



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 01:16 PM GMT

PDB ID : 3TD5  
Title : Crystal structure of OmpA-like domain from *Acinetobacter baumannii* in complex with L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala  
Authors : Park, J.S.; Lee, W.C.; Song, J.H.; Kim, H.Y.  
Deposited on : 2011-08-10  
Resolution : 2.00 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)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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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 : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

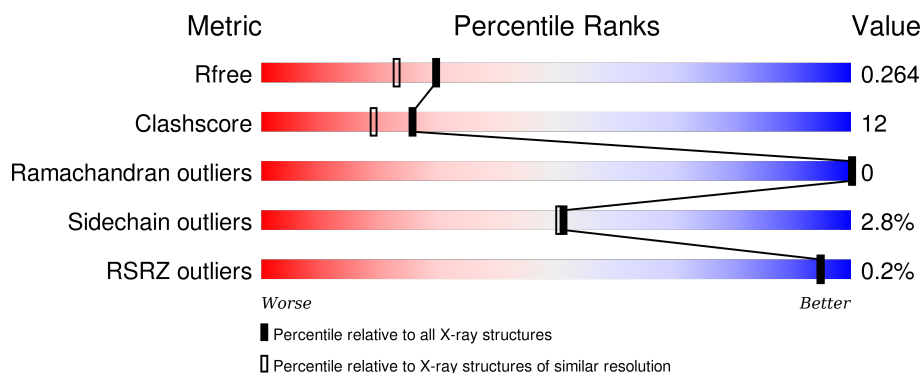
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.00 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))
$R_{free}$	91344	6249 (2.00-2.00)
Clashscore	102246	7340 (2.00-2.00)
Ramachandran outliers	100387	7248 (2.00-2.00)
Sidechain outliers	100360	7247 (2.00-2.00)
RSRZ outliers	91569	6262 (2.00-2.00)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	123	 64% 30% . .
1	B	123	 71% 28% .
1	C	123	 67% 31% .
1	D	123	 76% 20% . .
1	E	123	 76% 21% . .

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Mol	Chain	Length	Quality of chain
1	F	123	<div><div></div><div>72%</div><div>24%</div><div></div><div></div></div>
1	G	123	<div><div></div><div>76%</div><div>19%</div><div></div><div></div></div>
1	H	123	<div><div></div><div>72%</div><div>24%</div><div></div><div></div></div>
2	I	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	J	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	K	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	L	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	M	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	N	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	O	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>
2	P	5	<div><div></div><div>80%</div><div>20%</div><div></div><div></div></div>

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 8841 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 Outer membrane protein omp38.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	119	Total	C	N	O	S	0	0	0
			946	581	175	188	2			
1	B	121	Total	C	N	O	S	0	0	0
			964	592	179	190	3			
1	C	120	Total	C	N	O	S	0	0	0
			954	586	176	189	3			
1	D	120	Total	C	N	O	S	0	0	0
			954	586	176	189	3			
1	E	121	Total	C	N	O	S	0	0	0
			964	592	179	190	3			
1	F	121	Total	C	N	O	S	0	0	0
			964	592	179	190	3			
1	G	120	Total	C	N	O	S	0	0	0
			954	586	176	189	3			
1	H	120	Total	C	N	O	S	0	0	0
			954	586	176	189	3			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
A	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
A	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
A	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
B	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
B	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
B	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
B	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
C	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
C	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
C	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
C	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
D	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
D	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
D	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
E	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
E	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
E	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
E	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
F	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
F	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
F	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
F	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
G	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
G	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
G	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
G	220	MET	-	EXPRESSION TAG	UNP Q6RYW5
H	217	GLY	-	EXPRESSION TAG	UNP Q6RYW5
H	218	SER	-	EXPRESSION TAG	UNP Q6RYW5
H	219	HIS	-	EXPRESSION TAG	UNP Q6RYW5
H	220	MET	-	EXPRESSION TAG	UNP Q6RYW5

- Molecule 2 is a protein called peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	I	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	J	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	K	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	L	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	M	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	N	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	O	5	Total	C	N	O	0	0	0
			37	21	6	10			
2	P	5	Total	C	N	O	0	0	0
			37	21	6	10			

