



wwPDB X-ray Structure Validation Summary Report ⓘ

Jul 2, 2024 – 10:15 am BST

PDB ID : 8PMW
Title : HEV gt3 P domain in complex with glycan-sensitive nAb p60.1
Authors : Ssebyatika, G.; Krey, T.
Deposited on : 2023-06-29
Resolution : 1.98 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 : 1.8.4, 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

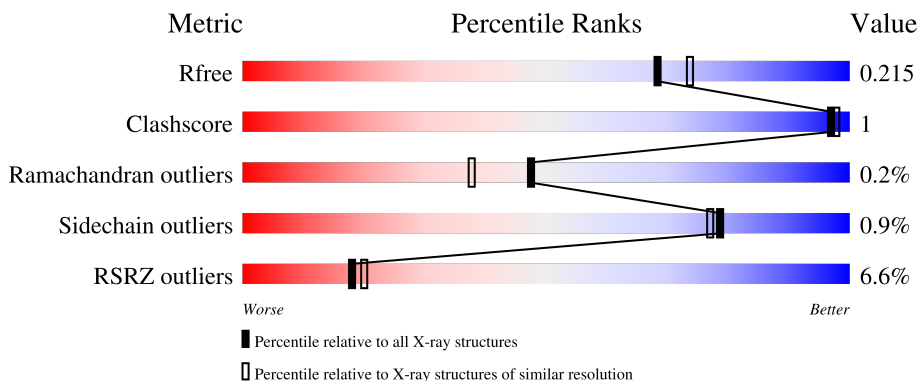
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.98 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	11647 (2.00-1.96)
Clashscore	141614	1014 (1.98-1.98)
Ramachandran outliers	138981	1006 (1.98-1.98)
Sidechain outliers	138945	1006 (1.98-1.98)
RSRZ outliers	127900	11410 (2.00-1.96)

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	251	
1	B	251	
1	G	251	
1	H	251	
2	C	211	

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Mol	Chain	Length	Quality of chain
2	D	211	<p>2% 72% 27%</p>
2	E	211	<p>6% 71% 28%</p>
2	F	211	<p>% 73% 26%</p>

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
3	ACT	D	701	-	-	-	X
3	ACT	G	301	-	-	-	X

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 8498 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 scFv_p60.1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	107	Total 803	C 501	N 138	O 161	S 3	0	0	0
1	B	120	Total 948	C 601	N 164	O 181	S 2	0	0	0
1	G	119	Total 942	C 598	N 163	O 179	S 2	0	0	0
1	H	107	Total 803	C 501	N 138	O 161	S 3	0	0	0

- Molecule 2 is a protein called Capsid protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	156	Total 1179	C 750	N 197	O 231	S 1	0	0	0
2	D	153	Total 1162	C 737	N 194	O 230	S 1	0	0	0
2	E	151	Total 1148	C 730	N 192	O 225	S 1	0	0	0
2	F	156	Total 1179	C 750	N 197	O 231	S 1	0	0	0

There are 28 discrepancies between the modelled and reference sequences:

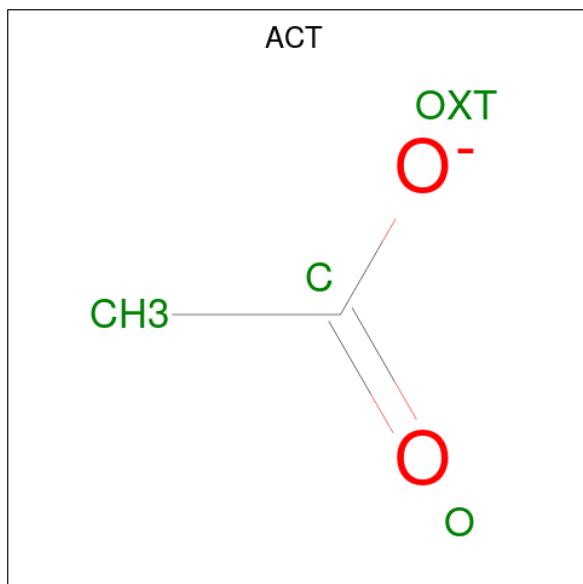
Chain	Residue	Modelled	Actual	Comment	Reference
C	463	GLY	-	expression tag	UNP A0A6C0PR31
C	464	ASP	-	expression tag	UNP A0A6C0PR31
C	465	ASP	-	expression tag	UNP A0A6C0PR31
C	466	ASP	-	expression tag	UNP A0A6C0PR31
C	467	ASP	-	expression tag	UNP A0A6C0PR31
C	468	LYS	-	expression tag	UNP A0A6C0PR31
C	513	PHE	LEU	conflict	UNP A0A6C0PR31
D	463	GLY	-	expression tag	UNP A0A6C0PR31

