Full wwPDB X-ray Structure Validation Report ⓘ

Jun 24, 2024 – 08:22 AM EDT

PDB ID	:	6H6D
Title	:	Crystal structures of the murine class I major histocompatibility complex H-2Db in complex with adenovirus-derived peptide Ad10
Authors	:	Achour, A.; Sandalova, T.; Han, X.
Deposited on	:	2018-07-27
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:

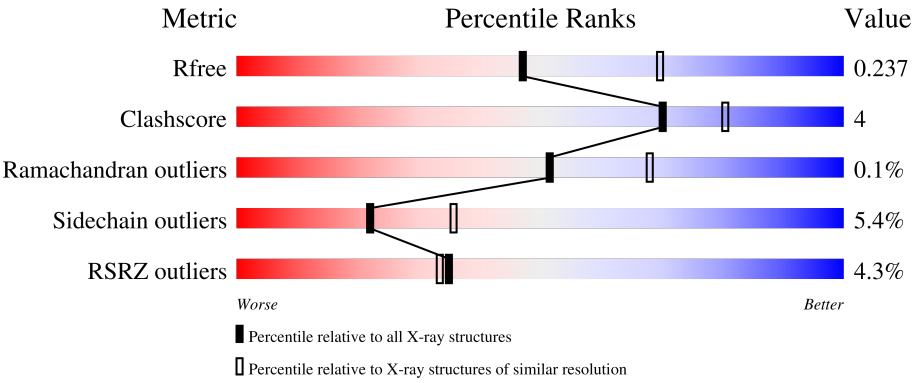
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (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 <=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	338	4% 69% 11% • 20%
1	D	338	5% 70% 9% • 19%
2	B	99	91% 9%
2	E	99	2% 94% 6%
3	C	10	90% 10%

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Mol	Chain	Length	Quality of chain
3	F	10	

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
4	SO4	A	401	-	-	-	X

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 6479 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
1	A	272	Total	C	N	O	S	0	1	0
			2244	1418	398	419	9			
1	D	273	Total	C	N	O	S	0	1	0
			2252	1422	400	421	9			

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	99	Total	C	N	O	S	0	0	0
			821	524	138	152	7			
2	E	99	Total	C	N	O	S	0	0	0
			821	524	138	152	7			

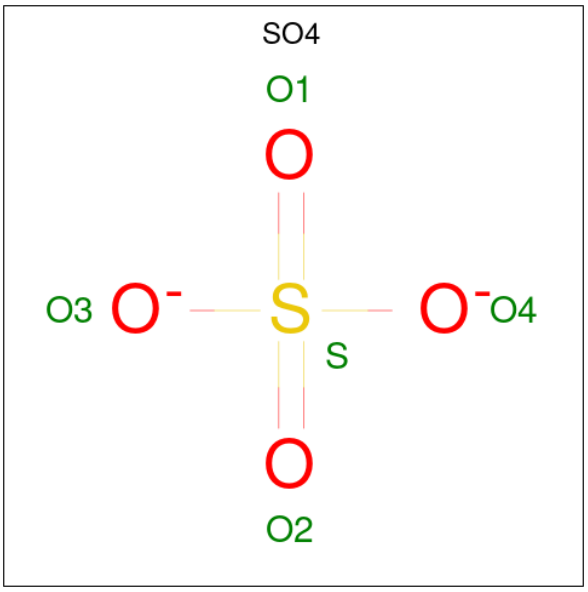
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	85	ASP	ALA	variant	UNP P01887
E	85	ASP	ALA	variant	UNP P01887

- Molecule 3 is a protein called Early E1A protein.