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	G	1	Total Cl 1 1	0	0
3	E	1	Total Cl 1 1	0	0
3	B	1	Total Cl 1 1	0	0
3	C	1	Total Cl 1 1	0	0
3	A	1	Total Cl 1 1	0	0
3	F	1	Total Cl 1 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	83	Total O 83 83	0	0
4	B	112	Total O 112 112	0	0
4	C	103	Total O 103 103	0	0
4	D	85	Total O 85 85	0	0
4	E	129	Total O 129 129	0	0
4	F	118	Total O 118 118	0	0
4	G	111	Total O 111 111	0	0
4	H	111	Total O 111 111	0	0
4	I	4	Total O 4 4	0	0
4	J	6	Total O 6 6	0	0
4	K	4	Total O 4 4	0	0
4	L	3	Total O 3 3	0	0
4	M	5	Total O 5 5	0	0
4	N	3	Total O 3 3	0	0

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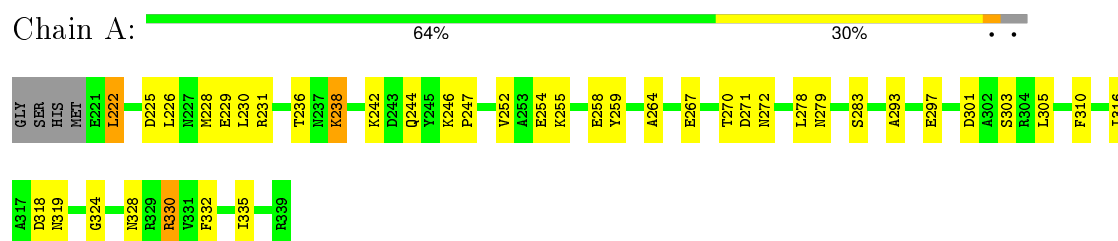
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	O	4	Total 4	O 4	0	0
4	P	4	Total 4	O 4	0	0

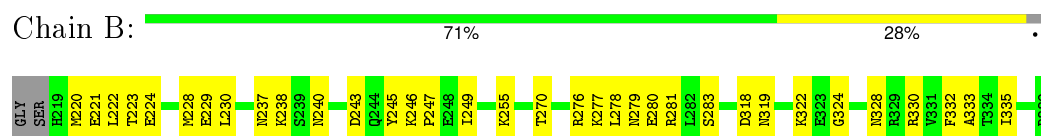
### 3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

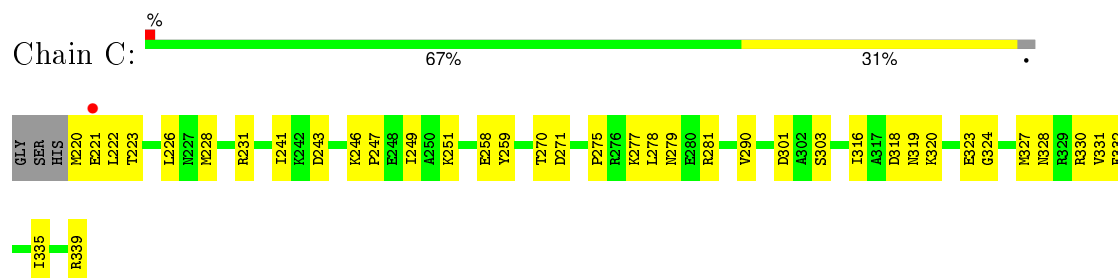
- Molecule 1: Outer membrane protein omp38



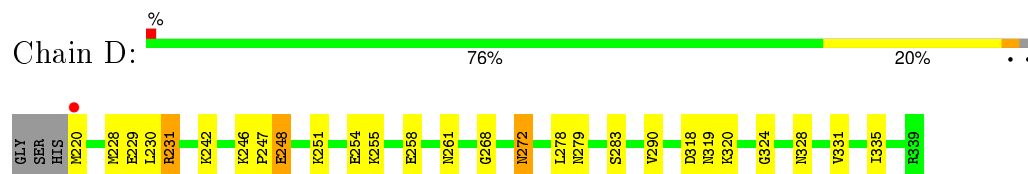
- Molecule 1: Outer membrane protein omp38



- Molecule 1: Outer membrane protein omp38



- Molecule 1: Outer membrane protein omp38



- Molecule 1: Outer membrane protein omp38

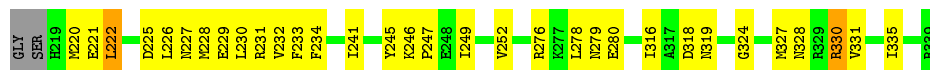






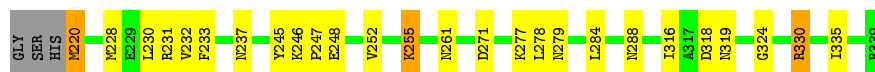
- Molecule 1: Outer membrane protein omp38

Chain F: 72% 24% ..



