Full wwPDB X-ray Structure Validation Report ⓘ

Sep 25, 2023 – 12:15 PM JST

PDB ID	:	8H64
Title	:	Crystal structure of Internalin A from Listeria monocytogenes with nanobody VHH24 bound
Authors	:	Caaveiro, J.M.M.; Nagatoish, S.; Tsumoto, K.
Deposited on	:	2022-10-15
Resolution	:	2.35 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

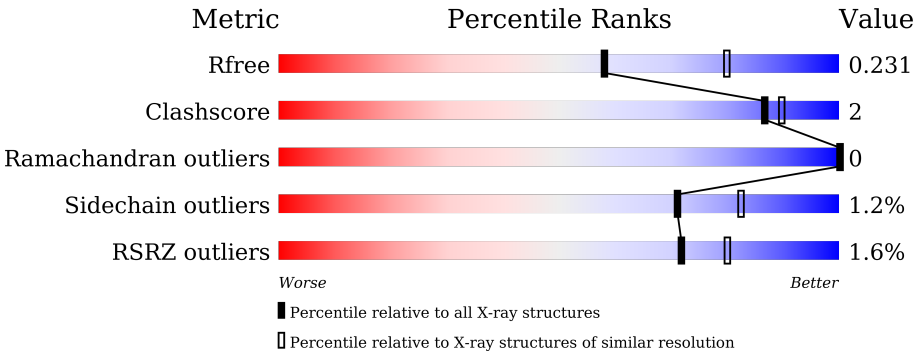
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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	1164 (2.36-2.36)
Clashscore	141614	1232 (2.36-2.36)
Ramachandran outliers	138981	1211 (2.36-2.36)
Sidechain outliers	138945	1212 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

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

Mol	Chain	Length	Quality of chain
1	A	462	94% 5% •
1	C	462	% 93% 7%
1	E	462	5% 93% 5% •
1	G	462	2% 90% 8% •
2	B	123	% 92% 7% •
2	D	123	92% 6% • •

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Mol	Chain	Length	Quality of chain
2	F	123	90% 7%
2	H	123	89% 8%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 18415 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 Internalin A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	457	Total	C	N	O	S	0	1	0
			3482	2180	577	723	2			
1	C	461	Total	C	N	O	S	0	0	0
			3504	2194	580	728	2			
1	E	457	Total	C	N	O	S	0	3	0
			3493	2187	579	725	2			
1	G	456	Total	C	N	O	S	0	1	0
			3474	2176	575	721	2			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	35	SER	-	expression tag	UNP P0DJM0
C	35	SER	-	expression tag	UNP P0DJM0
E	35	SER	-	expression tag	UNP P0DJM0
G	35	SER	-	expression tag	UNP P0DJM0

- Molecule 2 is a protein called Anti-internalin A VHH24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	121	Total	C	N	O	S	0	0	0
			933	582	171	177	3			
2	D	121	Total	C	N	O	S	0	0	0
			933	582	171	177	3			
2	F	121	Total	C	N	O	S	0	0	0
			933	582	171	177	3			
2	H	121	Total	C	N	O	S	0	0	0
			933	582	171	177	3			

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total Cl 2 2	0	0
3	E	1	Total Cl 1 1	0	0
3	G	1	Total Cl 1 1	0	0

- Molecule 4 is water.

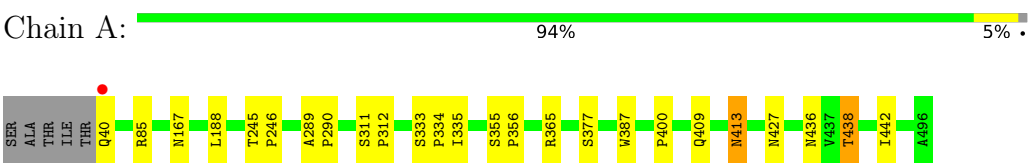
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	143	Total O 143 143	0	0
4	B	46	Total O 46 46	0	0
4	C	139	Total O 139 139	0	0
4	D	45	Total O 45 45	0	0
4	E	137	Total O 137 137	0	0
4	F	47	Total O 47 47	0	0
4	G	129	Total O 129 129	0	0
4	H	40	Total O 40 40	0	0

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.