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Chain	Residue	Modelled	Actual	Comment	Reference
D	464	ASP	-	expression tag	UNP A0A6C0PR31
D	465	ASP	-	expression tag	UNP A0A6C0PR31
D	466	ASP	-	expression tag	UNP A0A6C0PR31
D	467	ASP	-	expression tag	UNP A0A6C0PR31
D	468	LYS	-	expression tag	UNP A0A6C0PR31
D	513	PHE	LEU	conflict	UNP A0A6C0PR31
E	463	GLY	-	expression tag	UNP A0A6C0PR31
E	464	ASP	-	expression tag	UNP A0A6C0PR31
E	465	ASP	-	expression tag	UNP A0A6C0PR31
E	466	ASP	-	expression tag	UNP A0A6C0PR31
E	467	ASP	-	expression tag	UNP A0A6C0PR31
E	468	LYS	-	expression tag	UNP A0A6C0PR31
E	513	PHE	LEU	conflict	UNP A0A6C0PR31
F	463	GLY	-	expression tag	UNP A0A6C0PR31
F	464	ASP	-	expression tag	UNP A0A6C0PR31
F	465	ASP	-	expression tag	UNP A0A6C0PR31
F	466	ASP	-	expression tag	UNP A0A6C0PR31
F	467	ASP	-	expression tag	UNP A0A6C0PR31
F	468	LYS	-	expression tag	UNP A0A6C0PR31
F	513	PHE	LEU	conflict	UNP A0A6C0PR31

- Molecule 3 is ACETATE ION (three-letter code: ACT) (formula: C₂H₃O₂).



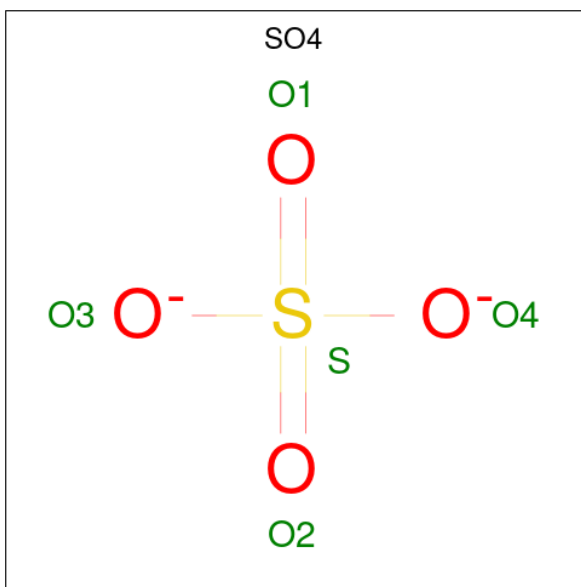
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	1	Total C O 4 2 2	0	0
3	D	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0

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



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	24	Total O 24 24	0	0
5	B	23	Total O 23 23	0	0
5	C	47	Total O 47 47	0	0
5	D	76	Total O 76 76	0	0

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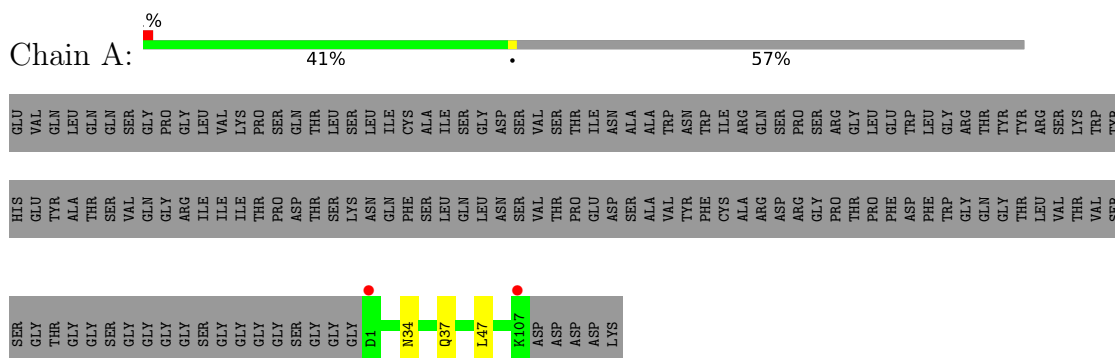
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	E	71	Total O 71 71	0	0
5	F	40	Total O 40 40	0	0
5	G	8	Total O 8 8	0	0
5	H	19	Total O 19 19	0	0

