



# wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 12, 2024 – 02:40 PM EST

PDB ID : 3HE1  
Title : Secreted protein Hcp3 from *Pseudomonas aeruginosa*.  
Authors : Osipiuk, J.; Xu, X.; Cui, H.; Savchenko, A.; Edwards, A.M.; Joachimiak, A.;  
Midwest Center for Structural Genomics (MCSG)  
Deposited on : 2009-05-07  
Resolution : 2.10 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](mailto:validation@mail.wwpdb.org)

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

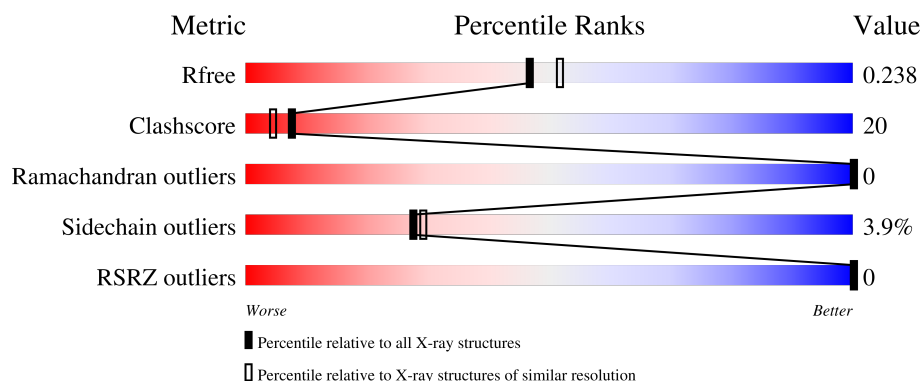
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 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))
$R_{free}$	164625	6234 (2.10-2.10)
Clashscore	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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

Mol	Chain	Length	Quality of chain
1	A	195	<div> <div>39%</div> <div>34%</div> <div>•</div> <div>25%</div> </div>
1	B	195	<div> <div>46%</div> <div>27%</div> <div>•</div> <div>27%</div> </div>
1	C	195	<div> <div>49%</div> <div>25%</div> <div>•</div> <div>25%</div> </div>
1	D	195	<div> <div>57%</div> <div>15%</div> <div>•</div> <div>27%</div> </div>
1	E	195	<div> <div>43%</div> <div>31%</div> <div>•</div> <div>25%</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	195	 A horizontal bar chart showing the quality of the chain. The bar is divided into three segments: a green segment on the left labeled '46%', a yellow segment in the middle labeled '26%', and a grey segment on the right labeled '27%'. A small black dot is located at the end of the yellow segment, just before the grey segment begins.

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 7705 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 Major exported Hcp3 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	147	Total	C	N	O	Se	0	3	0
			1186	753	199	231	3			
1	B	143	Total	C	N	O	Se	0	0	0
			1135	719	191	222	3			
1	C	147	Total	C	N	O	Se	0	1	0
			1173	745	196	229	3			
1	D	143	Total	C	N	O	Se	0	1	0
			1138	721	191	223	3			
1	E	147	Total	C	N	O	Se	1	3	0
			1189	754	200	232	3			
1	F	143	Total	C	N	O	Se	1	2	0
			1144	727	191	223	3			

There are 138 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MSE	-	expression tag	UNP Q9HI36
A	-20	GLY	-	expression tag	UNP Q9HI36
A	-19	SER	-	expression tag	UNP Q9HI36
A	-18	SER	-	expression tag	UNP Q9HI36
A	-17	HIS	-	expression tag	UNP Q9HI36
A	-16	HIS	-	expression tag	UNP Q9HI36
A	-15	HIS	-	expression tag	UNP Q9HI36
A	-14	HIS	-	expression tag	UNP Q9HI36
A	-13	HIS	-	expression tag	UNP Q9HI36
A	-12	HIS	-	expression tag	UNP Q9HI36
A	-11	SER	-	expression tag	UNP Q9HI36
A	-10	SER	-	expression tag	UNP Q9HI36
A	-9	GLY	-	expression tag	UNP Q9HI36
A	-8	ARG	-	expression tag	UNP Q9HI36
A	-7	GLU	-	expression tag	UNP Q9HI36
A	-6	ASN	-	expression tag	UNP Q9HI36
A	-5	LEU	-	expression tag	UNP Q9HI36