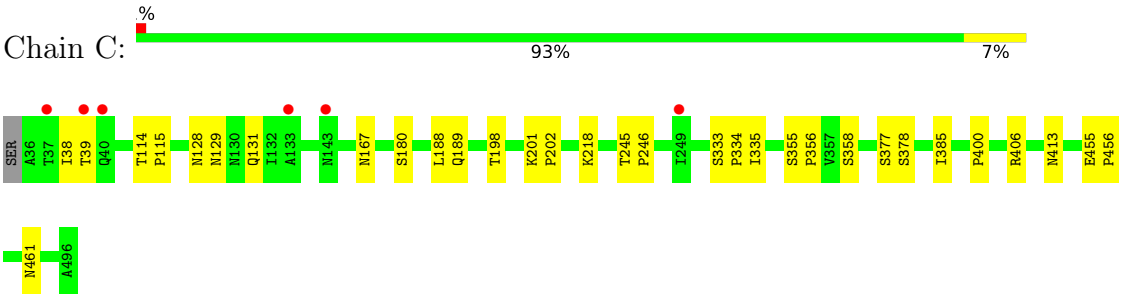
• Molecule 1: Internalin A

Chain A:



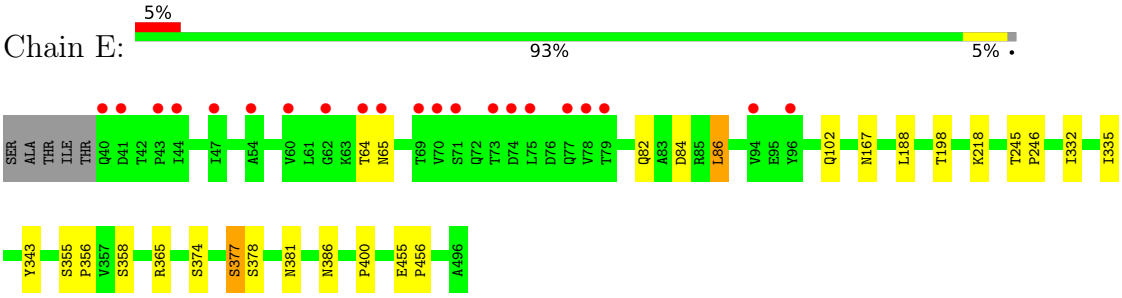
• Molecule 1: Internalin A

Chain C:



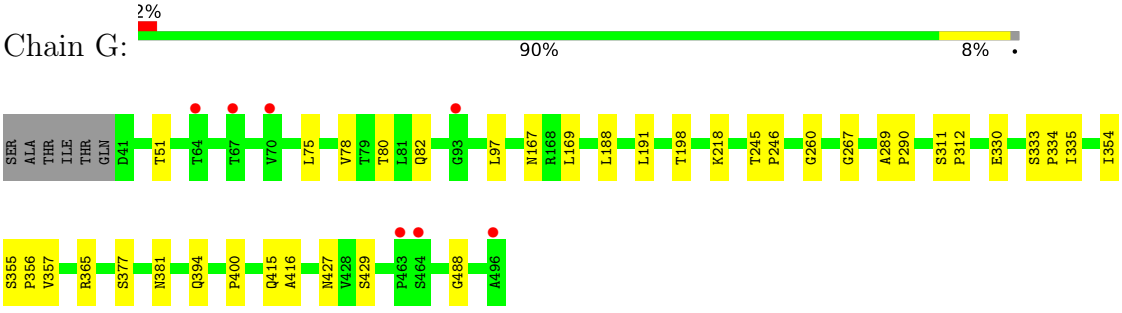
• Molecule 1: Internalin A

Chain E:



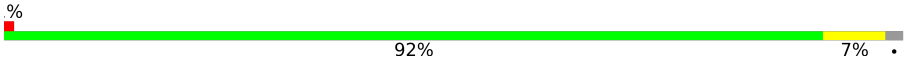
• Molecule 1: Internalin A

Chain G:



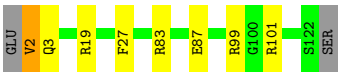
• Molecule 2: Anti-internalin A VHH24

Chain B:



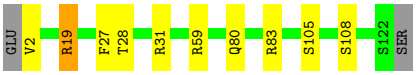
• Molecule 2: Anti-internalin A VHH24

Chain D:



• Molecule 2: Anti-internalin A VHH24

Chain F:



• Molecule 2: Anti-internalin A VHH24

Chain H:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	129.73Å 141.12Å 198.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	62.06 – 2.35 61.98 – 2.35	Depositor EDS
% Data completeness (in resolution range)	91.9 (62.06-2.35) 91.9 (61.98-2.35)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.88 (at 2.34Å)	Xtriage
Refinement program	REFMAC 5.8.0352	Depositor
R, R_{free}	0.188 , 0.227 0.195 , 0.231	Depositor DCC
R_{free} test set	7011 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	32.7	Xtriage
Anisotropy	0.188	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 30.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	18415	wwPDB-VP
Average B, all atoms (Å^2)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.21% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.46	0/3526	0.84	2/4826 (0.0%)
1	C	0.44	0/3545	0.81	2/4853 (0.0%)
1	E	0.47	0/3543	0.86	2/4849 (0.0%)
1	G	0.46	2/3518 (0.1%)	0.82	2/4815 (0.0%)
2	B	0.46	0/951	0.89	3/1285 (0.2%)
2	D	0.50	1/951 (0.1%)	0.88	1/1285 (0.1%)
2	F	0.50	0/951	0.94	3/1285 (0.2%)
2	H	0.52	0/951	0.98	3/1285 (0.2%)
All	All	0.47	3/17936 (0.0%)	0.85	18/24483 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	C	0	1
1	E	0	1
2	D	0	2
2	F	0	1
All	All	0	7

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	330	GLU	CD-OE2	6.91	1.33	1.25
1	G	330	GLU	CD-OE1	5.66	1.31	1.25
2	D	87	GLU	CD-OE2	5.31	1.31	1.25

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	99	ARG	NE-CZ-NH2	-11.91	114.34	120.30
1	E	343	TYR	CB-CG-CD1	8.81	126.28	121.00
1	E	343	TYR	CB-CG-CD2	-8.39	115.97	121.00
2	D	19	ARG	NE-CZ-NH2	-7.80	116.40	120.30
2	H	19	ARG	NE-CZ-NH2	-7.78	116.41	120.30
2	H	99	ARG	NE-CZ-NH1	7.07	123.83	120.30
1	G	381	ASN	CB-CA-C	-6.38	97.64	110.40
2	F	83	ARG	NE-CZ-NH2	-6.10	117.25	120.30
1	A	438	THR	CA-CB-OG1	-5.85	96.72	109.00
2	B	31	ARG	NE-CZ-NH2	-5.83	117.39	120.30
2	B	99	ARG	NE-CZ-NH2	5.63	123.11	120.30
2	B	99	ARG	NE-CZ-NH1	-5.40	117.60	120.30
2	F	59	ARG	NE-CZ-NH1	5.36	122.98	120.30
1	G	365	ARG	NE-CZ-NH2	-5.29	117.65	120.30
2	F	19	ARG	NE-CZ-NH2	-5.23	117.68	120.30
1	A	438	THR	CA-CB-CG2	5.20	119.68	112.40
1	C	406	ARG	NE-CZ-NH1	5.10	122.85	120.30
1	C	413	ASN	CB-CA-C	-5.06	100.27	110.40

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	365	ARG	Sidechain
1	A	85	ARG	Sidechain
1	C	39	THR	Peptide
2	D	101	ARG	Sidechain
2	D	83	ARG	Sidechain
1	E	365	ARG	Sidechain
2	F	31	ARG	Sidechain

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	3482	0	3544	12	0
1	C	3504	0	3568	17	0
1	E	3493	0	3558	14	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	G	3474	0	3538	20	0
2	B	933	0	914	3	0
2	D	933	0	914	1	0
2	F	933	0	914	3	0
2	H	933	0	914	7	0
3	A	2	0	0	0	0
3	E	1	0	0	0	0
3	G	1	0	0	0	0
4	A	143	0	0	1	0
4	B	46	0	0	0	0
4	C	139	0	0	1	0
4	D	45	0	0	0	0
4	E	137	0	0	1	0
4	F	47	0	0	0	0
4	G	129	0	0	0	0
4	H	40	0	0	2	0
All	All	18415	0	17864	76	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 2.