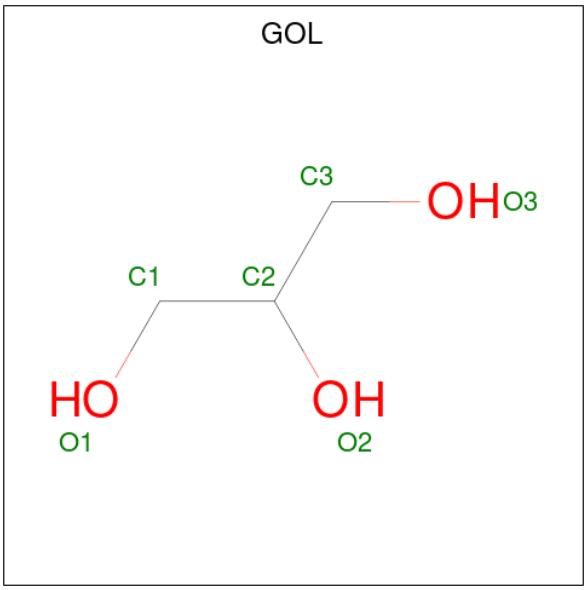
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	C	10	Total	C	N	O	0	0	0
			70	42	11	17			
3	F	10	Total	C	N	O	0	0	0
			70	42	11	17			

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



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

- 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 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0
5	D	1	Total C O 6 3 3	0	0
5	E	1	Total C O 6 3 3	0	0
5	E	1	Total C O 6 3 3	0	0

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	4	Total Cl 4 4	0	0
6	B	3	Total Cl 3 3	0	0
6	D	2	Total Cl 2 2	0	0
6	E	2	Total Cl 2 2	0	0

- Molecule 7 is water.

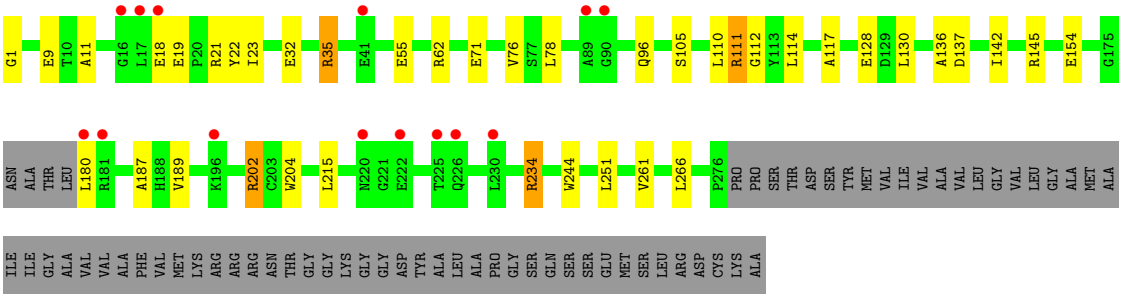
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	52	Total O 52 52	0	0
7	B	16	Total O 16 16	0	0
7	C	1	Total O 1 1	0	0
7	D	39	Total O 39 39	0	0
7	E	12	Total O 12 12	0	0
7	F	2	Total O 2 2	0	0

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.

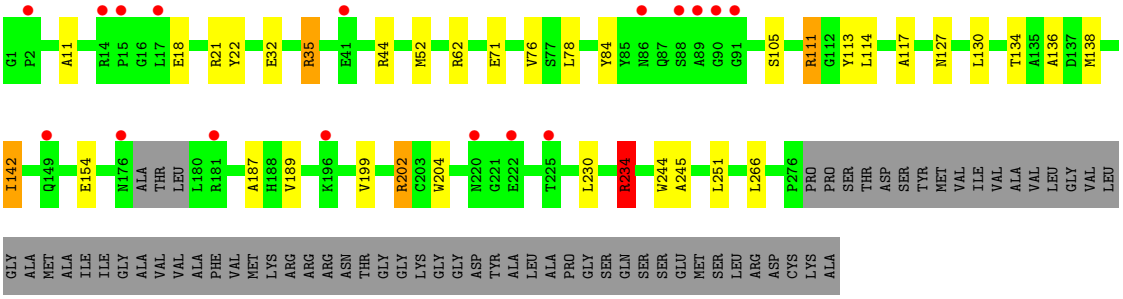
• Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

Chain A:



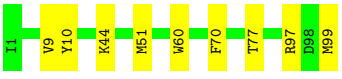
• Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

Chain D:



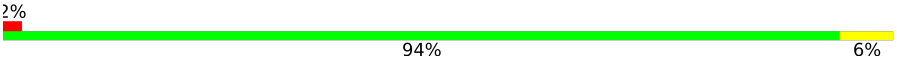
• Molecule 2: Beta-2-microglobulin

Chain B:



• Molecule 2: Beta-2-microglobulin

Chain E:



• Molecule 3: Early E1A protein

Chain C:

• Molecule 3: Early E1A protein

Chain F:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	47.14Å 69.24Å 87.16Å 84.20° 86.69° 81.75°	Depositor
Resolution (Å)	19.98 – 2.40 19.98 – 2.40	Depositor EDS
% Data completeness (in resolution range)	96.7 (19.98-2.40) 96.8 (19.98-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$< I/\sigma(I) >$ [1]	1.93 (at 2.41Å)	Xtriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.198 , 0.233 0.202 , 0.237	Depositor DCC
R_{free} test set	2000 reflections (4.88%)	wwPDB-VP
Wilson B-factor (Å^2)	39.0	Xtriage
Anisotropy	0.152	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 34.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	6479	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.17% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	0.76	0/2313	0.91	6/3138 (0.2%)
1	D	0.72	0/2321	0.90	7/3149 (0.2%)
2	B	0.70	0/847	0.86	1/1148 (0.1%)
2	E	0.72	0/847	0.85	0/1148
3	C	0.88	0/72	0.97	0/98
3	F	0.81	0/72	0.88	0/98
All	All	0.74	0/6472	0.89	14/8779 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	D	0	1
All	All	0	2

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	35	ARG	NE-CZ-NH2	-8.54	116.03	120.30
1	D	35	ARG	NE-CZ-NH2	-7.33	116.64	120.30
1	A	35	ARG	NE-CZ-NH1	7.04	123.82	120.30
1	D	35	ARG	NE-CZ-NH1	5.94	123.27	120.30
1	D	202	ARG	NE-CZ-NH1	5.73	123.17	120.30
1	A	202	ARG	NE-CZ-NH1	5.70	123.15	120.30
2	B	97	ARG	NE-CZ-NH1	5.43	123.02	120.30
1	D	111[A]	ARG	NE-CZ-NH2	5.40	123.00	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	111[B]	ARG	NE-CZ-NH2	5.40	123.00	120.30
1	A	202	ARG	NE-CZ-NH2	-5.30	117.65	120.30
1	A	62	ARG	NE-CZ-NH1	5.18	122.89	120.30
1	A	137	ASP	CB-CG-OD2	5.17	122.96	118.30
1	D	234	ARG	NE-CZ-NH2	-5.17	117.72	120.30
1	D	62	ARG	NE-CZ-NH1	5.13	122.86	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	136	ALA	Peptide
1	D	136	ALA	Peptide

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	2244	0	2119	22	0
1	D	2252	0	2125	20	0
2	B	821	0	796	6	0
2	E	821	0	796	2	0
3	C	70	0	66	2	0
3	F	70	0	66	1	0
4	A	10	0	0	2	0
4	B	5	0	0	0	0
4	E	5	0	0	0	0
5	A	18	0	24	2	0
5	B	12	0	16	3	0
5	D	6	0	8	0	0
5	E	12	0	16	0	0
6	A	4	0	0	0	0
6	B	3	0	0	0	0
6	D	2	0	0	0	0
6	E	2	0	0	0	0
7	A	52	0	0	1	0
7	B	16	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	C	1	0	0	0	0
7	D	39	0	0	1	0
7	E	12	0	0	0	0
7	F	2	0	0	0	0
All	All	6479	0	6032	45	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 4.

