



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 10:07 AM UTC

PDB ID : 3REW / pdb_00003rew
Title : Crystal structure of an Imp2a-derived peptide bound to human class I MHC HLA-A*02:01
Authors : Wood, A.; Mohammed, F.; Salim, M.; Tranter, A.; Rickinson, A.B.; Moss, P.A.H.; Stauss, H.J.; Steven, N.M.; Willcox, B.E.
Deposited on : 2011-04-05
Resolution : 1.90 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

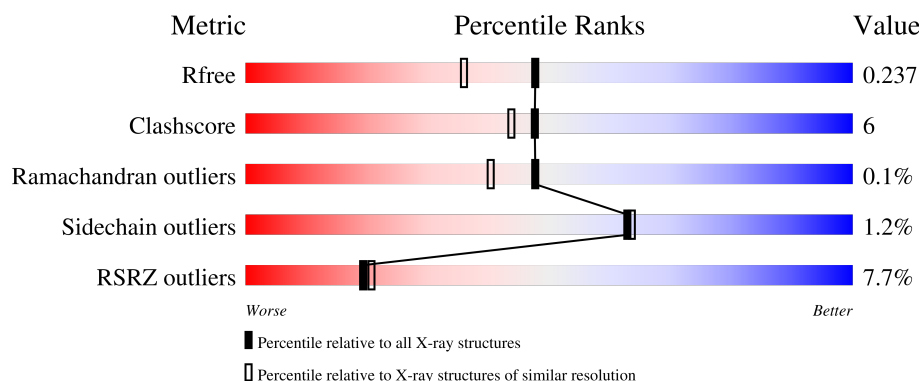
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.90 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	7789 (1.90-1.90)
Clashscore	190562	8410 (1.90-1.90)
Ramachandran outliers	187476	8333 (1.90-1.90)
Sidechain outliers	187428	8333 (1.90-1.90)
RSRZ outliers	180081	7790 (1.90-1.90)

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

Mol	Chain	Length	Quality of chain
1	A	275	7% 92% 7%
1	D	275	10% 89% 8%
2	B	99	3% 90% 9%
2	E	99	7% 90% 9%
3	C	9	78% 22%

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Mol	Chain	Length	Quality of chain
3	F	9	 67% 33%

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 6699 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 HLA class I histocompatibility antigen, A-2 alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	271	Total	C	N	O	S	37	2	0
			2219	1386	403	421	9			
1	D	271	Total	C	N	O	S	32	5	0
			2231	1392	407	423	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	31	2	0
			837	533	143	158	3			
2	E	99	Total	C	N	O	S	24	0	0
			829	528	140	158	3			

- Molecule 3 is a protein called Latent membrane protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	9	Total	C	N	O	S	0	0	0
			61	39	9	11	2			
3	F	9	Total	C	N	O	S	0	0	0
			61	39	9	11	2			

- Molecule 4 is IODIDE ION (CCD ID: IOD) (formula: I).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	3	Total	I	0	0
			3	3		
4	B	1	Total	I	0	0
			1	1		
4	C	1	Total	I	0	0
			1	1		
4	D	1	Total	I	0	0
			1	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	E	1	Total I 1 1	0	0
4	F	1	Total I 1 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0

- Molecule 6 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total Cl 1 1	0	0
6	D	2	Total Cl 2 2	0	0
6	E	2	Total Cl 2 2	0	0

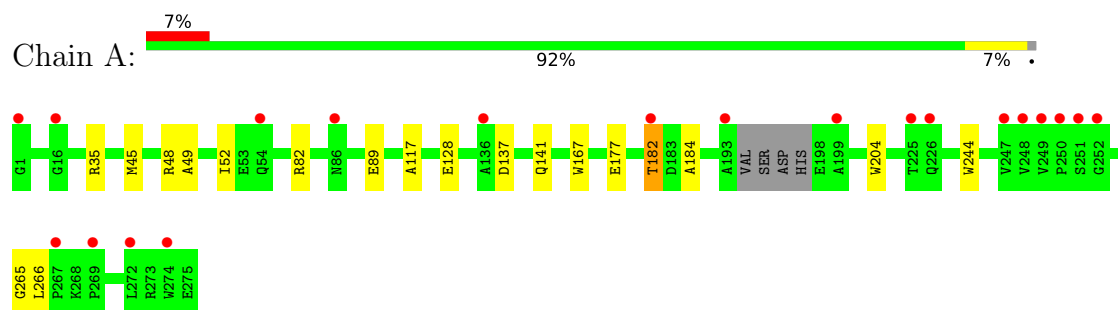
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	158	Total 158	O 158	0	0
7	B	63	Total 63	O 63	0	0
7	C	4	Total 4	O 4	0	0
7	D	150	Total 150	O 150	0	0
7	E	62	Total 62	O 62	0	0
7	F	3	Total 3	O 3	0	0