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	TYR	-	expression tag	UNP Q9HI36
A	-3	PHE	-	expression tag	UNP Q9HI36
A	-2	GLN	-	expression tag	UNP Q9HI36
A	-1	GLY	-	expression tag	UNP Q9HI36
A	0	HIS	-	expression tag	UNP Q9HI36
A	173	SER	-	expression tag	UNP Q9HI36
B	-21	MSE	-	expression tag	UNP Q9HI36
B	-20	GLY	-	expression tag	UNP Q9HI36
B	-19	SER	-	expression tag	UNP Q9HI36
B	-18	SER	-	expression tag	UNP Q9HI36
B	-17	HIS	-	expression tag	UNP Q9HI36
B	-16	HIS	-	expression tag	UNP Q9HI36
B	-15	HIS	-	expression tag	UNP Q9HI36
B	-14	HIS	-	expression tag	UNP Q9HI36
B	-13	HIS	-	expression tag	UNP Q9HI36
B	-12	HIS	-	expression tag	UNP Q9HI36
B	-11	SER	-	expression tag	UNP Q9HI36
B	-10	SER	-	expression tag	UNP Q9HI36
B	-9	GLY	-	expression tag	UNP Q9HI36
B	-8	ARG	-	expression tag	UNP Q9HI36
B	-7	GLU	-	expression tag	UNP Q9HI36
B	-6	ASN	-	expression tag	UNP Q9HI36
B	-5	LEU	-	expression tag	UNP Q9HI36
B	-4	TYR	-	expression tag	UNP Q9HI36
B	-3	PHE	-	expression tag	UNP Q9HI36
B	-2	GLN	-	expression tag	UNP Q9HI36
B	-1	GLY	-	expression tag	UNP Q9HI36
B	0	HIS	-	expression tag	UNP Q9HI36
B	173	SER	-	expression tag	UNP Q9HI36
C	-21	MSE	-	expression tag	UNP Q9HI36
C	-20	GLY	-	expression tag	UNP Q9HI36
C	-19	SER	-	expression tag	UNP Q9HI36
C	-18	SER	-	expression tag	UNP Q9HI36
C	-17	HIS	-	expression tag	UNP Q9HI36
C	-16	HIS	-	expression tag	UNP Q9HI36
C	-15	HIS	-	expression tag	UNP Q9HI36
C	-14	HIS	-	expression tag	UNP Q9HI36
C	-13	HIS	-	expression tag	UNP Q9HI36
C	-12	HIS	-	expression tag	UNP Q9HI36
C	-11	SER	-	expression tag	UNP Q9HI36
C	-10	SER	-	expression tag	UNP Q9HI36
C	-9	GLY	-	expression tag	UNP Q9HI36

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-8	ARG	-	expression tag	UNP Q9HI36
C	-7	GLU	-	expression tag	UNP Q9HI36
C	-6	ASN	-	expression tag	UNP Q9HI36
C	-5	LEU	-	expression tag	UNP Q9HI36
C	-4	TYR	-	expression tag	UNP Q9HI36
C	-3	PHE	-	expression tag	UNP Q9HI36
C	-2	GLN	-	expression tag	UNP Q9HI36
C	-1	GLY	-	expression tag	UNP Q9HI36
C	0	HIS	-	expression tag	UNP Q9HI36
C	173	SER	-	expression tag	UNP Q9HI36
D	-21	MSE	-	expression tag	UNP Q9HI36
D	-20	GLY	-	expression tag	UNP Q9HI36
D	-19	SER	-	expression tag	UNP Q9HI36
D	-18	SER	-	expression tag	UNP Q9HI36
D	-17	HIS	-	expression tag	UNP Q9HI36
D	-16	HIS	-	expression tag	UNP Q9HI36
D	-15	HIS	-	expression tag	UNP Q9HI36
D	-14	HIS	-	expression tag	UNP Q9HI36
D	-13	HIS	-	expression tag	UNP Q9HI36
D	-12	HIS	-	expression tag	UNP Q9HI36
D	-11	SER	-	expression tag	UNP Q9HI36
D	-10	SER	-	expression tag	UNP Q9HI36
D	-9	GLY	-	expression tag	UNP Q9HI36
D	-8	ARG	-	expression tag	UNP Q9HI36
D	-7	GLU	-	expression tag	UNP Q9HI36
D	-6	ASN	-	expression tag	UNP Q9HI36
D	-5	LEU	-	expression tag	UNP Q9HI36
D	-4	TYR	-	expression tag	UNP Q9HI36
D	-3	PHE	-	expression tag	UNP Q9HI36
D	-2	GLN	-	expression tag	UNP Q9HI36
D	-1	GLY	-	expression tag	UNP Q9HI36
D	0	HIS	-	expression tag	UNP Q9HI36
D	173	SER	-	expression tag	UNP Q9HI36
E	-21	MSE	-	expression tag	UNP Q9HI36
E	-20	GLY	-	expression tag	UNP Q9HI36
E	-19	SER	-	expression tag	UNP Q9HI36
E	-18	SER	-	expression tag	UNP Q9HI36
E	-17	HIS	-	expression tag	UNP Q9HI36
E	-16	HIS	-	expression tag	UNP Q9HI36
E	-15	HIS	-	expression tag	UNP Q9HI36
E	-14	HIS	-	expression tag	UNP Q9HI36
E	-13	HIS	-	expression tag	UNP Q9HI36