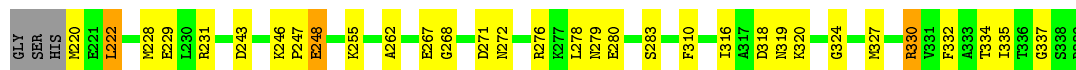
- Molecule 1: Outer membrane protein omp38

Chain G: 76% 19% ..



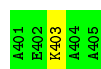
- Molecule 1: Outer membrane protein omp38

Chain H: 72% 24% ..



- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain I: 80% 20%



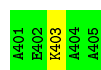
- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain J: 80% 20%



- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain K: 80% 20%




- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain L: 80% 20%




- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain M:  80% 20%




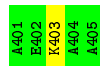
- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain N:  80% 20%




- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain O:  80% 20%



- Molecule 2: peptide(L-Ala-gamma-D-Glu-m-DAP-D-Ala-D-Ala)

Chain P:  80% 20%



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	65.09Å 162.61Å 66.23Å 90.00° 112.68° 90.00°	Depositor
Resolution (Å)	81.30 – 2.00 81.31 – 2.00	Depositor EDS
% Data completeness (in resolution range)	92.2 (81.30-2.00) 92.0 (81.31-2.00)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.38 (at 2.00Å)	Xtriage
Refinement program	CNS 1.3	Depositor
R, $R_{free}$	0.220 , 0.257 0.228 , 0.264	Depositor DCC
$R_{free}$ test set	3978 reflections (5.06%)	DCC
Wilson B-factor (Å <sup>2</sup> )	15.0	Xtriage
Anisotropy	1.095	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 58.6	EDS
Estimated twinning fraction	0.015 for l,-k,h	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	4 of 78633 reflections (0.005%)	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	8841	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	21.0	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 25.93 % 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 2.8916e-03. 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, 0.375 respectively for untwinned datasets, and 0.333, 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: DAL, API, FGA, 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	0.33	0/959	0.56	0/1291
1	B	0.31	0/978	0.55	0/1316
1	C	0.33	0/967	0.61	1/1301 (0.1%)
1	D	0.32	0/967	0.58	0/1301
1	E	0.34	0/978	0.59	0/1316
1	F	0.34	0/978	0.56	0/1316
1	G	0.31	0/967	0.55	0/1301
1	H	0.33	0/967	0.57	0/1301
2	I	0.38	0/4	0.48	0/4
2	J	0.39	0/4	0.58	0/4
2	K	0.40	0/4	0.55	0/4
2	L	0.37	0/4	0.63	0/4
2	M	0.38	0/4	0.61	0/4
2	N	0.39	0/4	0.59	0/4
2	O	0.38	0/4	0.47	0/4
2	P	0.39	0/4	0.48	0/4
All	All	0.33	0/7793	0.57	1/10475 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	221	GLU	N-CA-C	-6.92	92.33	111.00

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	946	0	936	29	0
1	B	964	0	952	27	0
1	C	954	0	945	35	0
1	D	954	0	945	24	0
1	E	964	0	952	25	0
1	F	964	0	952	27	0
1	G	954	0	945	23	0
1	H	954	0	945	29	0
2	I	37	0	29	1	0
2	J	37	0	29	1	0
2	K	37	0	30	2	0
2	L	37	0	29	2	0
2	M	37	0	29	1	0
2	N	37	0	29	1	0
2	O	37	0	29	2	0
2	P	37	0	29	1	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
4	A	83	0	0	1	0
4	B	112	0	0	1	0
4	C	103	0	0	3	0
4	D	85	0	0	3	0
4	E	129	0	0	1	0
4	F	118	0	0	0	0
4	G	111	0	0	0	0
4	H	111	0	0	0	0
4	I	4	0	0	0	0
4	J	6	0	0	0	0
4	K	4	0	0	0	0
4	L	3	0	0	0	0
4	M	5	0	0	0	0
4	N	3	0	0	0	0
4	O	4	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	P	4	0	0	0	0
All	All	8841	0	7805	197	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 12.

