	S	0	0	0
			80	47	16	16	1			
3	Q	10	Total	C	N	O	S	0	0	0
			80	47	16	16	1			
3	R	10	Total	C	N	O	S	0	0	0
			80	47	16	16	1			
3	S	10	Total	C	N	O	S	0	0	0
			80	47	16	16	1			

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



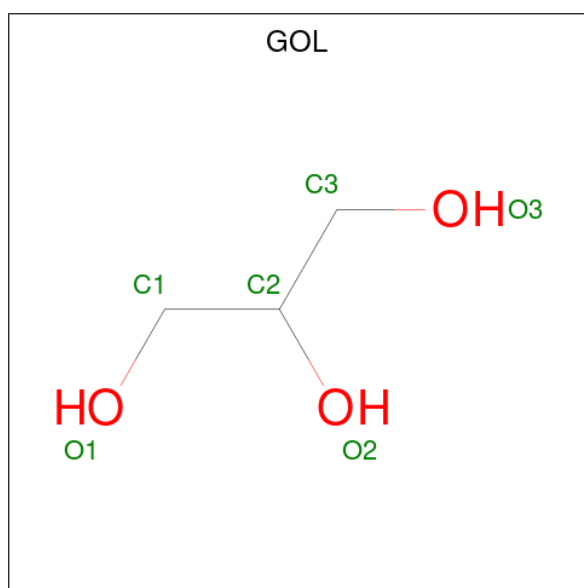
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	O S	0	0
			5	4 1		
4	B	1	Total	O S	0	0
			5	4 1		
4	B	1	Total	O S	0	0
			5	4 1		
4	D	1	Total	O S	0	0
			5	4 1		
4	D	1	Total	O S	0	0
			5	4 1		
4	F	1	Total	O S	0	0
			5	4 1		
4	F	1	Total	O S	0	0
			5	4 1		
4	F	1	Total	O S	0	0
			5	4 1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	G	1	Total	O	S	0	0
			5	4	1		
4	H	1	Total	O	S	0	0
			5	4	1		
4	H	1	Total	O	S	0	0
			5	4	1		
4	H	1	Total	O	S	0	0
			5	4	1		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	D	1	Total	C	O	0	0
			6	3	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	D	1	Total 6	C 3	O 3	0	0
5	D	1	Total 6	C 3	O 3	0	0
5	D	1	Total 6	C 3	O 3	0	0
5	E	1	Total 6	C 3	O 3	0	0
5	F	1	Total 6	C 3	O 3	0	0
5	G	1	Total 6	C 3	O 3	0	0
5	G	1	Total 6	C 3	O 3	0	0
5	H	1	Total 6	C 3	O 3	0	0
5	H	1	Total 6	C 3	O 3	0	0

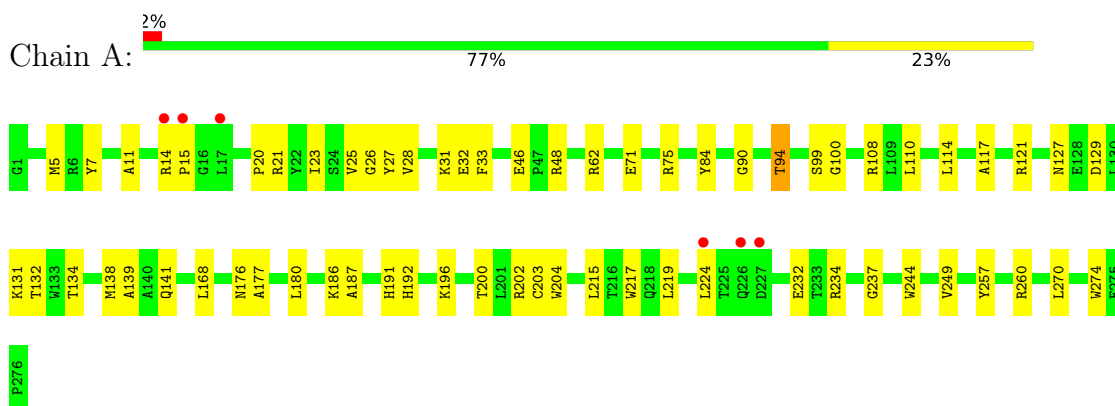
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	48	Total 48	O 48	0	0
6	B	23	Total 23	O 23	0	0
6	C	59	Total 59	O 59	0	0
6	D	24	Total 24	O 24	0	0
6	E	35	Total 35	O 35	0	0
6	F	28	Total 28	O 28	0	0
6	G	27	Total 27	O 27	0	0
6	H	25	Total 25	O 25	0	0
6	P	2	Total 2	O 2	0	0
6	Q	2	Total 2	O 2	0	0

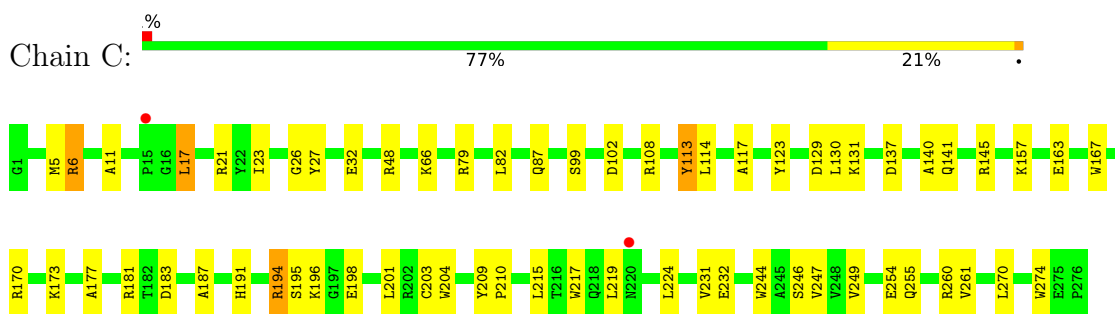
3 Residue-property plots [i](#)

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.

