Full wwPDB X-ray Structure Validation Report (i)

Jun 23, 2024 – 10:14 AM EDT

PDB ID	:	6QZW
Title	:	DPP8 bound to a dipeptide (MP) from the N-terminus of BRCA2
Authors	:	Ross, B.; Geiss-Friedlander, R.; Huber, R.
Deposited on	:	2019-03-12
Resolution	:	3.20 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 (i) 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 (1)) were used in the production of this report:

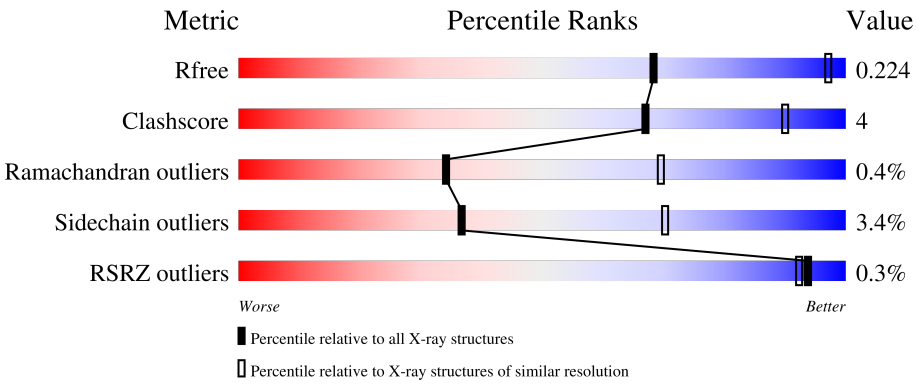
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.20 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	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

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	898	81% 11% 7%
1	B	898	80% 13% • 7%
1	C	898	80% 12% 7%
2	D	2	50% 50%
2	E	2	50% 50%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	F	2	100%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 20409 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 Dipeptidyl peptidase 8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	C	833	6780	4354	1141	1259	26	0	0	0
1	A	833	6780	4354	1141	1259	26	0	0	0
1	B	833	6780	4354	1141	1259	26	0	0	0

- Molecule 2 is a protein called MET-PRO.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	D	2	16	10	2	3	1	0	0	0
2	E	2	16	10	2	3	1	0	0	0
2	F	2	16	10	2	3	1	0	0	0

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Na		
3	C	1	1	1	0	0

- Molecule 4 is water.

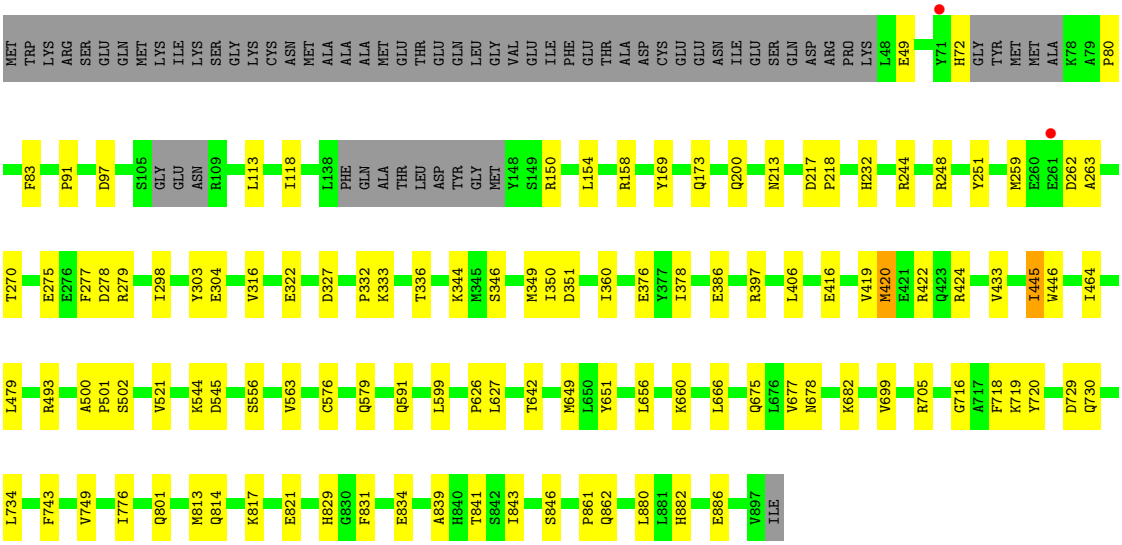
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	C	8	8	8	0	0
4	A	6	6	6	0	0
4	B	6	6	6	0	0

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.