The worst 5 of 197 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:H:279:ASN:HD21	2:P:403:API:HN61	1.24	0.85
1:D:279:ASN:HD21	2:L:403:API:HN61	1.24	0.85
1:G:279:ASN:HD21	2:O:403:API:HN61	1.27	0.83
1:E:279:ASN:HD21	2:M:403:API:HN61	1.28	0.81
1:F:228:MET:HB2	1:F:335:ILE:HB	1.62	0.81

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	117/123 (95%)	115 (98%)	2 (2%)	0	100	100
1	B	119/123 (97%)	117 (98%)	2 (2%)	0	100	100
1	C	118/123 (96%)	118 (100%)	0	0	100	100
1	D	118/123 (96%)	116 (98%)	2 (2%)	0	100	100
1	E	119/123 (97%)	118 (99%)	1 (1%)	0	100	100
1	F	119/123 (97%)	118 (99%)	1 (1%)	0	100	100
1	G	118/123 (96%)	116 (98%)	2 (2%)	0	100	100
1	H	118/123 (96%)	117 (99%)	1 (1%)	0	100	100
All	All	946/984 (96%)	935 (99%)	11 (1%)	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	102/105 (97%)	98 (96%)	4 (4%)	39	35
1	B	104/105 (99%)	102 (98%)	2 (2%)	65	67
1	C	103/105 (98%)	103 (100%)	0	100	100
1	D	103/105 (98%)	100 (97%)	3 (3%)	50	49
1	E	104/105 (99%)	102 (98%)	2 (2%)	65	67
1	F	104/105 (99%)	100 (96%)	4 (4%)	40	36
1	G	103/105 (98%)	98 (95%)	5 (5%)	31	25
1	H	103/105 (98%)	100 (97%)	3 (3%)	50	49
All	All	826/840 (98%)	803 (97%)	23 (3%)	51	50

5 of 23 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	330	ARG
1	F	229	GLU
1	H	248	GLU
1	F	222	LEU
1	F	231	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 38 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	308	GLN
1	E	308	GLN
1	H	308	GLN
1	E	219	HIS
1	E	314	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

32 non-standard protein/DNA/RNA residues 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	FGA	I	402	2	5,8,9	1.30	1 (20%)	2,9,11	0.55	0
2	API	I	403	2	7,11,12	2.01	3 (42%)	5,13,15	1.62	1 (20%)
2	DAL	I	404	2	3,4,5	0.51	0	0,4,6	0.00	-
2	DAL	I	405	2	2,5,5	0.26	0	0,6,6	0.00	-
2	FGA	J	402	2	5,8,9	1.31	1 (20%)	2,9,11	0.35	0
2	API	J	403	2	7,11,12	2.01	3 (42%)	5,13,15	1.59	1 (20%)
2	DAL	J	404	2	3,4,5	0.50	0	0,4,6	0.00	-
2	DAL	J	405	2	2,5,5	0.28	0	0,6,6	0.00	-
2	FGA	K	402	2	5,8,9	1.30	1 (20%)	2,9,11	0.31	0
2	API	K	403	2	7,11,12	2.00	3 (42%)	5,13,15	1.64	1 (20%)
2	DAL	K	404	2	3,4,5	0.52	0	0,4,6	0.00	-
2	DAL	K	405	2	2,5,5	0.26	0	0,6,6	0.00	-
2	FGA	L	402	2	5,8,9	1.30	1 (20%)	2,9,11	0.53	0
2	API	L	403	2	7,11,12	2.00	3 (42%)	5,13,15	1.54	1 (20%)
2	DAL	L	404	2	3,4,5	0.51	0	0,4,6	0.00	-
2	DAL	L	405	2	2,5,5	0.24	0	0,6,6	0.00	-
2	FGA	M	402	2	5,8,9	1.31	1 (20%)	2,9,11	0.39	0
2	API	M	403	2	7,11,12	2.00	3 (42%)	5,13,15	1.59	1 (20%)
2	DAL	M	404	2	3,4,5	0.51	0	0,4,6	0.00	-
2	DAL	M	405	2	2,5,5	0.27	0	0,6,6	0.00	-
2	FGA	N	402	2	5,8,9	1.31	1 (20%)	2,9,11	0.43	0
2	API	N	403	2	7,11,12	2.01	3 (42%)	5,13,15	1.58	1 (20%)
2	DAL	N	404	2	3,4,5	0.50	0	0,4,6	0.00	-
2	DAL	N	405	2	2,5,5	0.25	0	0,6,6	0.00	-