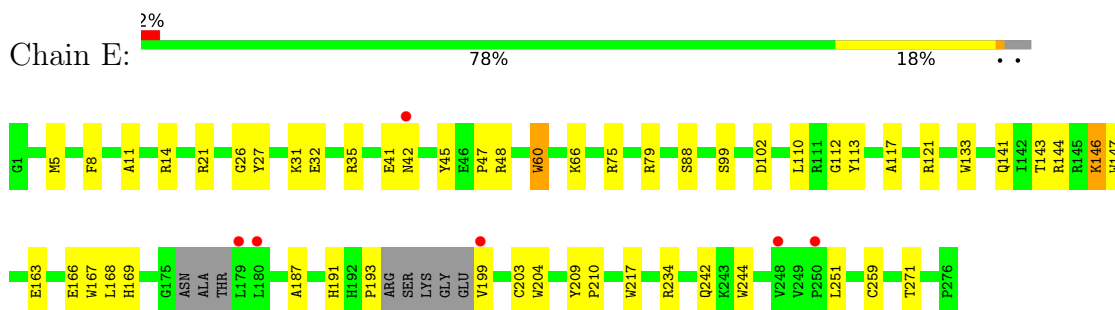
- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain



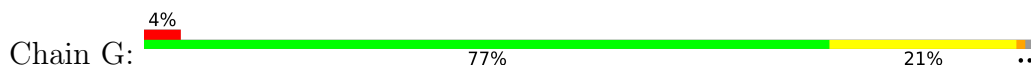
- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

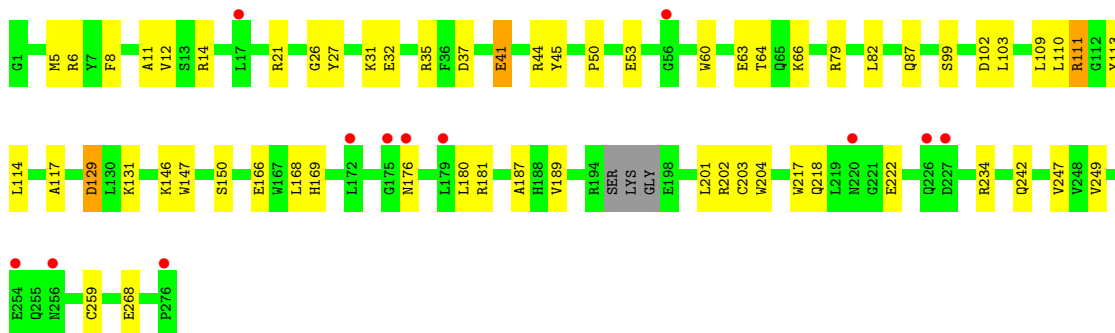


- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

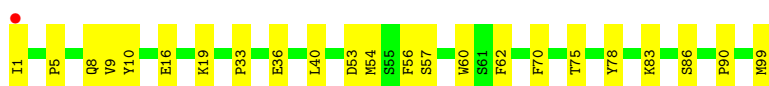
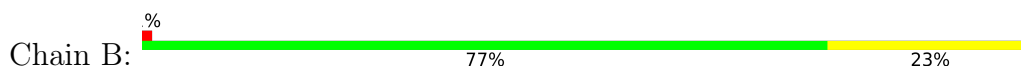


- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

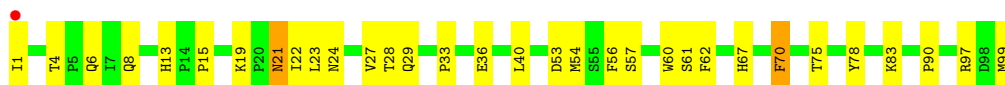




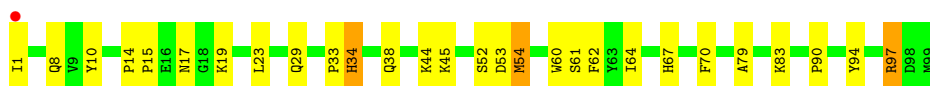
• Molecule 2: Beta-2-microglobulin



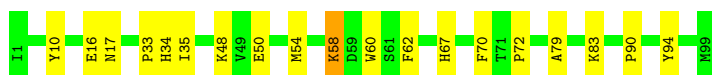
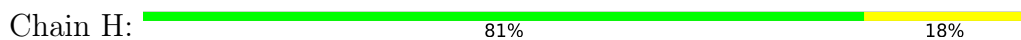
• Molecule 2: Beta-2-microglobulin



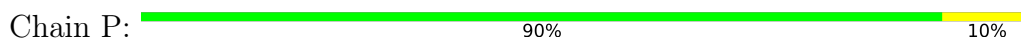
• Molecule 2: Beta-2-microglobulin



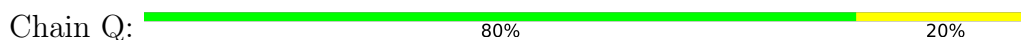
• Molecule 2: Beta-2-microglobulin



• Molecule 3: Pre-glycoprotein polyprotein GP complex

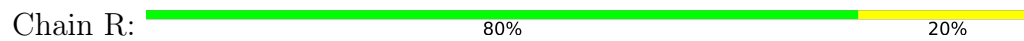


• Molecule 3: Pre-glycoprotein polyprotein GP complex





- Molecule 3: Pre-glycoprotein polyprotein GP complex



- Molecule 3: Pre-glycoprotein polyprotein GP complex



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	85.50Å 176.30Å 85.60Å 90.00° 119.80° 90.00°	Depositor
Resolution (Å)	19.45 – 2.40 19.45 – 2.40	Depositor EDS
% Data completeness (in resolution range)	98.8 (19.45-2.40) 98.2 (19.45-2.40)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.84 (at 2.41Å)	Xtrriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.199 , 0.259 0.199 , 0.259	Depositor DCC
R_{free} test set	4220 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	52.7	Xtrriage
Anisotropy	0.169	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 50.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.024 for -h-l,k,h 0.024 for l,k,-h-l 0.478 for h,-k,-h-l 0.027 for -h-l,-k,l 0.028 for l,-k,h	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	12734	wwPDB-VP
Average B, all atoms (Å ²)	67.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.04% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, GOL