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-12	HIS	-	expression tag	UNP Q9HI36
E	-11	SER	-	expression tag	UNP Q9HI36
E	-10	SER	-	expression tag	UNP Q9HI36
E	-9	GLY	-	expression tag	UNP Q9HI36
E	-8	ARG	-	expression tag	UNP Q9HI36
E	-7	GLU	-	expression tag	UNP Q9HI36
E	-6	ASN	-	expression tag	UNP Q9HI36
E	-5	LEU	-	expression tag	UNP Q9HI36
E	-4	TYR	-	expression tag	UNP Q9HI36
E	-3	PHE	-	expression tag	UNP Q9HI36
E	-2	GLN	-	expression tag	UNP Q9HI36
E	-1	GLY	-	expression tag	UNP Q9HI36
E	0	HIS	-	expression tag	UNP Q9HI36
E	173	SER	-	expression tag	UNP Q9HI36
F	-21	MSE	-	expression tag	UNP Q9HI36
F	-20	GLY	-	expression tag	UNP Q9HI36
F	-19	SER	-	expression tag	UNP Q9HI36
F	-18	SER	-	expression tag	UNP Q9HI36
F	-17	HIS	-	expression tag	UNP Q9HI36
F	-16	HIS	-	expression tag	UNP Q9HI36
F	-15	HIS	-	expression tag	UNP Q9HI36
F	-14	HIS	-	expression tag	UNP Q9HI36
F	-13	HIS	-	expression tag	UNP Q9HI36
F	-12	HIS	-	expression tag	UNP Q9HI36
F	-11	SER	-	expression tag	UNP Q9HI36
F	-10	SER	-	expression tag	UNP Q9HI36
F	-9	GLY	-	expression tag	UNP Q9HI36
F	-8	ARG	-	expression tag	UNP Q9HI36
F	-7	GLU	-	expression tag	UNP Q9HI36
F	-6	ASN	-	expression tag	UNP Q9HI36
F	-5	LEU	-	expression tag	UNP Q9HI36
F	-4	TYR	-	expression tag	UNP Q9HI36
F	-3	PHE	-	expression tag	UNP Q9HI36
F	-2	GLN	-	expression tag	UNP Q9HI36
F	-1	GLY	-	expression tag	UNP Q9HI36
F	0	HIS	-	expression tag	UNP Q9HI36
F	173	SER	-	expression tag	UNP Q9HI36

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	C	1	Total	C	O	0	0
			6	3	3		
2	F	1	Total	C	O	0	0
			6	3	3		

- Molecule 3 is water.

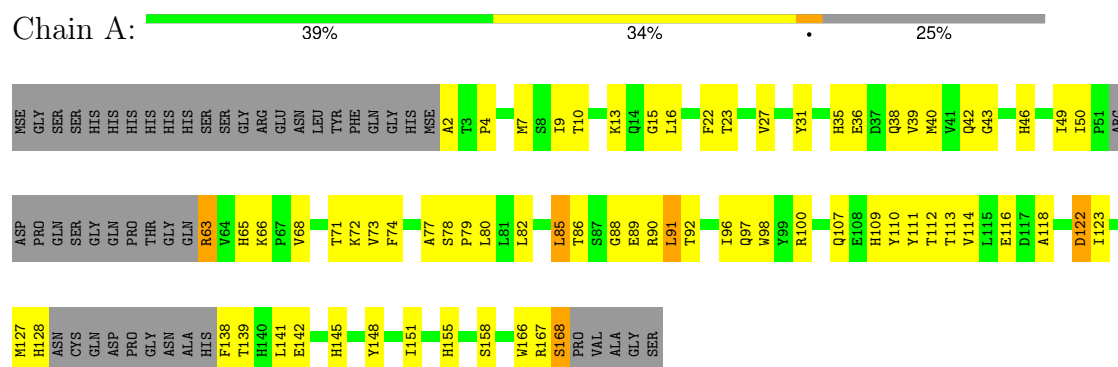
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	109	Total	O	0	0
			109	109		
3	B	133	Total	O	0	0
			133	133		
3	C	117	Total	O	0	0
			117	117		
3	D	133	Total	O	0	0
			133	133		
3	E	122	Total	O	0	0
			122	122		
3	F	114	Total	O	0	0
			114	114		