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FGA	O	402	2	5,8,9	1.32	1 (20%)	2,9,11	0.39	0
2	API	O	403	2	7,11,12	2.01	3 (42%)	5,13,15	1.59	1 (20%)
2	DAL	O	404	2	3,4,5	0.50	0	0,4,6	0.00	-
2	DAL	O	405	2	2,5,5	0.27	0	0,6,6	0.00	-
2	FGA	P	402	2	5,8,9	1.29	1 (20%)	2,9,11	0.40	0
2	API	P	403	2	7,11,12	2.01	3 (42%)	5,13,15	1.53	1 (20%)
2	DAL	P	404	2	3,4,5	0.49	0	0,4,6	0.00	-
2	DAL	P	405	2	2,5,5	0.26	0	0,6,6	0.00	-

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	FGA	I	402	2	-	0/3/8/9	0/0/0/0
2	API	I	403	2	-	0/6/12/14	0/0/0/0
2	DAL	I	404	2	-	0/0/2/4	0/0/0/0
2	DAL	I	405	2	-	0/0/4/4	0/0/0/0
2	FGA	J	402	2	-	0/3/8/9	0/0/0/0
2	API	J	403	2	-	0/6/12/14	0/0/0/0
2	DAL	J	404	2	-	0/0/2/4	0/0/0/0
2	DAL	J	405	2	-	0/0/4/4	0/0/0/0
2	FGA	K	402	2	-	0/3/8/9	0/0/0/0
2	API	K	403	2	-	0/6/12/14	0/0/0/0
2	DAL	K	404	2	-	0/0/2/4	0/0/0/0
2	DAL	K	405	2	-	0/0/4/4	0/0/0/0
2	FGA	L	402	2	-	0/3/8/9	0/0/0/0
2	API	L	403	2	-	0/6/12/14	0/0/0/0
2	DAL	L	404	2	-	0/0/2/4	0/0/0/0
2	DAL	L	405	2	-	0/0/4/4	0/0/0/0
2	FGA	M	402	2	-	0/3/8/9	0/0/0/0
2	API	M	403	2	-	0/6/12/14	0/0/0/0
2	DAL	M	404	2	-	0/0/2/4	0/0/0/0
2	DAL	M	405	2	-	0/0/4/4	0/0/0/0
2	FGA	N	402	2	-	0/3/8/9	0/0/0/0
2	API	N	403	2	-	0/6/12/14	0/0/0/0
2	DAL	N	404	2	-	0/0/2/4	0/0/0/0
2	DAL	N	405	2	-	0/0/4/4	0/0/0/0
2	FGA	O	402	2	-	0/3/8/9	0/0/0/0
2	API	O	403	2	-	0/6/12/14	0/0/0/0
2	DAL	O	404	2	-	0/0/2/4	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	DAL	O	405	2	-	0/0/4/4	0/0/0/0
2	FGA	P	402	2	-	0/3/8/9	0/0/0/0
2	API	P	403	2	-	0/6/12/14	0/0/0/0
2	DAL	P	404	2	-	0/0/2/4	0/0/0/0
2	DAL	P	405	2	-	0/0/4/4	0/0/0/0

The worst 5 of 32 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	403	API	C4-C5	-2.76	1.39	1.52
2	O	403	API	C4-C5	-2.75	1.39	1.52
2	I	403	API	C4-C3	-2.75	1.39	1.52
2	L	403	API	C4-C3	-2.75	1.39	1.52
2	J	403	API	C4-C3	-2.75	1.39	1.52

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	403	API	O1-C1-C2	-3.06	117.53	125.49
2	K	403	API	O1-C1-C2	-2.99	117.70	125.49
2	M	403	API	O1-C1-C2	-2.94	117.84	125.49
2	O	403	API	O1-C1-C2	-2.93	117.87	125.49
2	J	403	API	O1-C1-C2	-2.88	117.98	125.49

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

8 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	I	403	API	1	0
2	J	403	API	1	0
2	K	403	API	2	0
2	L	403	API	2	0
2	M	403	API	1	0
2	N	403	API	1	0
2	O	403	API	2	0
2	P	403	API	1	0