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	0.49	0/2313	0.68	1/3144 (0.0%)
1	C	0.62	4/2304 (0.2%)	0.71	3/3134 (0.1%)
1	E	0.52	0/2167	0.76	5/2954 (0.2%)
1	G	0.55	3/2220 (0.1%)	0.69	1/3024 (0.0%)
2	B	0.45	0/829	0.67	0/1128
2	D	0.47	0/843	0.66	0/1145
2	F	0.53	0/847	0.74	1/1151 (0.1%)
2	H	0.57	0/847	0.75	1/1148 (0.1%)
3	P	0.47	0/82	0.65	0/109
3	Q	0.39	0/82	0.66	0/109
3	R	0.36	0/82	0.60	0/109
3	S	0.37	0/82	0.54	0/109
All	All	0.53	7/12698 (0.1%)	0.71	12/17264 (0.1%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	113	TYR	CB-CG	-8.88	1.38	1.51
1	G	181	ARG	CZ-NH2	-8.61	1.21	1.33
1	C	194	ARG	CZ-NH2	-8.17	1.22	1.33
1	C	194	ARG	NE-CZ	-8.16	1.22	1.33
1	G	181	ARG	NE-CZ	-7.70	1.23	1.33
1	C	194	ARG	CZ-NH1	-5.52	1.25	1.33
1	G	41	GLU	CD-OE1	-5.30	1.19	1.25

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	146	LYS	CD-CE-NZ	8.63	131.55	111.70
1	E	146	LYS	CA-CB-CG	8.34	131.75	113.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	17	LEU	CA-CB-CG	8.15	134.06	115.30
1	E	60	TRP	CA-CB-CG	-7.34	99.76	113.70
2	F	97	ARG	NE-CZ-NH1	-6.93	116.83	120.30
1	E	146	LYS	CG-CD-CE	-6.87	91.30	111.90
1	G	181	ARG	NE-CZ-NH2	-6.25	117.17	120.30
1	C	113	TYR	CB-CA-C	-5.92	98.56	110.40
1	C	6	ARG	CG-CD-NE	-5.66	99.92	111.80
2	H	48	LYS	N-CA-CB	5.29	120.12	110.60
1	E	146	LYS	N-CA-CB	-5.26	101.14	110.60
1	A	215	LEU	CA-CB-CG	5.25	127.37	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	2243	0	2102	51	0
1	C	2234	0	2085	50	0
1	E	2098	0	1894	39	1
1	G	2156	0	1956	46	0
2	B	803	0	758	25	0
2	D	814	0	776	30	0
2	F	817	0	779	21	0
2	H	821	0	796	15	0
3	P	80	0	68	1	0
3	Q	80	0	68	2	0
3	R	80	0	68	2	0
3	S	80	0	68	3	0
4	A	5	0	0	0	0
4	B	10	0	0	0	0
4	D	10	0	0	1	0
4	F	15	0	0	0	0
4	G	5	0	0	0	0
4	H	20	0	0	0	0
5	A	6	0	8	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	18	0	24	4	0
5	C	6	0	8	0	0
5	D	24	0	32	4	0
5	E	6	0	8	1	0
5	F	6	0	8	0	0
5	G	12	0	16	4	0
5	H	12	0	16	1	0
6	A	48	0	0	2	0
6	B	23	0	0	1	0
6	C	59	0	0	2	1
6	D	24	0	0	0	0
6	E	35	0	0	0	0
6	F	28	0	0	0	0
6	G	27	0	0	1	0
6	H	25	0	0	0	0
6	P	2	0	0	0	0
6	Q	2	0	0	0	0
All	All	12734	0	11538	245	1

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 10.