All (76) 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:C:38:ILE:HD12	1:C:38:ILE:O	1.79	0.82
1:G:78:VAL:HG11	1:G:97:LEU:HD22	1.64	0.79
2:H:80:GLN:NE2	4:H:301:HOH:O	2.27	0.68
1:G:75:LEU:O	1:G:78:VAL:HG12	1.97	0.64
2:F:2:VAL:HG13	2:F:27:PHE:CE2	2.35	0.61
1:A:436:ASN:HB3	1:A:442:ILE:HD11	1.83	0.61
1:C:128:ASN:HD22	1:C:129:ASN:HD22	1.49	0.60
2:H:2:VAL:HG13	2:H:27:PHE:CE2	2.38	0.59
1:C:461:ASN:OD1	4:C:501:HOH:O	2.17	0.59
2:B:2:VAL:HG13	2:B:27:PHE:CE2	2.39	0.58
1:C:167:ASN:HB2	1:C:189:GLN:HE21	1.73	0.54
1:G:377:SER:HA	1:G:400:PRO:HB3	1.89	0.54
1:E:358:SER:HB3	1:E:378:SER:HB2	1.90	0.53
1:G:80:THR:HG23	1:G:82:GLN:HE21	1.74	0.51
1:E:374:SER:O	4:E:601:HOH:O	2.19	0.51
1:C:358:SER:HB3	1:C:378:SER:HB2	1.92	0.51
1:E:198:THR:HG22	1:E:218:LYS:HB2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:245:THR:N	1:C:246:PRO:CD	2.75	0.50
1:C:198:THR:HG22	1:C:218:LYS:HB2	1.93	0.50
2:D:2:VAL:HA	2:D:27:PHE:CD2	2.48	0.49
1:A:355:SER:N	1:A:356:PRO:CD	2.75	0.49
1:G:198:THR:HG22	1:G:218:LYS:HB2	1.96	0.48
1:E:377:SER:HA	1:E:400:PRO:HB3	1.96	0.48
2:H:71:ASP:OD2	2:H:74:LYS:HD3	2.13	0.47
1:E:84:ASP:O	1:E:86:LEU:HD13	2.13	0.47
1:C:167:ASN:HA	1:C:188:LEU:HA	1.96	0.47
1:C:377:SER:HA	1:C:400:PRO:HB3	1.97	0.46
1:G:355:SER:N	1:G:356:PRO:CD	2.79	0.45
1:G:245:THR:N	1:G:246:PRO:CD	2.79	0.45
1:G:333:SER:N	1:G:334:PRO:CD	2.79	0.45
1:A:167:ASN:HA	1:A:188:LEU:HA	1.99	0.45
2:F:19:ARG:HD3	2:F:80:GLN:NE2	2.31	0.45
1:G:167:ASN:HA	1:G:188:LEU:HA	1.98	0.45
1:G:78:VAL:O	1:G:78:VAL:HG13	2.16	0.45
1:G:377:SER:HA	1:G:400:PRO:CB	2.47	0.45
1:E:64:THR:HG23	1:E:65:ASN:HD22	1.82	0.45
1:E:82:GLN:HE22	1:E:102:GLN:NE2	2.14	0.45
1:A:387:TRP:CD1	1:A:409:GLN:HB2	2.53	0.44
1:E:355:SER:N	1:E:356:PRO:CD	2.80	0.44
1:C:377:SER:HA	1:C:400:PRO:CB	2.47	0.44
2:F:2:VAL:HA	2:F:27:PHE:CD2	2.52	0.44
1:C:355:SER:N	1:C:356:PRO:CD	2.80	0.44
2:B:2:VAL:HA	2:B:27:PHE:CD2	2.52	0.44