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

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, 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	119/123 (96%)	-0.45	0 100 100	10, 20, 34, 42	0
1	B	121/123 (98%)	-0.44	0 100 100	14, 23, 42, 47	0
1	C	120/123 (97%)	-0.46	1 (0%) 87 88	11, 18, 36, 56	0
1	D	120/123 (97%)	-0.51	1 (0%) 87 88	10, 18, 36, 56	0
1	E	121/123 (98%)	-0.53	0 100 100	8, 15, 27, 43	0
1	F	121/123 (98%)	-0.47	0 100 100	10, 17, 29, 45	0
1	G	120/123 (97%)	-0.50	0 100 100	13, 20, 38, 41	0
1	H	120/123 (97%)	-0.52	0 100 100	8, 17, 29, 51	0
2	I	1/5 (20%)	0.33	0 100 100	25, 25, 25, 25	0
2	J	1/5 (20%)	0.25	0 100 100	28, 28, 28, 28	0
2	K	1/5 (20%)	0.62	0 100 100	23, 23, 23, 23	0
2	L	1/5 (20%)	0.23	0 100 100	26, 26, 26, 26	0
2	M	1/5 (20%)	0.64	0 100 100	24, 24, 24, 24	0
2	N	1/5 (20%)	0.87	0 100 100	21, 21, 21, 21	0
2	O	1/5 (20%)	-0.29	0 100 100	26, 26, 26, 26	0
2	P	1/5 (20%)	-0.29	0 100 100	22, 22, 22, 22	0
All	All	970/1024 (94%)	-0.48	2 (0%) 95 95	8, 19, 36, 56	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	221	GLU	2.1
1	D	220	MET	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
2	API	L	403	12/13	0.95	0.10	-	10,12,14,15	0
2	DAL	K	405	6/6	0.93	0.13	-	15,17,22,26	0
2	DAL	L	405	6/6	0.96	0.08	-	16,17,18,21	0
2	DAL	M	404	5/6	0.98	0.08	-	12,14,15,15	0
2	DAL	L	404	5/6	0.96	0.10	-	10,11,15,16	0
2	API	I	403	12/13	0.97	0.09	-	11,13,14,16	0
2	DAL	P	405	6/6	0.95	0.08	-	17,17,19,22	0
2	FGA	J	402	9/10	0.96	0.09	-	17,19,23,25	0
2	API	N	403	12/13	0.97	0.09	-	10,11,12,12	0
2	DAL	J	405	6/6	0.95	0.12	-	19,22,25,26	0
2	API	J	403	12/13	0.97	0.09	-	9,14,16,16	0
2	FGA	L	402	9/10	0.95	0.12	-	12,21,27,27	0
2	DAL	I	404	5/6	0.96	0.10	-	16,16,18,18	0
2	DAL	O	404	5/6	0.98	0.10	-	11,14,16,17	0
2	DAL	P	404	5/6	0.98	0.08	-	13,15,17,17	0
2	FGA	P	402	9/10	0.95	0.14	-	12,19,24,29	0
2	DAL	I	405	6/6	0.97	0.08	-	17,20,23,26	0
2	DAL	N	405	6/6	0.98	0.07	-	18,19,24,25	0
2	FGA	O	402	9/10	0.95	0.08	-	16,20,25,26	0
2	FGA	M	402	9/10	0.94	0.10	-	13,20,24,25	0
2	DAL	M	405	6/6	0.98	0.08	-	11,15,17,19	0
2	DAL	N	404	5/6	0.98	0.09	-	12,13,14,16	0
2	FGA	I	402	9/10	0.95	0.10	-	12,22,25,27	0
2	API	M	403	12/13	0.97	0.10	-	7,11,12,14	0
2	FGA	K	402	9/10	0.98	0.10	-	10,16,21,22	0
2	DAL	O	405	6/6	0.93	0.12	-	17,22,24,26	0
2	DAL	K	404	5/6	0.97	0.09	-	8,10,14,15	0
2	API	O	403	12/13	0.97	0.08	-	10,12,14,14	0
2	API	P	403	12/13	0.97	0.10	-	7,11,13,14	0
2	API	K	403	12/13	0.97	0.09	-	8,9,11,13	0
2	DAL	J	404	5/6	0.98	0.09	-	12,14,17,18	0
2	FGA	N	402	9/10	0.97	0.09	-	9,12,17,18	0

### 6.3 Carbohydrates [i](#)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
3	CL	B	2	1/1	0.98	0.03	-	56,56,56,56	0
3	CL	E	4	1/1	0.97	0.07	-	52,52,52,52	0
3	CL	F	5	1/1	0.89	0.06	-	63,63,63,63	0
3	CL	A	1	1/1	0.95	0.05	-	65,65,65,65	0
3	CL	G	6	1/1	0.89	0.08	-	58,58,58,58	0
3	CL	C	3	1/1	0.91	0.09	-	53,53,53,53	0

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

There are no such residues in this entry.