All (45) 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)
1:D:84:TYR:CZ	1:D:142:ILE:HD11	2.23	0.73
1:D:84:TYR:CE1	1:D:142:ILE:HD11	2.23	0.72
1:A:23:ILE:HD12	5:A:404:GOL:H11	1.70	0.72
1:A:1:GLY:N	7:A:503:HOH:O	2.31	0.63
1:A:32:GLU:OE2	1:A:35:ARG:HD2	2.09	0.53
1:D:76:VAL:HG12	3:F:9:GLU:HG3	1.89	0.52
1:D:32:GLU:OE2	1:D:35:ARG:HD2	2.09	0.52
1:A:23:ILE:HD12	5:A:404:GOL:C1	2.40	0.52
1:A:111[A]:ARG:NH1	1:A:112:GLY:O	2.42	0.52
1:D:11:ALA:HA	1:D:21:ARG:O	2.10	0.52
1:A:11:ALA:HA	1:A:21:ARG:O	2.10	0.51
1:A:202:ARG:HG2	1:A:204:TRP:NE1	2.26	0.51
1:D:84:TYR:CE2	1:D:142:ILE:HD11	2.48	0.49
1:D:234:ARG:NH2	2:E:99:MET:O	2.44	0.49
1:D:202:ARG:HG2	1:D:204:TRP:NE1	2.27	0.49
1:D:84:TYR:CD1	1:D:142:ILE:HD11	2.48	0.48
1:A:234:ARG:NH2	2:B:99:MET:O	2.43	0.47
1:D:127:ASN:HD21	1:D:134:THR:HG1	1.60	0.47
4:A:402:SO4:O4	5:B:103:GOL:O3	2.32	0.47
2:B:51:MET:HG2	5:B:103:GOL:H2	1.96	0.46
1:A:111[A]:ARG:HD2	1:A:128:GLU:CD	2.35	0.46
1:A:117:ALA:HB2	2:B:60:TRP:CE2	2.51	0.45
1:D:52:MET:HA	1:D:52:MET:HE2	1.98	0.45
2:B:9:VAL:H	5:B:102:GOL:H2	1.81	0.45
1:A:145:ARG:NH2	4:A:401:SO4:O1	2.50	0.45
1:A:18:GLU:HG3	1:A:19:GLU:O	2.18	0.44
1:A:76:VAL:HG12	3:C:9:GLU:HG2	2.00	0.44
1:D:202:ARG:HD2	1:D:244:TRP:CD2	2.53	0.44
1:D:22:TYR:CB	1:D:71:GLU:HG3	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:117:ALA:HB2	2:E:60:TRP:CE2	2.54	0.43
1:D:187:ALA:HA	1:D:204:TRP:O	2.19	0.43
1:A:111[A]:ARG:HH11	1:A:111[A]:ARG:HG3	1.84	0.42
1:D:111[A]:ARG:HD2	1:D:113:TYR:CZ	2.54	0.42
1:A:234:ARG:HD3	2:B:10:TYR:CZ	2.55	0.42
1:D:111[B]:ARG:NH1	7:D:503:HOH:O	2.48	0.42
1:A:22:TYR:CB	1:A:71:GLU:HG3	2.50	0.42
1:A:234:ARG:HD3	2:B:10:TYR:CE2	2.55	0.42
1:A:76:VAL:CG1	3:C:9:GLU:HG2	2.50	0.41
1:A:202:ARG:HD2	1:A:244:TRP:CD2	2.55	0.41
1:A:9:GLU:O	1:A:96:GLN:HA	2.21	0.41
1:A:187:ALA:HA	1:A:204:TRP:O	2.20	0.41
1:A:215:LEU:HD22	1:A:261:VAL:HG22	2.03	0.41
1:D:22:TYR:HB3	1:D:71:GLU:HG3	2.03	0.41
1:D:142:ILE:HD13	1:D:142:ILE:HG21	1.76	0.40
1:D:230:LEU:HD23	1:D:245:ALA:HB2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	269/338 (80%)	261 (97%)	8 (3%)	0	100 100
1	D	270/338 (80%)	260 (96%)	10 (4%)	0	100 100
2	B	97/99 (98%)	96 (99%)	1 (1%)	0	100 100
2	E	97/99 (98%)	96 (99%)	1 (1%)	0	100 100
3	C	8/10 (80%)	7 (88%)	1 (12%)	0	100 100
3	F	8/10 (80%)	7 (88%)	0	1 (12%)	0 0
All	All	749/894 (84%)	727 (97%)	21 (3%)	1 (0%)	51 68