1:G:80:THR:CG2	1:G:82:GLN:HE21	2.30	0.44
1:A:413:ASN:ND2	4:A:614:HOH:O	2.50	0.44
1:A:333:SER:N	1:A:334:PRO:CD	2.81	0.44
1:G:394:GLN:HG2	1:G:416:ALA:O	2.17	0.43
1:C:333:SER:N	1:C:334:PRO:CD	2.81	0.43
1:A:377:SER:HA	1:A:400:PRO:HB3	1.99	0.43
1:C:128:ASN:HD22	1:C:129:ASN:ND2	2.15	0.43
1:E:167:ASN:HA	1:E:188:LEU:HA	2.01	0.43
2:H:2:VAL:HA	2:H:27:PHE:CD2	2.54	0.42
1:A:245:THR:N	1:A:246:PRO:CD	2.83	0.42
1:E:377:SER:HA	1:E:400:PRO:CB	2.50	0.42
1:E:358:SER:O	1:E:381[A]:ASN:ND2	2.53	0.42
1:G:354:ILE:O	1:G:357:VAL:HG22	2.20	0.42
1:E:455:GLU:HA	1:E:456:PRO:HA	1.87	0.42
2:H:89:THR:O	2:H:90:ALA:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:267:GLY:HA2	1:G:290:PRO:CG	2.50	0.41
1:C:38:ILE:O	1:C:38:ILE:CD1	2.59	0.41
1:G:260:GLY:O	2:H:31:ARG:NH2	2.54	0.41
1:A:289:ALA:N	1:A:290:PRO:CD	2.84	0.41
1:A:311:SER:HB2	1:A:312:PRO:HD3	2.03	0.41
1:E:245:THR:N	1:E:246:PRO:CD	2.83	0.41
2:H:99:ARG:NH1	4:H:306:HOH:O	2.54	0.41
1:C:201:LYS:N	1:C:202:PRO:CD	2.84	0.41
1:C:455:GLU:HA	1:C:456:PRO:HA	1.89	0.41
1:G:169:LEU:O	1:G:191:LEU:HA	2.21	0.41
1:C:114:THR:HB	1:C:115:PRO:HD3	2.03	0.40
1:G:311:SER:N	1:G:312:PRO:CD	2.84	0.40
1:G:415:GLN:O	1:G:488:GLY:HA2	2.21	0.40
1:A:311:SER:N	1:A:312:PRO:CD	2.85	0.40
1:E:332:ILE:O	1:E:335:ILE:HG12	2.22	0.40
1:A:377:SER:HA	1:A:400:PRO:CB	2.52	0.40
2:B:89:THR:O	2:B:90:ALA:HB2	2.21	0.40
1:G:289:ALA:N	1:G:290:PRO:CD	2.84	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	456/462 (99%)	427 (94%)	29 (6%)	0	100	100
1	C	459/462 (99%)	429 (94%)	30 (6%)	0	100	100
1	E	458/462 (99%)	430 (94%)	28 (6%)	0	100	100
1	G	455/462 (98%)	426 (94%)	29 (6%)	0	100	100
2	B	119/123 (97%)	116 (98%)	3 (2%)	0	100	100
2	D	119/123 (97%)	116 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	F	119/123 (97%)	116 (98%)	3 (2%)	0	100	100
2	H	119/123 (97%)	116 (98%)	3 (2%)	0	100	100
All	All	2304/2340 (98%)	2176 (94%)	128 (6%)	0	100	100