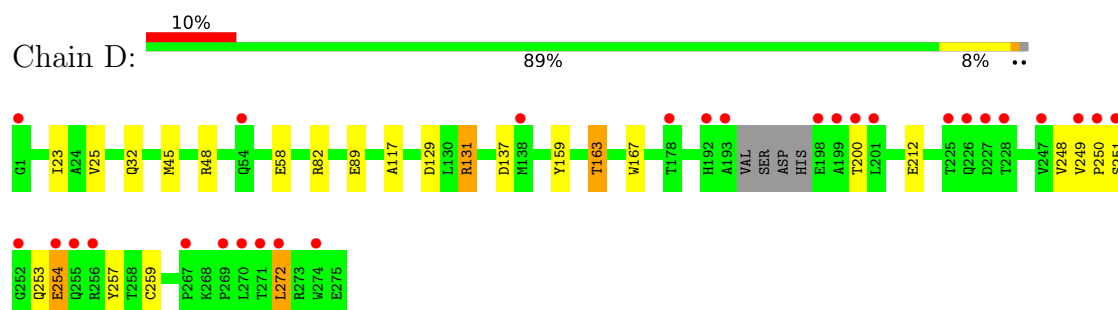
3 Residue-property plots

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.

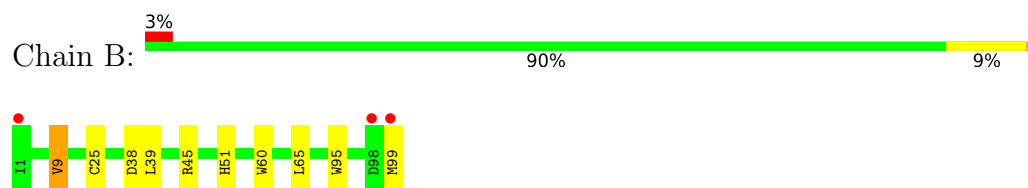
- Molecule 1: HLA class I histocompatibility antigen, A-2 alpha chain



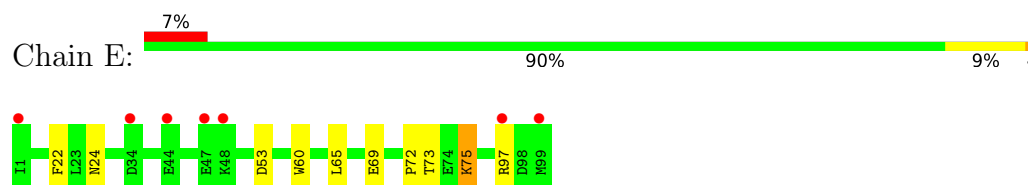
- Molecule 1: HLA class I histocompatibility antigen, A-2 alpha chain



- Molecule 2: Beta-2-microglobulin



- Molecule 2: Beta-2-microglobulin



- Molecule 3: Latent membrane protein 2

Chain C:  78% 22%



● Molecule 3: Latent membrane protein 2

Chain F:  67% 33%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	49.75Å 141.44Å 141.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.11 – 1.90 39.11 – 1.90	Depositor EDS
% Data completeness (in resolution range)	99.7 (39.11-1.90) 99.7 (39.11-1.90)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.35 (at 1.89Å)	Xtriage
Refinement program	REFMAC 5.0, CNS	Depositor
R, R_{free}	0.208 , 0.239 (Not available) , 0.237	Depositor DCC
R_{free} test set	4014 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	20.5	Xtriage
Anisotropy	0.038	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 39.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.013 for -h,l,k	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	6699	wwPDB-VP
Average B, all atoms (Å ²)	22.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.74% 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