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	F	9	GLU

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	232/280 (83%)	217 (94%)	15 (6%)	17 27
1	D	233/280 (83%)	219 (94%)	14 (6%)	19 31
2	B	94/94 (100%)	91 (97%)	3 (3%)	39 59
2	E	94/94 (100%)	90 (96%)	4 (4%)	29 46
3	C	9/9 (100%)	8 (89%)	1 (11%)	6 8
3	F	9/9 (100%)	9 (100%)	0	100 100
All	All	671/766 (88%)	634 (94%)	37 (6%)	22 35

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	GLU
1	A	78	LEU
1	A	105	SER
1	A	110	LEU
1	A	111[A]	ARG
1	A	111[B]	ARG
1	A	114	LEU
1	A	130	LEU
1	A	142	ILE
1	A	154	GLU
1	A	180	LEU
1	A	189	VAL
1	A	234	ARG
1	A	251	LEU
1	A	266	LEU
2	B	44	LYS

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Mol	Chain	Res	Type
2	B	70	PHE
2	B	77	THR
3	C	9	GLU
1	D	18	GLU
1	D	44	ARG
1	D	78	LEU
1	D	105	SER
1	D	114	LEU
1	D	130	LEU
1	D	138	MET
1	D	142	ILE
1	D	154	GLU
1	D	189	VAL
1	D	199	VAL
1	D	234	ARG
1	D	251	LEU
1	D	266	LEU
2	E	1	ILE
2	E	45	LYS
2	E	70	PHE
2	E	77	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	3	HIS
1	D	127	ASN

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)

Of 23 ligands modelled in this entry, 11 are monoatomic - leaving 12 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	$\#\|Z\| > 2$
5	GOL	B	103	-	5,5,5	0.70	0	5,5,5	0.81	0
4	SO4	E	101	-	4,4,4	0.53	0	6,6,6	0.35	0
5	GOL	A	405	-	5,5,5	0.66	0	5,5,5	1.43	0
5	GOL	E	102	-	5,5,5	0.91	0	5,5,5	1.03	0
5	GOL	B	102	-	5,5,5	1.11	0	5,5,5	1.66	1 (20%)
5	GOL	D	401	-	5,5,5	0.45	0	5,5,5	0.35	0
4	SO4	A	402	-	4,4,4	0.41	0	6,6,6	0.21	0
5	GOL	E	103	-	5,5,5	0.27	0	5,5,5	0.63	0
4	SO4	A	401	-	4,4,4	0.33	0	6,6,6	0.21	0
5	GOL	A	403	-	5,5,5	0.23	0	5,5,5	0.44	0
4	SO4	B	101	-	4,4,4	0.38	0	6,6,6	0.52	0
5	GOL	A	404	-	5,5,5	0.51	0	5,5,5	0.82	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	B	103	-	-	2/4/4/4	-
5	GOL	A	405	-	-	2/4/4/4	-
5	GOL	E	102	-	-	4/4/4/4	-
5	GOL	B	102	-	-	4/4/4/4	-
5	GOL	D	401	-	-	1/4/4/4	-
5	GOL	E	103	-	-	2/4/4/4	-
5	GOL	A	403	-	-	2/4/4/4	-
5	GOL	A	404	-	-	2/4/4/4	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	B	102	GOL	O1-C1-C2	2.84	123.82	110.20

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	403	GOL	O1-C1-C2-C3
5	B	102	GOL	O1-C1-C2-C3
5	B	103	GOL	O1-C1-C2-C3
5	E	102	GOL	O1-C1-C2-C3
5	E	102	GOL	O2-C2-C3-O3
5	A	403	GOL	O1-C1-C2-O2
5	B	103	GOL	O1-C1-C2-O2
5	A	405	GOL	C1-C2-C3-O3
5	B	102	GOL	C1-C2-C3-O3
5	E	102	GOL	C1-C2-C3-O3
5	B	102	GOL	O2-C2-C3-O3
5	B	102	GOL	O1-C1-C2-O2
5	E	102	GOL	O1-C1-C2-O2
5	A	405	GOL	O2-C2-C3-O3
5	E	103	GOL	O1-C1-C2-O2
5	E	103	GOL	O1-C1-C2-C3
5	A	404	GOL	O2-C2-C3-O3
5	A	404	GOL	C1-C2-C3-O3
5	D	401	GOL	C1-C2-C3-O3

There are no ring outliers.