All (245) 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)
2:D:21:ASN:HD22	2:D:22:ILE:H	1.13	0.95
2:F:17:ASN:ND2	2:F:97:ARG:HH12	1.68	0.92
1:A:20:PRO:O	6:A:401:HOH:O	1.94	0.85
1:E:187:ALA:HA	1:E:204:TRP:O	1.81	0.80
1:G:21:ARG:HH12	5:G:303:GOL:H2	1.45	0.80
1:G:111:ARG:HD3	1:G:113:TYR:CE2	2.20	0.76
1:G:189:VAL:HG12	1:G:201:LEU:HD21	1.68	0.75
2:D:21:ASN:ND2	2:D:22:ILE:H	1.85	0.73
1:C:102:ASP:OD2	1:C:113:TYR:OH	2.07	0.73
1:E:47:PRO:HG3	1:E:60:TRP:CH2	2.24	0.72
1:G:189:VAL:CG1	1:G:201:LEU:HD21	2.19	0.72
2:F:33:PRO:HG3	2:F:62:PHE:CZ	2.24	0.71
2:D:13:HIS:H	2:D:21:ASN:HD21	1.35	0.71
1:C:194:ARG:HB2	1:C:198:GLU:O	1.91	0.70
1:E:234:ARG:HE	1:E:242:GLN:HE21	1.38	0.69
1:E:234:ARG:HE	1:E:242:GLN:NE2	1.91	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:9:VAL:H	5:B:105:GOL:H32	1.58	0.69
1:C:219:LEU:HB2	1:C:224:LEU:HD11	1.76	0.68
1:G:111:ARG:HD3	1:G:113:TYR:CZ	2.28	0.68
1:A:187:ALA:HA	1:A:204:TRP:O	1.95	0.66
1:C:219:LEU:HB3	1:C:224:LEU:HD21	1.78	0.66
1:A:62:ARG:NH2	6:A:403:HOH:O	2.28	0.65
1:A:244:TRP:HZ2	2:B:99:MET:HE3	1.61	0.65
2:D:21:ASN:HD22	2:D:22:ILE:N	1.90	0.64
1:C:27:TYR:CZ	5:D:103:GOL:H12	2.32	0.64
1:C:129:ASP:OD1	1:C:131:LYS:N	2.30	0.64
1:A:127:ASN:OD1	1:A:134:THR:HG23	1.97	0.64
1:G:203:CYS:HB2	1:G:217:TRP:CZ2	2.33	0.64
2:H:16:GLU:OE2	2:H:17:ASN:N	2.32	0.63
2:B:8:GLN:HB3	5:B:105:GOL:H11	1.81	0.62
1:G:5:MET:HB2	1:G:168:LEU:HD13	1.80	0.62
2:H:33:PRO:HG3	2:H:62:PHE:CZ	2.34	0.62
1:C:163:GLU:HG3	6:C:404:HOH:O	2.00	0.62
1:C:191:HIS:HE1	1:C:254:GLU:HG2	1.65	0.62
1:G:99:SER:HA	1:G:113:TYR:O	2.00	0.61
1:G:27:TYR:HA	1:G:31:LYS:O	2.01	0.61
1:G:12:VAL:HG11	2:H:34:HIS:HE1	1.65	0.60
1:E:203:CYS:HB2	1:E:217:TRP:CZ2	2.35	0.60
1:G:35:ARG:NH2	2:H:54:MET:O	2.28	0.60
2:B:16:GLU:HB3	2:B:19:LYS:HB2	1.82	0.60
1:E:234:ARG:HH11	2:F:8:GLN:NE2	1.99	0.60
1:G:234:ARG:HD2	1:G:242:GLN:HE21	1.67	0.59
2:D:33:PRO:HG3	2:D:62:PHE:CE1	2.37	0.59
1:E:99:SER:HA	1:E:113:TYR:O	2.02	0.59
1:E:191:HIS:CD2	1:E:193:PRO:HD3	2.37	0.59
2:B:83:LYS:HG2	2:B:90:PRO:HG3	1.84	0.59
1:E:27:TYR:HA	1:E:31:LYS:O	2.03	0.59
1:A:219:LEU:HB2	1:A:224:LEU:HD11	1.83	0.58
1:C:247:VAL:HG12	1:C:249:VAL:HG23	1.86	0.58
1:E:5:MET:HB2	1:E:168:LEU:HD13	1.86	0.57
1:G:187:ALA:HA	1:G:204:TRP:O	2.04	0.57
2:D:4:THR:N	4:D:102:SO4:O3	2.37	0.57
1:G:27:TYR:CZ	5:G:302:GOL:H32	2.40	0.57
1:C:187:ALA:HA	1:C:204:TRP:O	2.05	0.57
1:A:5:MET:HB2	1:A:168:LEU:HD13	1.86	0.56
1:C:260:ARG:HA	1:C:270:LEU:O	2.05	0.56
1:G:117:ALA:HB2	2:H:60:TRP:CE2	2.41	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:8:PHE:CE2	5:G:302:GOL:H31	2.41	0.56
1:E:234:ARG:HD2	2:F:10:TYR:CE2	2.42	0.55
1:G:217:TRP:CH2	1:G:259:CYS:HB2	2.42	0.55
1:G:102:ASP:O	1:G:110:LEU:N	2.37	0.54
1:G:234:ARG:HD3	2:H:10:TYR:CE2	2.42	0.54
1:C:232:GLU:HG2	2:D:8:GLN:NE2	2.23	0.54
1:G:129:ASP:OD2	1:G:131:LYS:N	2.31	0.54
1:A:234:ARG:HH11	2:B:8:GLN:NE2	2.05	0.54
1:E:203:CYS:O	1:E:244:TRP:HA	2.08	0.53
1:E:191:HIS:CE1	1:E:199:VAL:HG21	2.43	0.53
1:C:191:HIS:CE1	1:C:254:GLU:HG2	2.43	0.53
2:B:33:PRO:HG3	2:B:62:PHE:CZ	2.43	0.53
1:C:117:ALA:HB2	2:D:60:TRP:CE2	2.44	0.53
1:G:201:LEU:HD23	1:G:202:ARG:N	2.24	0.53
1:C:255:GLN:CD	1:C:255:GLN:H	2.12	0.53
2:H:58:LYS:H	2:H:58:LYS:HD2	1.74	0.53
1:A:260:ARG:HA	1:A:270:LEU:O	2.09	0.53
1:C:195:SER:O	1:C:198:GLU:HG2	2.09	0.53
1:E:193:PRO:HA	1:E:199:VAL:HA	1.91	0.53
2:F:33:PRO:HG3	2:F:62:PHE:CE1	2.44	0.53
1:E:35:ARG:NH2	2:F:54:MET:O	2.32	0.53
1:A:28:VAL:HG23	1:A:33:PHE:CE1	2.43	0.52
1:A:121:ARG:HH12	2:B:1:ILE:N	2.05	0.52
1:G:176:ASN:O	1:G:180:LEU:HD13	2.09	0.52
1:C:232:GLU:HG2	2:D:8:GLN:HE21	1.73	0.52
2:D:33:PRO:HG3	2:D:62:PHE:CZ	2.45	0.52
1:A:203:CYS:O	1:A:244:TRP:HA	2.10	0.52
2:D:83:LYS:HG2	2:D:90:PRO:HG3	1.92	0.52
1:G:37:ASP:OD2	6:G:401:HOH:O	2.19	0.52
2:B:56:PHE:HB3	2:B:62:PHE:CD1	2.45	0.52
2:H:83:LYS:HG2	2:H:90:PRO:HG3	1.92	0.52
1:A:27:TYR:CE2	5:A:302:GOL:H12	2.46	0.51
2:D:36:GLU:HB2	2:D:83:LYS:HB2	1.92	0.51
2:D:8:GLN:OE1	5:D:105:GOL:O1	2.29	0.51
1:A:176:ASN:O	1:A:180:LEU:HD13	2.11	0.51
1:A:203:CYS:HB2	1:A:217:TRP:CZ2	2.45	0.51
1:C:6:ARG:NH2	1:C:102:ASP:OD1	2.43	0.51
1:A:117:ALA:HB2	2:B:60:TRP:CE2	2.46	0.51
1:E:11:ALA:HA	1:E:21:ARG:O	2.10	0.51
1:E:141:GLN:OE1	1:E:144:ARG:NH2	2.43	0.51
1:E:143:THR:O	1:E:146:LYS:HB3	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:146:LYS:O	1:G:150:SER:OG	2.22	0.51
2:B:40:LEU:O	2:B:78:TYR:HA	2.11	0.50
1:A:219:LEU:HB3	1:A:224:LEU:HD21	1.93	0.50
1:E:66:LYS:HE3	3:R:2:SER:HB2	1.93	0.50
1:G:50:PRO:HA	1:G:53:GLU:OE2	2.12	0.50
1:E:112:GLY:C	1:E:113:TYR:HD1	2.15	0.50
2:F:83:LYS:HG2	2:F:90:PRO:HG3	1.92	0.50
1:C:82:LEU:HA	1:C:87:GLN:HE21	1.77	0.50
1:A:71:GLU:O	1:A:75:ARG:HG3	2.10	0.49
2:B:36:GLU:HB2	2:B:83:LYS:HB2	1.95	0.49
1:E:166:GLU:O	1:E:169:HIS:HB2	2.12	0.49
2:H:50:GLU:HB2	2:H:67:HIS:CE1	2.48	0.49
1:A:177:ALA:O	1:C:177:ALA:HB1	2.13	0.49
1:G:111:ARG:HG3	1:G:113:TYR:HE2	1.78	0.49
1:A:191:HIS:HB2	1:A:274:TRP:NE1	2.28	0.48
1:A:15:PRO:HB3	1:A:90:GLY:HA2	1.96	0.48
1:C:130:LEU:HB2	1:C:157:LYS:HD2	1.95	0.48
1:C:145[B]:ARG:NH2	6:C:405:HOH:O	2.46	0.48
1:C:244:TRP:HZ2	2:D:99:MET:HE3	1.77	0.48
1:E:117:ALA:HB2	2:F:60:TRP:CE2	2.48	0.48
2:B:33:PRO:HG3	2:B:62:PHE:CE2	2.48	0.48
1:A:237:GLY:HA3	6:B:205:HOH:O	2.14	0.48
1:A:27:TYR:HA	1:A:31:LYS:O	2.14	0.47
2:B:16:GLU:HG2	2:B:19:LYS:CG	2.44	0.47