5.1 Standard geometry

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

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	0.80	0/2292	0.82	0/3108
1	D	0.83	1/2321 (0.0%)	0.86	1/3147 (0.0%)
2	B	0.72	0/870	0.76	0/1176
2	E	0.78	0/852	0.86	1/1152 (0.1%)
3	C	0.96	0/60	0.88	0/78
3	F	0.97	0/60	0.94	0/78
All	All	0.80	1/6455 (0.0%)	0.83	2/8739 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	23	ILE	CA-CB	5.79	1.61	1.54

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	75	LYS	N-CA-CB	6.90	120.68	110.33
1	D	137	ASP	N-CA-C	5.19	115.09	108.24

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2219	0	2074	29	0
1	D	2231	0	2083	26	0
2	B	837	0	808	10	0
2	E	829	0	794	6	0
3	C	61	0	71	7	0
3	F	61	0	71	9	0
4	A	3	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
5	A	4	0	6	0	0
5	B	4	0	6	0	0
6	B	1	0	0	0	0
6	D	2	0	0	1	0
6	E	2	0	0	0	0
7	A	158	0	0	1	0
7	B	63	0	0	0	0
7	C	4	0	0	0	0
7	D	150	0	0	0	0
7	E	62	0	0	0	0
7	F	3	0	0	0	0
All	All	6699	0	5913	66	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 6.

All (66) 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:A:167:TRP:CD1	3:C:1:CYS:HG	1.25	1.54
1:D:167:TRP:CD1	3:F:1:CYS:HG	1.25	1.54
1:D:167:TRP:HD1	3:F:1:CYS:SG	1.31	1.53
1:A:167:TRP:HD1	3:C:1:CYS:SG	1.33	1.50
1:D:167:TRP:CD1	3:F:1:CYS:SG	2.24	1.13
1:A:167:TRP:CD1	3:C:1:CYS:SG	2.26	1.11
1:A:35:ARG:HG2	1:A:48:ARG:HD2	1.65	0.76
1:A:204:TRP:HZ2	2:B:99:MET:O	1.69	0.76
1:D:250:PRO:HG2	1:D:253:GLN:HB2	1.72	0.71
1:D:167:TRP:CD1	3:F:1:CYS:CB	2.77	0.68
1:D:159:TYR:HA	1:D:163:THR:HG23	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:204:TRP:CZ2	2:B:99:MET:O	2.49	0.64
1:A:177:GLU:HG2	7:A:432:HOH:O	1.98	0.63
1:A:167:TRP:CD1	3:C:1:CYS:CB	2.84	0.61
1:D:249:VAL:HG23	1:D:257:TYR:CE1	2.38	0.59
1:A:82:ARG:NH1	1:A:89:GLU:HG3	2.18	0.58
2:E:24:ASN:HB3	2:E:65:LEU:HD11	1.87	0.56
2:E:22:PHE:CZ	2:E:69:GLU:HG2	2.41	0.56
1:D:45:MET:CE	3:F:2:LEU:HD11	2.34	0.56
1:A:82:ARG:HH11	1:A:89:GLU:HG3	1.72	0.55
2:E:73:THR:O	2:E:97:ARG:NH2	2.41	0.54
1:D:167:TRP:HA	1:D:167:TRP:CE3	2.44	0.53
1:A:182[B]:THR:CG2	1:A:265:GLY:CA	2.86	0.53
1:D:167:TRP:HA	1:D:167:TRP:HE3	1.75	0.52
1:A:182[B]:THR:HG22	1:A:265:GLY:HA3	1.93	0.51
1:D:167:TRP:CD1	3:F:1:CYS:HB3	2.46	0.50
1:D:25[A]:VAL:HG13	1:D:32:GLN:NE2	2.26	0.50
1:A:182[B]:THR:HG21	1:A:265:GLY:HA2	1.92	0.50
1:D:131:ARG:HH11	1:D:131:ARG:HG3	1.76	0.49
1:A:45:MET:CE	3:C:2:LEU:HD11	2.43	0.49
1:A:117:ALA:HB2	2:B:60:TRP:CE2	2.47	0.49
1:D:82[B]:ARG:HD2	1:D:89:GLU:HA	1.94	0.49
1:A:182[B]:THR:HG22	1:A:265:GLY:CA	2.43	0.48
1:A:184:ALA:HB1	1:A:266:LEU:HD23	1.96	0.48
2:B:9[A]:VAL:HG23	2:B:95:TRP:HA	1.95	0.48
1:A:128:GLU:H	1:A:128:GLU:CD	2.21	0.47
1:D:131:ARG:HH11	1:D:131:ARG:CG	2.27	0.47
1:A:137:ASP:O	1:A:141:GLN:HG2	2.14	0.47
1:D:117:ALA:HB2	2:E:60:TRP:CE2	2.49	0.47
2:B:38:ASP:OD1	2:B:45:ARG:NH1	2.47	0.46
1:A:182[B]:THR:CG2	1:A:265:GLY:HA2	2.45	0.46
1:D:249:VAL:HG11	1:D:254:GLU:HG3	1.97	0.46
2:B:51:HIS:HA	2:B:65:LEU:O	2.16	0.46
1:A:182[B]:THR:HG21	1:A:265:GLY:CA	2.46	0.46
2:E:72:PRO:HB2	2:E:97:ARG:NH2	2.30	0.46
1:D:25[A]:VAL:CG1	1:D:32:GLN:HG3	2.46	0.45
1:A:167:TRP:HA	1:A:167:TRP:CE3	2.51	0.45
1:A:49:ALA:O	1:A:52:ILE:HG22	2.17	0.45
1:D:129:ASP:O	1:D:131:ARG:HG3	2.17	0.44
1:D:200:THR:HG22	1:D:248:VAL:HG22	1.99	0.44
1:A:35:ARG:HG2	1:A:48:ARG:CD	2.43	0.44
1:A:167:TRP:HA	1:A:167:TRP:HE3	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:259:CYS:HB3	1:D:272:LEU:HB2	2.00	0.43
6:D:277:CL:CL	3:F:9:VAL:OXT	2.73	0.43
1:D:131:ARG:HG3	1:D:131:ARG:NH1	2.34	0.43
1:D:48:ARG:HD2	2:E:53:ASP:OD2	2.19	0.43
1:A:244:TRP:HE1	2:B:99:MET:HE1	1.84	0.43
1:A:244:TRP:NE1	2:B:99:MET:CE	2.82	0.42
3:C:1:CYS:SG	3:C:1:CYS:O	2.77	0.42
1:D:45:MET:HE1	3:F:2:LEU:HD11	2.01	0.42
1:A:244:TRP:NE1	2:B:99:MET:HE3	2.36	0.41
1:A:167:TRP:CD1	3:C:1:CYS:HB3	2.54	0.41
2:B:25:CYS:HB2	2:B:39:LEU:HD21	2.03	0.41
3:F:1:CYS:SG	3:F:1:CYS:O	2.78	0.41