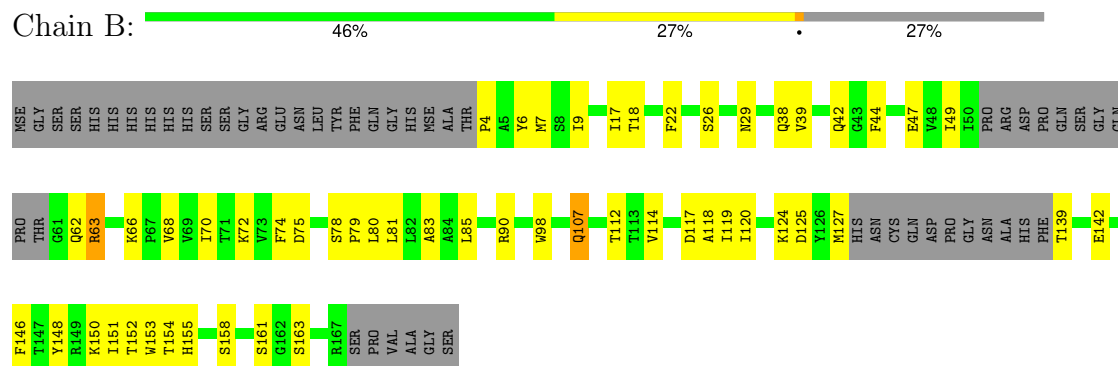
### 3 Residue-property plots

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.

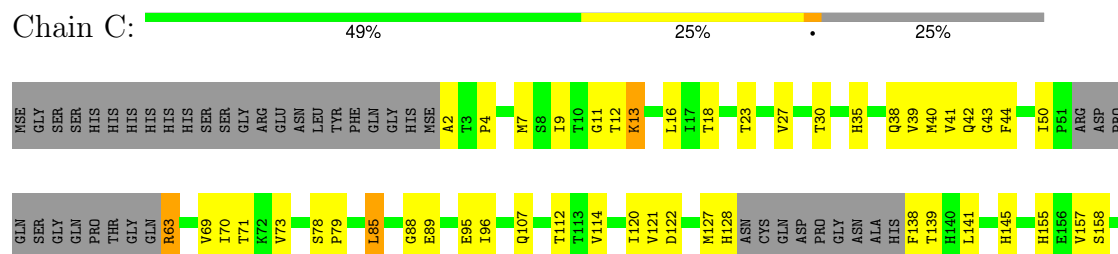
#### • Molecule 1: Major exported Hcp3 protein



#### • Molecule 1: Major exported Hcp3 protein

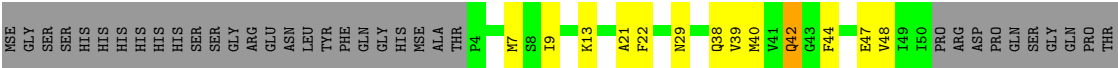


#### • Molecule 1: Major exported Hcp3 protein





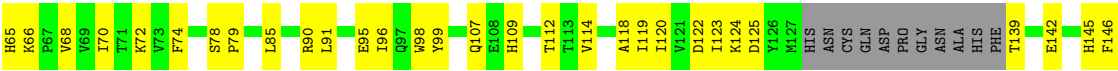
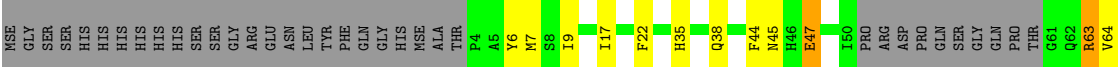
• Molecule 1: Major exported Hcp3 protein



• Molecule 1: Major exported Hcp3 protein



• Molecule 1: Major exported Hcp3 protein



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 3 1 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	141.22Å 141.22Å 105.05Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	39.80 – 2.10 39.80 – 2.10	Depositor EDS
% Data completeness (in resolution range)	82.6 (39.80-2.10) 82.8 (39.80-2.10)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.99 (at 2.10Å)	Xtriage
Refinement program	PHENIX	Depositor
R, $R_{free}$	0.214 , 0.254 0.205 , 0.238	Depositor DCC
$R_{free}$ test set	2898 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	27.3	Xtriage
Anisotropy	0.390	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.39 , 66.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.489 for -h,-k,l	Xtriage
Reported twinning fraction	0.509 for -k,h+k,l	Depositor
Outliers	24 of 57854 reflections (0.041%)	Xtriage
$F_o, F_c$ correlation	0.98	EDS
Total number of atoms	7705	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	32.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 84.81 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.5049e-07. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.40	0/1219	0.61	0/1651
1	B	0.40	0/1156	0.59	0/1563
1	C	0.40	0/1200	0.61	0/1626
1	D	0.40	0/1162	0.60	0/1571
1	E	0.39	0/1219	0.61	0/1651
1	F	0.41	0/1171	0.58	0/1584
All	All	0.40	0/7127	0.60	0/9646