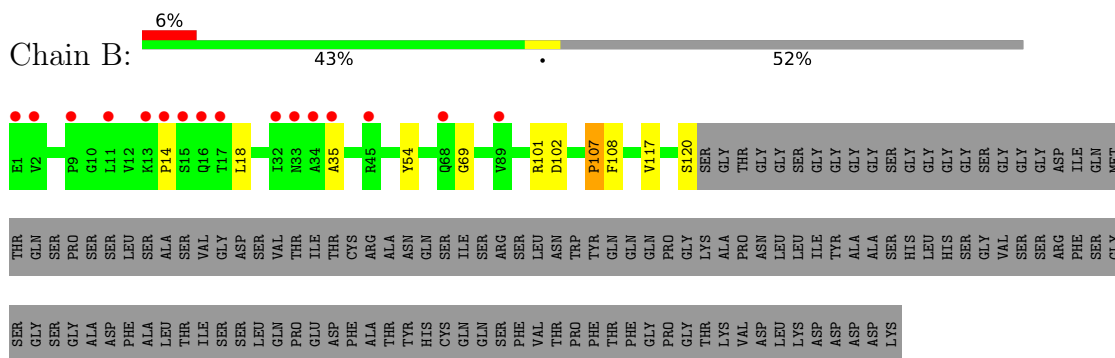
3 Residue-property plots [i](#)

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.

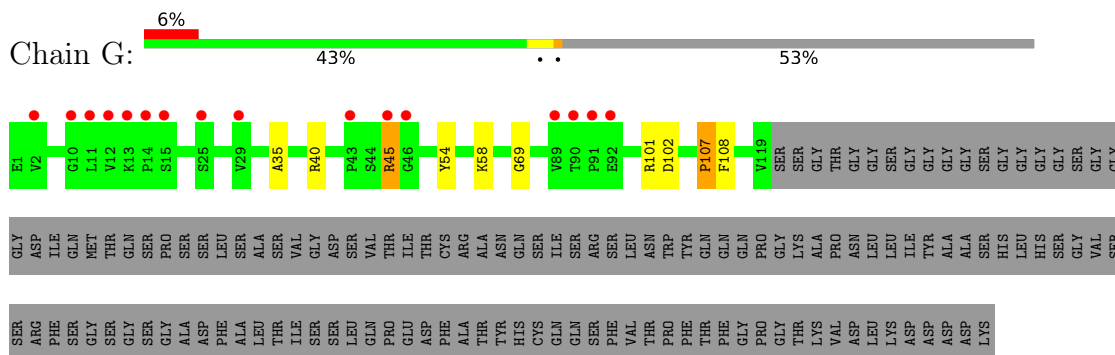
- Molecule 1: scFv_p60.1



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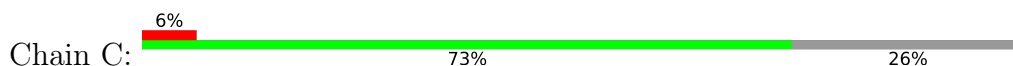


GLU VAL GLN LEU GLN SER GLY PRO LEU VAL LYS PRO GLN THR SER LEU SER LEU ILE CYS ALA ILE SER GLY ASP SER VAL SER THR ILE ASN ALA TRP ASN TRP ILE ARG GLN SER PRO ARG GLY LEU THR TYR ARG SER LYS TRP TRP SER

HIS GLU TYR ALA THR VAL GLN ARG ILE ILE THR PRO ASP THR LYS ASN GLN PHE SER LEU LEU LEU ASN VAL THR PRO THR LYS LEU LEU ASN SER VAL THR PRO GLU ASP ALA TRP ASP ALA TRP PHE CYS ARG ASP ARG PRO ARG THR PRO PHE THR PHE TRP GLY ARG GLN TYR THR LEU VAL THR VAL THR SER

SER GLY THR GLY SER GLY GLY GLY GLY GLY GLY GLY GLY GLY GLY D1 S9 V15 R34 Q37 L47 F100 K107 ASP ASP ASP LYS

- Molecule 2: Capsid protein



GLY ASP ASP D467 T496 T497 T510 S546 Y574 N575 T576 T577 A578 A588 G589 F605 V622 LEU GLU ASP THR THR ASP TYR PRO ALA ARG ALA HIS THR PHE ASP PHE CYS PRO GLU CYS ARG THR LEU GLY LEU LEU GLN CYS ALA PHE GLN THR SER THR ILE