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	269/275 (98%)	261 (97%)	8 (3%)	0	100	100
1	D	272/275 (99%)	267 (98%)	4 (2%)	1 (0%)	30	22
2	B	99/99 (100%)	98 (99%)	1 (1%)	0	100	100
2	E	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
3	C	7/9 (78%)	7 (100%)	0	0	100	100
3	F	7/9 (78%)	7 (100%)	0	0	100	100
All	All	751/766 (98%)	736 (98%)	14 (2%)	1 (0%)	48	40

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	251	SER

5.3.2 Protein sidechains ⓘ

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	229/231 (99%)	227 (99%)	2 (1%)	70	73
1	D	232/231 (100%)	227 (98%)	5 (2%)	45	42
2	B	96/94 (102%)	94 (98%)	2 (2%)	47	44
2	E	94/94 (100%)	93 (99%)	1 (1%)	65	67
3	C	7/7 (100%)	7 (100%)	0	100	100
3	F	7/7 (100%)	7 (100%)	0	100	100
All	All	665/664 (100%)	655 (98%)	10 (2%)	63	56

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	182[A]	THR
1	A	182[B]	THR
2	B	9[A]	VAL
2	B	9[B]	VAL
1	D	131	ARG
1	D	163	THR
1	D	212	GLU
1	D	254	GLU
1	D	272	LEU
2	E	75	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	GLN
1	A	86	ASN
1	A	87	GLN
2	B	13	HIS
1	D	43	GLN
1	D	115	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 13 are monoatomic - leaving 2 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	EDO	A	279	-	3,3,3	0.42	0	2,2,2	0.54	0
5	EDO	B	102	-	3,3,3	0.70	0	2,2,2	0.31	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	EDO	A	279	-	-	1/1/1/1	-
5	EDO	B	102	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	279	EDO	O1-C1-C2-O2

There are no ring outliers.