5 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	103	GOL	2	0
5	B	102	GOL	1	0
4	A	402	SO4	1	0
4	A	401	SO4	1	0
5	A	404	GOL	2	0

5.7 Other polymers

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

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, 95^{th} 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	272/338 (80%)	-0.01	14 (5%) 28 26	23, 43, 81, 112	0
1	D	273/338 (80%)	0.11	17 (6%) 20 19	24, 47, 89, 113	0
2	B	99/99 (100%)	-0.16	0 100 100	25, 43, 65, 78	0
2	E	99/99 (100%)	-0.07	2 (2%) 65 63	29, 48, 76, 81	0
3	C	10/10 (100%)	-0.72	0 100 100	26, 29, 37, 39	0
3	F	10/10 (100%)	-0.42	0 100 100	31, 35, 48, 50	0
All	All	763/894 (85%)	-0.01	33 (4%) 35 33	23, 44, 81, 113	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	17	LEU	5.4
1	D	17	LEU	5.3
1	D	2	PRO	3.7
1	A	16	GLY	3.3
1	D	176	ASN	3.0
1	D	220	ASN	2.9
1	A	225	THR	2.9
1	D	90	GLY	2.9
1	D	41	GLU	2.8
1	A	181	ARG	2.8
1	D	89	ALA	2.8
1	D	225	THR	2.7
1	A	89	ALA	2.6
1	A	180	LEU	2.6
1	D	196	LYS	2.5
1	A	222	GLU	2.4
1	A	196	LYS	2.4
1	A	18	GLU	2.4
1	A	230	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	149	GLN	2.4
1	D	86	ASN	2.4
1	A	226	GLN	2.3
1	D	222	GLU	2.3
1	D	14	ARG	2.3
1	A	41	GLU	2.3
1	D	15	PRO	2.2
2	E	89	GLU	2.2
1	A	220	ASN	2.2
1	D	91	GLY	2.2
1	D	181	ARG	2.1
1	D	88	SER	2.1
2	E	74	GLU	2.0
1	A	90	GLY	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, 95^{th} 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	A	401	5/5	0.62	0.42	130,141,145,154	0
5	GOL	D	401	6/6	0.74	0.24	64,73,77,80	0
4	SO4	A	402	5/5	0.76	0.31	125,125,129,134	0
4	SO4	B	101	5/5	0.79	0.28	84,104,112,121	0
5	GOL	E	102	6/6	0.83	0.26	51,61,67,68	0
6	CL	A	406	1/1	0.84	0.10	72,72,72,72	0
6	CL	D	402	1/1	0.87	0.17	61,61,61,61	0
5	GOL	B	102	6/6	0.90	0.25	49,50,53,55	0
5	GOL	B	103	6/6	0.90	0.14	52,62,64,65	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	CL	E	104	1/1	0.90	0.07	63,63,63,63	0
5	GOL	A	405	6/6	0.92	0.21	35,44,47,64	0
5	GOL	A	403	6/6	0.94	0.12	53,59,60,60	0
4	SO4	E	101	5/5	0.94	0.35	72,72,79,85	0
5	GOL	E	103	6/6	0.94	0.19	55,60,62,66	0
6	CL	B	106	1/1	0.95	0.06	58,58,58,58	0
5	GOL	A	404	6/6	0.95	0.21	40,41,44,46	0
6	CL	D	403	1/1	0.95	0.07	70,70,70,70	0
6	CL	A	408	1/1	0.95	0.10	64,64,64,64	0
6	CL	B	104	1/1	0.96	0.10	60,60,60,60	0
6	CL	A	407	1/1	0.97	0.05	64,64,64,64	0
6	CL	B	105	1/1	0.97	0.08	62,62,62,62	0
6	CL	E	105	1/1	0.98	0.04	54,54,54,54	0
6	CL	A	409	1/1	0.99	0.03	57,57,57,57	0

6.5 Other polymers (i)

There are no such residues in this entry.