ALA GLU LEU GLN ARG LEU LYS MET VAL GLY THR ARG SER

- Molecule 2: Capsid protein



GLY ASP D466 D467 K468 G586 R537 S618 ALA ALA VAL LEU LEU GLU ASP THR THR ASP TYR PRO ARG ALA ALA HIS THR PHE ASP ASP PHE CYS PRO GLU ARG THR LEU GLY LEU LEU GLN CYS ALA PHE THR SER THR ILE ALA GLU LEU LEU GLN ARG LEU LYS MET THR VAL

GLY LYS THR ARG GLU SER

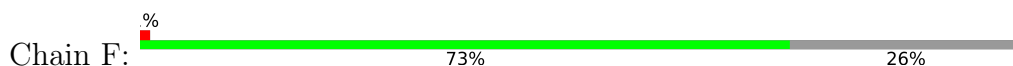
- Molecule 2: Capsid protein



GLY ASP D467 V511 R537 A568 G569 Y570 F571 Y574 A588 V592 A593 I594 S595 T596 Y597 T598 L601 H617 SER ALA LEU VAL LEU LEU GLU ASP THR THR TYR ASP PRO ALA ARG ALA HIS THR PHE ASP ASP PHE CYS PRO ARG ALA PHE THR SER THR ILE ALA GLU LEU LEU PHE GLN CYS ALA PHE THR SER THR ILE ALA GLU LEU LEU PHE GLN CYS ARG LEU LYS MET CYS ARG THR LEU LYS VAL

LEU GLN GLY CYS PHE GLN SER THR ILE ALA ALA GLU LEU GLN ARG LEU LYS MET LYS VAL GLY THR THR ARG GLU ARG MET LYS VAL

- Molecule 2: Capsid protein



GLY ASP D467 R525 Y574 A588 V622 LEU LEU ASP THR THR ASP TYR PRO ALA ARG ALA HIS THR PHE ASP ASP CYS PRO GLU CYS ARG THR LEU LEU GLY LEU GLN CYS ALA PHE GLN SER THR ILE ALA GLU LEU LEU PHE THR SER THR ILE ALA GLU LEU LEU PHE GLN CYS ARG LEU LYS MET LYS VAL LEU LYS

THR ARG GLU SER

4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	75.81Å 159.26Å 205.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.44 – 1.98 48.44 – 1.98	Depositor EDS
% Data completeness (in resolution range)	99.5 (48.44-1.98) 99.5 (48.44-1.98)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.38 (at 1.98Å)	Xtrriage
Refinement program	BUSTER 2.10.4	Depositor
R, R_{free}	0.206 , 0.227 0.195 , 0.215	Depositor DCC
R_{free} test set	4316 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	42.2	Xtrriage
Anisotropy	0.227	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 39.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	8498	wwPDB-VP
Average B, all atoms (Å ²)	45.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.38% 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, ACT

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	0.41	0/822	0.60	0/1117
1	B	0.38	0/974	0.59	0/1330
1	G	0.41	0/968	0.60	0/1322
1	H	0.42	0/822	0.59	0/1117
2	C	0.37	0/1208	0.58	0/1658
2	D	0.44	0/1191	0.59	0/1634
2	E	0.42	0/1177	0.59	0/1615
2	F	0.38	0/1208	0.57	0/1658
All	All	0.40	0/8370	0.59	0/11451

There are no bond length outliers.

There are no bond angle outliers.

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	803	0	770	2	0
1	B	948	0	917	6	0
1	G	942	0	912	7	0
1	H	803	0	770	2	0
2	C	1179	0	1161	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	1162	0	1135	0	0
2	E	1148	0	1126	1	0
2	F	1179	0	1161	0	0
3	A	4	0	3	0	0
3	C	4	0	3	0	0
3	D	4	0	3	0	0
3	G	4	0	3	0	0
4	A	5	0	0	0	0
4	H	5	0	0	0	0
5	A	24	0	0	0	0
5	B	23	0	0	0	0
5	C	47	0	0	0	0
5	D	76	0	0	0	0
5	E	71	0	0	0	0
5	F	40	0	0	0	0
5	G	8	0	0	0	0
5	H	19	0	0	0	0
All	All	8498	0	7964	15	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 1.