1:C:181:ARG:NE	1:C:183:ASP:OD2	2.44	0.47
1:G:103:LEU:HD23	1:G:109:LEU:HA	1.96	0.47
1:C:6:ARG:NH2	1:C:113:TYR:CZ	2.82	0.47
1:E:133:TRP:HB2	1:E:144:ARG:HG3	1.95	0.47
1:G:234:ARG:HD3	2:H:10:TYR:CD2	2.50	0.47
1:G:247:VAL:HG22	1:G:249:VAL:HG13	1.97	0.47
1:A:27:TYR:CZ	5:A:302:GOL:H12	2.49	0.47
1:C:113:TYR:N	1:C:113:TYR:CD2	2.82	0.47
1:C:215:LEU:HD22	1:C:261:VAL:HG22	1.97	0.47
2:D:56:PHE:HB3	2:D:62:PHE:CD2	2.50	0.47
1:E:60:TRP:HD1	1:E:60:TRP:HA	1.50	0.47
1:A:232:GLU:HG3	2:B:8:GLN:OE1	2.15	0.47
1:C:191:HIS:HB2	1:C:274:TRP:NE1	2.30	0.46
2:H:33:PRO:HG3	2:H:62:PHE:CE1	2.50	0.46
2:D:36:GLU:OE2	2:D:83:LYS:HD2	2.15	0.46
2:D:56:PHE:O	5:D:103:GOL:O1	2.28	0.46
2:D:24:ASN:HD22	2:D:67:HIS:HB3	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:THR:HG21	2:B:33:PRO:HD3	1.97	0.46
2:D:40:LEU:O	2:D:78:TYR:HA	2.15	0.46
1:E:102:ASP:O	1:E:110:LEU:N	2.43	0.46
1:E:48:ARG:NH2	2:F:53:ASP:OD2	2.48	0.46
2:H:35:ILE:O	5:H:106:GOL:H32	2.15	0.46
1:A:48:ARG:NH2	2:B:53:ASP:OD2	2.47	0.46
1:C:48:ARG:NH2	2:D:53:ASP:OD2	2.44	0.46
1:C:209:TYR:CD1	1:C:210:PRO:HA	2.51	0.46
1:G:21:ARG:HH12	5:G:303:GOL:C2	2.22	0.46
1:G:44:ARG:HH12	1:G:60:TRP:HB3	1.81	0.46
1:A:129:ASP:OD1	1:A:131:LYS:N	2.49	0.46
1:A:202:ARG:HD3	1:A:244:TRP:CD2	2.51	0.46
1:A:21:ARG:CZ	1:A:23:ILE:HD11	2.46	0.45
1:C:21:ARG:NE	1:C:23:ILE:HD11	2.31	0.45
1:C:203:CYS:O	1:C:244:TRP:HA	2.17	0.45
1:G:63:GLU:OE1	3:S:1:CYS:HA	2.17	0.45
1:G:82:LEU:HD23	1:G:87:GLN:HB2	1.97	0.45
1:G:5:MET:O	1:G:6:ARG:HG3	2.17	0.45
2:F:38:GLN:HG2	2:F:45:LYS:HE3	1.98	0.45
1:C:99:SER:HB3	1:C:114:LEU:HD12	1.99	0.45
2:F:52:SER:O	2:F:64:ILE:HD11	2.16	0.45
1:G:66:LYS:HE3	3:S:2:SER:HB2	1.98	0.45
1:A:5:MET:O	1:A:100:GLY:HA3	2.16	0.45
1:E:191:HIS:ND1	1:E:199:VAL:HG21	2.31	0.45
1:G:11:ALA:HA	1:G:21:ARG:O	2.16	0.45
1:E:14:ARG:HD3	2:F:34[A]:HIS:CE1	2.52	0.45
1:E:163:GLU:O	1:E:167:TRP:HB2	2.17	0.45
1:A:192:HIS:HB2	1:A:200:THR:HB	1.99	0.45
2:D:23:LEU:O	2:D:67:HIS:HA	2.16	0.45
1:A:27:TYR:CG	5:A:302:GOL:H31	2.52	0.44
1:A:234:ARG:HD2	2:B:10:TYR:CE1	2.52	0.44
1:E:147:TRP:NE1	3:R:9:TYR:O	2.49	0.44
1:A:121:ARG:HH12	2:B:1:ILE:H1	1.65	0.44
2:B:5:PRO:HD3	2:B:86:SER:OG	2.18	0.44
1:G:44:ARG:HA	1:G:64:THR:HG23	2.00	0.44
1:C:203:CYS:HB2	1:C:217:TRP:CZ2	2.52	0.44
1:E:121:ARG:NH1	2:F:1:ILE:HG12	2.32	0.44
1:A:110:LEU:HA	1:A:110:LEU:HD23	1.73	0.44
1:E:234:ARG:HD2	2:F:10:TYR:CD2	2.52	0.44
1:A:23:ILE:HD12	2:B:54:MET:SD	2.58	0.44
1:A:127:ASN:HD22	1:A:132:THR:C	2.22	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:41:GLU:OE1	1:E:41:GLU:N	2.47	0.43
1:G:14:ARG:HD3	2:H:34:HIS:CE1	2.53	0.43
1:A:99:SER:HB3	1:A:114:LEU:HD12	2.00	0.43
2:B:16:GLU:HG2	2:B:19:LYS:HG3	2.00	0.43
1:C:217:TRP:CD1	1:C:247:VAL:HG23	2.53	0.43
2:D:21:ASN:HB3	2:D:70:PHE:CE1	2.53	0.43
1:A:7:TYR:CE2	3:P:2:SER:HB3	2.53	0.43
1:A:31:LYS:HD2	1:A:31:LYS:HA	1.67	0.43
1:C:231:VAL:HG13	1:C:244:TRP:CZ2	2.54	0.43
1:E:217:TRP:CH2	1:E:259:CYS:HB2	2.54	0.43
1:G:99:SER:HB3	1:G:114:LEU:HD23	2.00	0.43
2:H:17:ASN:HA	2:H:72:PRO:O	2.18	0.43
1:A:138:MET:HA	1:A:141:GLN:HG3	2.01	0.43
1:G:6:ARG:NH2	1:G:113:TYR:CE2	2.86	0.43
1:A:84:TYR:HB3	1:A:139:ALA:HB1	2.01	0.43
1:C:66:LYS:HE3	3:Q:2:SER:OG	2.19	0.43
2:D:29:GLN:HA	2:D:61:SER:HB2	2.00	0.43
1:C:21:ARG:CZ	1:C:23:ILE:HD11	2.49	0.42
1:C:167:TRP:CG	3:Q:1:CYS:HB2	2.54	0.42
1:A:186:LYS:HE3	1:A:186:LYS:HB3	1.74	0.42
1:C:196:LYS:HB2	1:C:196:LYS:HE3	1.91	0.42
2:D:57:SER:OG	5:D:106:GOL:H2	2.19	0.42
1:E:110:LEU:HD12	1:E:110:LEU:HA	1.82	0.42
2:H:79:ALA:HB2	2:H:94:TYR:CD1	2.55	0.42
2:F:17:ASN:HD22	2:F:17:ASN:HA	1.71	0.42
1:A:11:ALA:HA	1:A:21:ARG:O	2.20	0.42
1:C:23:ILE:HD12	2:D:54[A]:MET:SD	2.60	0.42
2:F:44:LYS:HB3	2:F:44:LYS:HE2	1.83	0.42
2:D:1:ILE:HD12	2:D:1:ILE:HA	1.92	0.42
1:E:209:TYR:CD1	1:E:210:PRO:HA	2.55	0.42
1:C:11:ALA:HA	1:C:21:ARG:O	2.20	0.42
1:C:201:LEU:O	1:C:246:SER:HA	2.20	0.42
1:G:147:TRP:NE1	3:S:9:TYR:O	2.46	0.42
1:G:218:GLN:HA	1:G:222:GLU:O	2.20	0.41
1:A:7:TYR:HA	1:A:25:VAL:O	2.20	0.41
1:E:26:GLY:O	1:E:32:GLU:HA	2.19	0.41
2:F:14:PRO:HA	2:F:15:PRO:HD3	1.98	0.41
1:A:249:VAL:HG22	1:A:257:TYR:CE2	2.55	0.41
2:B:8:GLN:HA	5:B:105:GOL:O2	2.19	0.41
1:A:196:LYS:N	1:A:196:LYS:HD2	2.35	0.41
1:C:26:GLY:O	1:C:32:GLU:HA	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:137:ASP:O	1:C:141:GLN:HG2	2.20	0.41
2:D:56:PHE:HB3	2:D:62:PHE:CE2	2.55	0.41
1:E:8:PHE:CE2	5:E:301:GOL:H11	2.56	0.41
1:G:41:GLU:CD	1:G:41:GLU:N	2.73	0.41
1:G:26:GLY:O	1:G:32:GLU:HA	2.20	0.41
1:C:6:ARG:NH2	1:C:113:TYR:CE2	2.89	0.41
2:B:19:LYS:HA	2:B:19:LYS:HD2	1.90	0.41
1:C:5:MET:C	1:C:6:ARG:HG2	2.40	0.41
1:C:173:LYS:HE2	1:G:268:GLU:OE1	2.21	0.41
2:D:6:GLN:O	2:D:27:VAL:HA	2.20	0.41
1:A:26:GLY:O	1:A:32:GLU:HA	2.22	0.40
2:F:19:LYS:HE3	2:F:19:LYS:HB2	1.90	0.40
2:F:79:ALA:HB2	2:F:94:TYR:CD1	2.56	0.40
1:G:166:GLU:O	1:G:169:HIS:HB2	2.21	0.40
1:A:14:ARG:HH21	1:A:15:PRO:HG2	1.85	0.40
1:A:14:ARG:NH2	1:A:15:PRO:HG2	2.35	0.40
1:C:123:TYR:CZ	1:C:140:ALA:HA	2.56	0.40
1:E:41:GLU:HG2	1:E:42:ASN:H	1.86	0.40
2:F:29:GLN:HA	2:F:61:SER:HB2	2.03	0.40
1:C:167:TRP:CZ3	1:C:170:ARG:HD3	2.57	0.40
2:D:6:GLN:HB2	2:D:28:THR:OG1	2.22	0.40
2:B:57:SER:OG	5:B:104:GOL:H11	2.22	0.40
2:D:15:PRO:HG2	2:D:97:ARG:HB2	2.03	0.40
2:F:23:LEU:O	2:F:67:HIS:HA	2.22	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:88:SER:N	6:C:401:HOH:O[2_555]	2.18	0.02