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	1186	0	1145	65	0
1	B	1135	0	1096	45	0
1	C	1173	0	1128	40	0
1	D	1138	0	1101	21	0
1	E	1189	0	1144	56	0
1	F	1144	0	1114	52	0
2	C	6	0	8	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	F	6	0	8	0	0
3	A	109	0	0	7	0
3	B	133	0	0	4	0
3	C	117	0	0	1	0
3	D	133	0	0	3	0
3	E	122	0	0	4	0
3	F	114	0	0	9	0
All	All	7705	0	6744	272	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 20.

The worst 5 of 272 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:B:151:ILE:HG21	3:B:175:HOH:O	1.42	1.16
1:A:151:ILE:HG21	3:A:403:HOH:O	1.45	1.15
1:F:151:ILE:HG21	3:F:174:HOH:O	1.44	1.13
1:D:151:ILE:HG21	3:D:536:HOH:O	1.42	1.12
1:A:13:LYS:HD3	1:A:89:GLU:HG3	1.42	1.01

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	144/195 (74%)	139 (96%)	5 (4%)	0	100	100
1	B	137/195 (70%)	130 (95%)	7 (5%)	0	100	100
1	C	142/195 (73%)	137 (96%)	5 (4%)	0	100	100
1	D	138/195 (71%)	133 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	144/195 (74%)	138 (96%)	6 (4%)	0	100	100
1	F	139/195 (71%)	133 (96%)	6 (4%)	0	100	100
All	All	844/1170 (72%)	810 (96%)	34 (4%)	0	100	100

There are no Ramachandran outliers to report.

### 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	130/161 (81%)	122 (94%)	8 (6%)	15	13
1	B	123/161 (76%)	118 (96%)	5 (4%)	26	27
1	C	128/161 (80%)	124 (97%)	4 (3%)	35	39
1	D	124/161 (77%)	119 (96%)	5 (4%)	27	28
1	E	130/161 (81%)	125 (96%)	5 (4%)	28	30
1	F	125/161 (78%)	122 (98%)	3 (2%)	44	49
All	All	760/966 (79%)	730 (96%)	30 (4%)	27	29

5 of 30 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	63	ARG
1	F	47	GLU
1	D	29	ASN
1	F	107	GLN
1	E	42	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 23 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	29	ASN
1	E	97	GLN

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Mol	Chain	Res	Type
1	E	42	GLN
1	E	145	HIS
1	B	42	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](#)

2 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	$\# Z  > 2$
2	GOL	F	302	-	5,5,5	0.39	0	5,5,5	0.19	0
2	GOL	C	301	-	5,5,5	0.39	0	5,5,5	0.37	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
2	GOL	F	302	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	C	301	-	-	3/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	301	GOL	O1-C1-C2-C3
2	F	302	GOL	O1-C1-C2-O2
2	F	302	GOL	O1-C1-C2-C3
2	C	301	GOL	O1-C1-C2-O2
2	C	301	GOL	C1-C2-C3-O3

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	301	GOL	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.



## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	144/195 (73%)	-1.26	0 100 100	20, 34, 53, 67	3 (2%)
1	B	140/195 (71%)	-1.30	0 100 100	23, 34, 47, 62	0
1	C	144/195 (73%)	-1.55	0 100 100	15, 24, 43, 63	1 (0%)
1	D	140/195 (71%)	-1.56	0 100 100	15, 25, 40, 56	1 (0%)
1	E	144/195 (73%)	-1.31	0 100 100	18, 33, 50, 64	3 (2%)
1	F	140/195 (71%)	-1.27	0 100 100	16, 35, 48, 60	2 (1%)
All	All	852/1170 (72%)	-1.37	0 100 100	15, 32, 48, 67	10 (1%)

There are no RSRZ outliers to report.

### 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<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	GOL	C	301	6/6	0.99	0.05	18,36,37,71	0
2	GOL	F	302	6/6	0.99	0.05	23,46,53,62	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.