The worst 5 of 15 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:G:40:ARG:NH2	1:G:45:ARG:HH12	1.82	0.78
1:B:69:GLY:HA2	1:G:69:GLY:HA3	1.74	0.70
1:G:40:ARG:NH2	1:G:45:ARG:NH1	2.49	0.60
1:G:107:PRO:HG3	1:H:34:ASN:CG	2.32	0.50
1:A:34:ASN:CG	1:B:107:PRO:HG3	2.36	0.45

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	105/251 (42%)	101 (96%)	4 (4%)	0	100	100
1	B	118/251 (47%)	113 (96%)	4 (3%)	1 (1%)	19	9
1	G	117/251 (47%)	111 (95%)	5 (4%)	1 (1%)	17	8
1	H	105/251 (42%)	102 (97%)	3 (3%)	0	100	100
2	C	154/211 (73%)	150 (97%)	4 (3%)	0	100	100
2	D	151/211 (72%)	146 (97%)	5 (3%)	0	100	100
2	E	149/211 (71%)	145 (97%)	4 (3%)	0	100	100
2	F	154/211 (73%)	149 (97%)	5 (3%)	0	100	100
All	All	1053/1848 (57%)	1017 (97%)	34 (3%)	2 (0%)	47	38

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	107	PRO
1	G	107	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	91/206 (44%)	91 (100%)	0	100	100
1	B	105/206 (51%)	104 (99%)	1 (1%)	76	73
1	G	104/206 (50%)	101 (97%)	3 (3%)	42	31
1	H	91/206 (44%)	90 (99%)	1 (1%)	73	70
2	C	127/174 (73%)	126 (99%)	1 (1%)	81	80
2	D	126/174 (72%)	125 (99%)	1 (1%)	81	80
2	E	124/174 (71%)	124 (100%)	0	100	100
2	F	127/174 (73%)	126 (99%)	1 (1%)	81	80

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	895/1520 (59%)	887 (99%)	8 (1%)	78 77

5 of 8 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	1	ASP
1	G	102	ASP
1	G	45	ARG
2	F	574	TYR
1	G	58	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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](#)

6 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
3	ACT	G	301	-	3,3,3	0.59	0	3,3,3	2.01	2 (66%)
4	SO4	A	202	-	4,4,4	0.12	0	6,6,6	0.23	0
3	ACT	C	701	-	3,3,3	0.85	0	3,3,3	1.59	1 (33%)
3	ACT	D	701	-	3,3,3	1.09	0	3,3,3	1.54	1 (33%)
4	SO4	H	201	-	4,4,4	0.33	0	6,6,6	0.36	0
3	ACT	A	201	-	3,3,3	0.89	0	3,3,3	1.34	0

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	G	301	ACT	O-C-CH3	-2.56	112.37	122.33
3	G	301	ACT	OXT-C-O	2.31	130.58	122.05
3	D	701	ACT	OXT-C-O	2.08	129.72	122.05
3	C	701	ACT	OXT-C-O	2.02	129.50	122.05

There are no chirality outliers.

There are no torsion outliers.

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 [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, 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	107/251 (42%)	0.37	2 (1%) 66 68	35, 44, 58, 67	0
1	B	120/251 (47%)	0.93	16 (13%) 3 3	35, 49, 86, 98	0
1	G	119/251 (47%)	0.98	16 (13%) 3 3	34, 44, 76, 93	0
1	H	107/251 (42%)	0.40	5 (4%) 31 33	33, 44, 57, 70	0
2	C	156/211 (73%)	0.64	12 (7%) 13 15	35, 46, 62, 73	0
2	D	153/211 (72%)	0.14	4 (2%) 56 58	32, 39, 50, 82	0
2	E	151/211 (71%)	0.63	13 (8%) 10 11	30, 39, 50, 68	0
2	F	156/211 (73%)	0.35	3 (1%) 66 68	35, 46, 61, 69	0
All	All	1069/1848 (57%)	0.54	71 (6%) 18 20	30, 44, 66, 98	0

The worst 5 of 71 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	11	LEU	9.1
1	G	14	PRO	6.6
1	G	13	LYS	5.6
1	G	15	SER	5.0
1	G	2	VAL	4.9

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
3	ACT	D	701	4/4	0.33	0.41	67,68,68,68	0
3	ACT	C	701	4/4	0.57	0.22	66,66,66,67	0
3	ACT	G	301	4/4	0.62	0.46	68,68,68,68	0
3	ACT	A	201	4/4	0.83	0.27	54,54,54,54	0
4	SO4	A	202	5/5	0.97	0.13	50,51,52,52	0
4	SO4	H	201	5/5	0.97	0.11	56,57,57,57	0

6.5 Other polymers [i](#)

There are no such residues in this entry.