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	275/276 (100%)	271 (98%)	4 (2%)	0	100	100
1	C	275/276 (100%)	268 (98%)	7 (2%)	0	100	100
1	E	264/276 (96%)	256 (97%)	8 (3%)	0	100	100
1	G	269/276 (98%)	265 (98%)	4 (2%)	0	100	100
2	B	97/99 (98%)	95 (98%)	2 (2%)	0	100	100
2	D	98/99 (99%)	97 (99%)	1 (1%)	0	100	100
2	F	98/99 (99%)	97 (99%)	1 (1%)	0	100	100
2	H	97/99 (98%)	95 (98%)	2 (2%)	0	100	100
3	P	8/10 (80%)	7 (88%)	1 (12%)	0	100	100
3	Q	8/10 (80%)	7 (88%)	1 (12%)	0	100	100
3	R	8/10 (80%)	7 (88%)	1 (12%)	0	100	100
3	S	8/10 (80%)	7 (88%)	1 (12%)	0	100	100
All	All	1505/1540 (98%)	1472 (98%)	33 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	227/234 (97%)	224 (99%)	3 (1%)	69	84
1	C	225/234 (96%)	222 (99%)	3 (1%)	69	84
1	E	200/234 (86%)	195 (98%)	5 (2%)	47	67
1	G	209/234 (89%)	205 (98%)	4 (2%)	57	75
2	B	90/94 (96%)	88 (98%)	2 (2%)	52	71
2	D	91/94 (97%)	87 (96%)	4 (4%)	28	45
2	F	92/94 (98%)	88 (96%)	4 (4%)	29	46
2	H	94/94 (100%)	92 (98%)	2 (2%)	53	72