No monomer is involved in short contacts.

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

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	271/275 (98%)	0.23	20 (7%)	20 22	11, 20, 36, 45	11 (4%)
1	D	271/275 (98%)	0.23	28 (10%)	12 12	8, 17, 37, 44	14 (5%)
2	B	99/99 (100%)	0.22	3 (3%)	52 56	12, 21, 31, 42	10 (10%)
2	E	99/99 (100%)	0.30	7 (7%)	22 23	9, 20, 36, 44	5 (5%)
3	C	9/9 (100%)	-0.33	0	100 100	11, 14, 17, 17	0
3	F	9/9 (100%)	-0.31	0	100 100	11, 12, 15, 16	0
All	All	758/766 (98%)	0.23	58 (7%)	19 21	8, 19, 36, 45	40 (5%)

All (58) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	1	ILE	7.5
1	D	193	ALA	5.1
1	D	249	VAL	4.7
1	D	225	THR	4.0
1	D	226	GLN	4.0
2	E	1	ILE	3.7
1	A	249	VAL	3.7
1	D	252	GLY	3.7
2	E	99	MET	3.6
1	D	250	PRO	3.5
1	A	199	ALA	3.3
1	A	251	SER	3.3
1	D	200	THR	3.2
1	A	267	PRO	3.2
1	D	199	ALA	3.1
1	D	228	THR	3.1
1	D	267	PRO	3.1
1	A	274	TRP	3.0
1	D	274	TRP	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	1	GLY	3.0
1	D	270	LEU	2.9
1	A	225	THR	2.9
1	D	269	PRO	2.8
1	A	250	PRO	2.8
1	D	251	SER	2.8
1	D	198	GLU	2.8
2	B	99	MET	2.8
1	A	193	ALA	2.7
2	B	98	ASP	2.7
1	A	226	GLN	2.7
1	A	269	PRO	2.6
1	D	255	GLN	2.6
1	A	86	ASN	2.6
1	A	272	LEU	2.6
1	A	16	GLY	2.6
2	E	34	ASP	2.5
1	A	248	VAL	2.5
1	D	201	LEU	2.4
1	D	54	GLN	2.4
1	A	182[A]	THR	2.4
1	D	256	ARG	2.3
1	D	138	MET	2.3
1	D	227	ASP	2.3
1	D	254	GLU	2.3
1	D	178	THR	2.2
1	D	271	THR	2.2
1	D	192	HIS	2.2
1	A	247	VAL	2.2
1	A	136	ALA	2.2
1	D	272	LEU	2.1
2	E	47	GLU	2.1
1	A	252	GLY	2.1
1	D	247	VAL	2.1
2	E	44	GLU	2.1
1	A	54	GLN	2.1
1	D	1	GLY	2.1
2	E	48	LYS	2.0
2	E	97	ARG	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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
5	EDO	B	102	4/4	0.79	0.15	34,35,35,35	0
5	EDO	A	279	4/4	0.91	0.10	33,36,36,38	0
6	CL	B	101	1/1	0.97	0.06	22,22,22,22	0
6	CL	D	277	1/1	0.97	0.25	38,38,38,38	0
6	CL	E	101	1/1	0.97	0.06	31,31,31,31	0
4	IOD	E	100	1/1	0.98	0.14	26,26,26,26	0
4	IOD	A	278	1/1	0.98	0.17	51,51,51,51	0
6	CL	D	278	1/1	0.98	0.08	30,30,30,30	0
4	IOD	B	100	1/1	0.98	0.06	32,32,32,32	0
6	CL	E	102	1/1	0.98	0.21	36,36,36,36	0
4	IOD	A	277	1/1	0.99	0.13	47,47,47,47	0
4	IOD	C	10	1/1	0.99	0.02	19,19,19,19	0
4	IOD	A	276	1/1	1.00	0.01	16,16,16,16	0
4	IOD	F	10	1/1	1.00	0.01	18,18,18,18	0
4	IOD	D	276	1/1	1.00	0.01	17,17,17,17	0

6.5 Other polymers [i](#)

There are no such residues in this entry.