There are no Ramachandran outliers to report.

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	413/416 (99%)	408 (99%)	5 (1%)	71	82
1	C	415/416 (100%)	411 (99%)	4 (1%)	76	85
1	E	415/416 (100%)	412 (99%)	3 (1%)	84	91
1	G	412/416 (99%)	408 (99%)	4 (1%)	76	85
2	B	98/100 (98%)	96 (98%)	2 (2%)	55	66
2	D	98/100 (98%)	95 (97%)	3 (3%)	40	48
2	F	98/100 (98%)	95 (97%)	3 (3%)	40	48
2	H	98/100 (98%)	97 (99%)	1 (1%)	76	85
All	All	2047/2064 (99%)	2022 (99%)	25 (1%)	71	82

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	40	GLN
1	A	335	ILE
1	A	413	ASN
1	A	427	ASN
1	A	438	THR
2	B	29	LEU
2	B	55	ILE
1	C	131	GLN
1	C	180	SER

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Mol	Chain	Res	Type
1	C	335	ILE
1	C	385	ILE
2	D	2	VAL
2	D	3	GLN
2	D	99	ARG
1	E	86	LEU
1	E	377	SER
1	E	386	ASN
2	F	28	THR
2	F	105	SER
2	F	108	SER
1	G	51	THR
1	G	335	ILE
1	G	427	ASN
1	G	429	SER
2	H	75	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	GLN
1	A	109	GLN
1	A	364	GLN
1	A	394	GLN
2	B	80	GLN
2	B	82	ASN
1	C	46	GLN
1	C	129	ASN
1	C	189	GLN
1	C	284	GLN
1	C	364	GLN
2	D	80	GLN
2	D	82	ASN
1	E	65	ASN
1	E	102	GLN
1	E	394	GLN
2	F	72	ASN
2	F	80	GLN
2	F	82	ASN
1	G	82	GLN
1	G	109	GLN
1	G	143	ASN

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Mol	Chain	Res	Type
1	G	394	GLN
1	G	409	GLN
2	H	75	ASN
2	H	82	ASN
2	H	118	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 4 ligands modelled in this entry, 4 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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	457/462 (98%)	-0.26	1 (0%) 95 97	19, 34, 60, 98	0
1	C	461/462 (99%)	-0.02	6 (1%) 77 84	18, 43, 89, 140	0
1	E	457/462 (98%)	0.08	21 (4%) 32 45	20, 34, 86, 114	0
1	G	456/462 (98%)	-0.09	7 (1%) 73 81	18, 38, 82, 103	0
2	B	121/123 (98%)	-0.07	1 (0%) 86 91	21, 35, 62, 88	0
2	D	121/123 (98%)	-0.28	0 100 100	23, 30, 61, 90	0
2	F	121/123 (98%)	-0.29	0 100 100	20, 31, 57, 73	0
2	H	121/123 (98%)	-0.17	0 100 100	20, 36, 61, 77	0
All	All	2315/2340 (98%)	-0.10	36 (1%) 72 80	18, 35, 78, 140	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	39	THR	7.2
1	C	37	THR	5.7
1	E	70	VAL	5.5
1	E	40	GLN	4.9
1	G	463	PRO	4.5
1	E	78	VAL	4.2
1	E	47	ILE	4.1
1	E	96	TYR	3.9
1	A	40	GLN	3.5
1	E	79	THR	3.3
1	E	62	GLY	3.3
1	E	41	ASP	3.1
1	E	74	ASP	3.0
1	E	60	VAL	3.0
1	E	77	GLN	3.0
2	B	27	PHE	2.8

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Mol	Chain	Res	Type	RSRZ
1	E	69	THR	2.7
1	E	73	THR	2.7
1	E	71	SER	2.6
1	G	67	THR	2.6
1	E	75	LEU	2.6
1	E	65	ASN	2.5
1	G	496	ALA	2.4
1	G	70	VAL	2.3
1	G	464	SER	2.3
1	E	94	VAL	2.2
1	E	44	ILE	2.2
1	C	143	ASN	2.2
1	G	64	THR	2.2
1	C	249	ILE	2.2
1	G	93	GLY	2.2
1	C	133	ALA	2.1
1	E	54	ALA	2.1
1	C	40	GLN	2.1
1	E	43	PRO	2.1
1	E	64	THR	2.1

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CL	E	501	1/1	0.91	0.10	55,55,55,55	0
3	CL	A	502	1/1	0.92	0.08	63,63,63,63	0
3	CL	A	501	1/1	0.92	0.14	65,65,65,65	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CL	G	501	1/1	0.94	0.18	52,52,52,52	0

6.5 Other polymers (i)

There are no such residues in this entry.