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	P	9/9 (100%)	9 (100%)	0	100	100
3	Q	9/9 (100%)	9 (100%)	0	100	100
3	R	9/9 (100%)	9 (100%)	0	100	100
3	S	9/9 (100%)	9 (100%)	0	100	100
All	All	1264/1348 (94%)	1237 (98%)	27 (2%)	53	72

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	GLU
1	A	94	THR
1	A	108	ARG
2	B	70	PHE
2	B	75	THR
1	C	17	LEU
1	C	79	ARG
1	C	108	ARG
2	D	19	LYS
2	D	21	ASN
2	D	70	PHE
2	D	75	THR
1	E	45	TYR
1	E	75	ARG
1	E	79	ARG
1	E	251	LEU
1	E	271	THR
2	F	34[A]	HIS
2	F	34[B]	HIS
2	F	54	MET
2	F	70	PHE
1	G	45	TYR
1	G	79	ARG
1	G	111	ARG
1	G	129	ASP
2	H	58	LYS
2	H	70	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	96	GLN
1	A	141	GLN
2	B	8	GLN
1	C	87	GLN
1	C	96	GLN
1	C	191	HIS
2	D	21	ASN
2	D	24	ASN
2	D	67	HIS
1	E	191	HIS
1	E	218	GLN
1	E	242	GLN
2	F	8	GLN
2	F	17	ASN
1	G	191	HIS
1	G	192	HIS
1	G	218	GLN
1	G	242	GLN
2	H	34	HIS
2	H	67	HIS
3	P	7	HIS
3	Q	7	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

28 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	SO4	F	103	-	4,4,4	0.13	0	6,6,6	0.18	0
4	SO4	G	301	-	4,4,4	0.15	0	6,6,6	0.08	0
5	GOL	D	106	-	5,5,5	0.35	0	5,5,5	0.28	0
5	GOL	B	103	-	5,5,5	0.33	0	5,5,5	0.70	0
5	GOL	D	104	-	5,5,5	0.35	0	5,5,5	0.26	0
4	SO4	B	101	2	4,4,4	0.34	0	6,6,6	0.29	0
4	SO4	D	101	-	4,4,4	0.13	0	6,6,6	0.15	0
5	GOL	D	103	-	5,5,5	0.41	0	5,5,5	0.69	0
5	GOL	G	303	-	5,5,5	0.30	0	5,5,5	0.45	0
5	GOL	B	104	-	5,5,5	0.46	0	5,5,5	0.33	0
4	SO4	F	101	-	4,4,4	0.13	0	6,6,6	0.15	0
5	GOL	F	104	-	5,5,5	0.41	0	5,5,5	0.50	0
4	SO4	H	102	-	4,4,4	0.13	0	6,6,6	0.08	0
5	GOL	C	301	-	5,5,5	0.34	0	5,5,5	0.49	0
4	SO4	A	301	-	4,4,4	0.15	0	6,6,6	0.15	0
5	GOL	E	301	-	5,5,5	0.33	0	5,5,5	0.30	0
4	SO4	H	103	-	4,4,4	0.12	0	6,6,6	0.18	0
5	GOL	H	106	-	5,5,5	0.35	0	5,5,5	0.44	0
4	SO4	H	104	-	4,4,4	0.15	0	6,6,6	0.07	0
5	GOL	H	105	-	5,5,5	0.37	0	5,5,5	0.34	0
5	GOL	G	302	-	5,5,5	0.41	0	5,5,5	0.51	0
4	SO4	B	102	-	4,4,4	0.13	0	6,6,6	0.18	0
5	GOL	D	105	-	5,5,5	0.39	0	5,5,5	0.59	0
4	SO4	F	102	-	4,4,4	0.16	0	6,6,6	0.11	0
5	GOL	A	302	-	5,5,5	0.52	0	5,5,5	1.00	0
5	GOL	B	105	-	5,5,5	0.55	0	5,5,5	0.66	0
4	SO4	H	101	-	4,4,4	0.14	0	6,6,6	0.14	0
4	SO4	D	102	-	4,4,4	0.17	0	6,6,6	0.15	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	D	106	-	-	2/4/4/4	-
5	GOL	B	103	-	-	3/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	H	106	-	-	2/4/4/4	-
5	GOL	D	104	-	-	0/4/4/4	-
5	GOL	H	105	-	-	4/4/4/4	-
5	GOL	G	302	-	-	4/4/4/4	-
5	GOL	D	103	-	-	4/4/4/4	-
5	GOL	C	301	-	-	2/4/4/4	-
5	GOL	B	104	-	-	3/4/4/4	-
5	GOL	G	303	-	-	2/4/4/4	-
5	GOL	D	105	-	-	2/4/4/4	-
5	GOL	A	302	-	-	4/4/4/4	-
5	GOL	B	105	-	-	0/4/4/4	-
5	GOL	F	104	-	-	2/4/4/4	-
5	GOL	E	301	-	-	3/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (37) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	302	GOL	O1-C1-C2-C3
5	C	301	GOL	O1-C1-C2-O2
5	D	103	GOL	O1-C1-C2-C3
5	D	103	GOL	C1-C2-C3-O3
5	D	105	GOL	O1-C1-C2-C3
5	D	106	GOL	O1-C1-C2-C3
5	E	301	GOL	O1-C1-C2-O2
5	E	301	GOL	O1-C1-C2-C3
5	F	104	GOL	O1-C1-C2-C3
5	G	302	GOL	O1-C1-C2-C3
5	G	302	GOL	C1-C2-C3-O3
5	H	105	GOL	O1-C1-C2-C3
5	H	105	GOL	C1-C2-C3-O3
5	H	105	GOL	O2-C2-C3-O3
5	D	103	GOL	O1-C1-C2-O2
5	D	105	GOL	O1-C1-C2-O2
5	B	103	GOL	C1-C2-C3-O3
5	B	104	GOL	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
5	C	301	GOL	O1-C1-C2-C3
5	G	303	GOL	O1-C1-C2-C3
5	H	106	GOL	O1-C1-C2-C3
5	A	302	GOL	O1-C1-C2-O2
5	B	103	GOL	O2-C2-C3-O3
5	G	302	GOL	O1-C1-C2-O2
5	H	106	GOL	O1-C1-C2-O2
5	D	103	GOL	O2-C2-C3-O3
5	A	302	GOL	O2-C2-C3-O3
5	B	103	GOL	O1-C1-C2-O2
5	G	302	GOL	O2-C2-C3-O3
5	H	105	GOL	O1-C1-C2-O2
5	A	302	GOL	C1-C2-C3-O3
5	E	301	GOL	O2-C2-C3-O3
5	F	104	GOL	O1-C1-C2-O2
5	B	104	GOL	O1-C1-C2-O2
5	G	303	GOL	O1-C1-C2-O2
5	B	104	GOL	O2-C2-C3-O3
5	D	106	GOL	O1-C1-C2-O2

There are no ring outliers.

11 monomers are involved in 18 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	106	GOL	1	0
5	D	103	GOL	2	0
5	G	303	GOL	2	0
5	B	104	GOL	1	0
5	E	301	GOL	1	0
5	H	106	GOL	1	0
5	G	302	GOL	2	0
5	D	105	GOL	1	0
5	A	302	GOL	3	0
5	B	105	GOL	3	0
4	D	102	SO4	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	276/276 (100%)	-0.36	6 (2%) 62 60	36, 59, 96, 172	0
1	C	276/276 (100%)	-0.35	2 (0%) 87 86	36, 58, 97, 156	0
1	E	268/276 (97%)	-0.07	6 (2%) 62 60	39, 74, 122, 193	0
1	G	273/276 (98%)	-0.06	12 (4%) 34 33	39, 77, 136, 184	0
2	B	99/99 (100%)	-0.43	1 (1%) 82 80	38, 60, 87, 125	0
2	D	99/99 (100%)	-0.42	1 (1%) 82 80	40, 61, 93, 149	0
2	F	99/99 (100%)	-0.44	1 (1%) 82 80	37, 53, 82, 105	0
2	H	99/99 (100%)	-0.47	0 100 100	37, 54, 84, 108	0
3	P	10/10 (100%)	-0.50	0 100 100	50, 60, 68, 70	0
3	Q	10/10 (100%)	-0.46	0 100 100	50, 61, 74, 79	0
3	R	10/10 (100%)	-0.42	0 100 100	64, 75, 96, 104	0
3	S	10/10 (100%)	-0.49	0 100 100	66, 78, 92, 96	0
All	All	1529/1540 (99%)	-0.28	29 (1%) 66 64	36, 64, 112, 193	0

All (29) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	179	LEU	16.3
1	G	175	GLY	9.2
1	G	254	GLU	7.2
1	E	250	PRO	6.3
1	A	227	ASP	6.1
1	G	179	LEU	4.9
2	D	1	ILE	4.9
1	A	15	PRO	4.8
1	C	15	PRO	4.1
1	G	276	PRO	3.6
1	C	220	ASN	3.5

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Mol	Chain	Res	Type	RSRZ
2	B	1	ILE	3.4
1	G	256	ASN	3.3
1	A	14	ARG	2.8
1	G	56	GLY	2.8
1	A	226	GLN	2.7
1	A	17	LEU	2.7
1	G	17	LEU	2.6
1	G	176	ASN	2.6
1	G	220	ASN	2.5
1	E	248	VAL	2.5
1	G	227	ASP	2.5
1	A	224	LEU	2.3
1	E	180	LEU	2.3
2	F	1	ILE	2.2
1	E	42	ASN	2.2
1	G	226	GLN	2.1
1	E	199	VAL	2.0
1	G	172	LEU	2.0

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

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	SO4	B	101	5/5	0.81	0.11	125,130,132,134	0
5	GOL	D	106	6/6	0.84	0.18	83,92,95,103	0
5	GOL	B	103	6/6	0.85	0.13	73,76,78,78	0
5	GOL	G	303	6/6	0.86	0.14	80,85,89,90	0
4	SO4	H	103	5/5	0.87	0.19	87,94,100,101	5

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	SO4	A	301	5/5	0.88	0.13	149,149,150,153	0
5	GOL	D	105	6/6	0.88	0.31	65,84,86,89	0
4	SO4	H	104	5/5	0.89	0.12	135,137,139,139	0
5	GOL	B	104	6/6	0.90	0.30	77,98,105,106	0
4	SO4	D	102	5/5	0.91	0.15	115,119,121,122	5
4	SO4	B	102	5/5	0.91	0.13	124,128,131,133	5
4	SO4	F	103	5/5	0.92	0.10	122,122,126,133	0
5	GOL	H	106	6/6	0.93	0.18	90,96,100,104	0
4	SO4	G	301	5/5	0.94	0.12	133,136,136,139	0
5	GOL	D	104	6/6	0.94	0.14	62,90,98,99	0
5	GOL	H	105	6/6	0.94	0.12	73,86,89,91	0
4	SO4	F	102	5/5	0.94	0.14	105,112,114,114	0
5	GOL	B	105	6/6	0.95	0.18	61,67,82,91	0
4	SO4	D	101	5/5	0.95	0.11	113,120,122,125	0
5	GOL	F	104	6/6	0.95	0.14	56,72,78,78	0
4	SO4	F	101	5/5	0.96	0.12	113,115,119,120	0
5	GOL	D	103	6/6	0.96	0.12	42,54,58,65	0
5	GOL	G	302	6/6	0.96	0.17	61,65,67,80	0
4	SO4	H	101	5/5	0.97	0.10	100,106,113,114	0
4	SO4	H	102	5/5	0.97	0.06	93,103,108,109	0
5	GOL	A	302	6/6	0.97	0.17	48,49,61,64	0
5	GOL	C	301	6/6	0.97	0.14	70,75,79,89	0
5	GOL	E	301	6/6	0.97	0.15	49,53,59,64	0

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

There are no such residues in this entry.