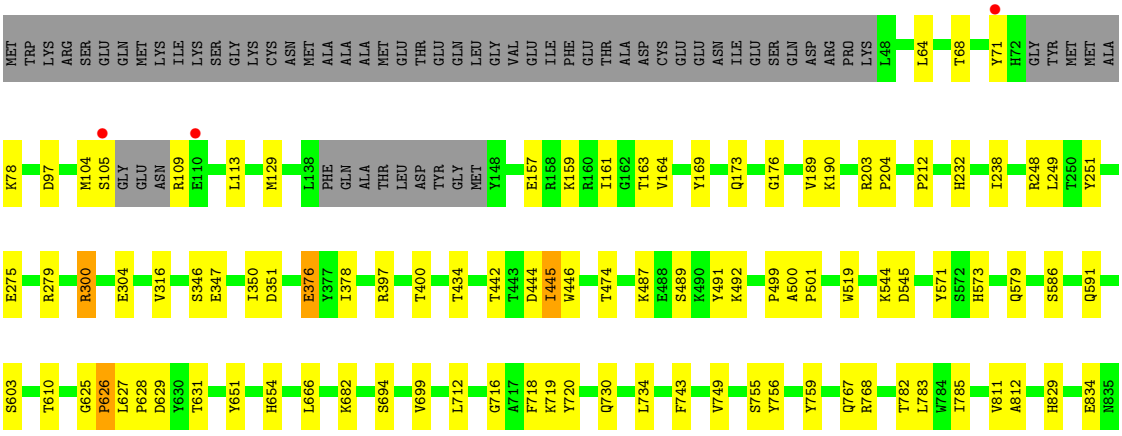
• Molecule 1: Dipeptidyl peptidase 8

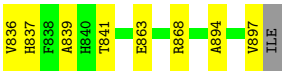
Chain C:



• Molecule 1: Dipeptidyl peptidase 8

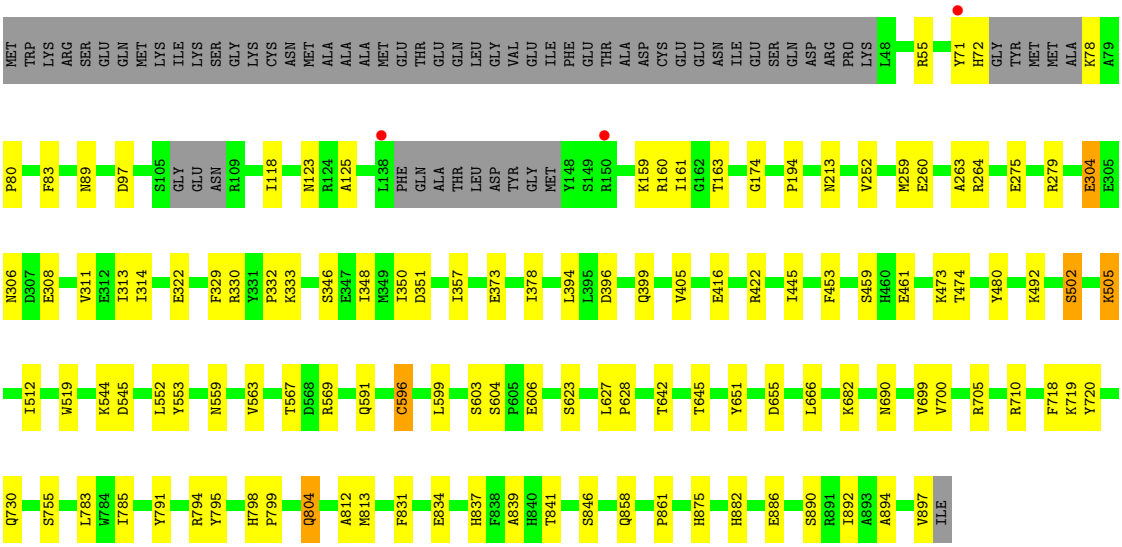
Chain A:





• Molecule 1: Dipeptidyl peptidase 8

Chain B:



• Molecule 2: MET-PRO

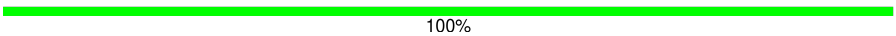
Chain D:

• Molecule 2: MET-PRO

Chain E:

• Molecule 2: MET-PRO

Chain F:



There are no outlier residues recorded for this chain.

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	162.73Å 246.07Å 261.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.58 – 3.20 44.58 – 3.20	Depositor EDS
% Data completeness (in resolution range)	99.9 (44.58-3.20) 99.9 (44.58-3.20)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.60 (at 3.19Å)	Xtriage
Refinement program	REFMAC 5.8.0232	Depositor
R, R_{free}	0.184 , 0.225 0.187 , 0.224	Depositor DCC
R_{free} test set	4323 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	89.5	Xtriage
Anisotropy	0.364	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 49.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	20409	wwPDB-VP
Average B, all atoms (Å^2)	91.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.48% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: NA

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	0.63	0/6966	0.65	0/9447
1	B	0.63	0/6966	0.65	0/9447
1	C	0.63	0/6966	0.65	0/9447
2	D	0.58	0/16	0.41	0/19
2	E	0.49	0/16	0.47	0/19
2	F	0.53	0/16	0.43	0/19
All	All	0.63	0/20946	0.65	0/28398

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	6780	0	6607	56	0
1	B	6780	0	6607	54	0
1	C	6780	0	6607	48	0
2	D	16	0	18	1	0
2	E	16	0	18	1	0
2	F	16	0	18	0	0
3	C	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	6	0	0	0	0
4	B	6	0	0	0	0
4	C	8	0	0	0	0
All	All	20409	0	19875	157	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 4.

All (157) 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:591:GLN:HE22	1:B:682:LYS:HG2	1.52	0.74
1:A:591:GLN:HE22	1:A:682:LYS:HG2	1.57	0.69
1:C:642:THR:HG21	1:C:705:ARG:NH1	2.09	0.68
1:A:654:HIS:ND1	1:A:694:SER:HA	2.11	0.66
1:B:627:LEU:HD12	1:B:628:PRO:HD2	1.79	0.65
1:A:627:LEU:HD12	1:A:628:PRO:HD2	1.79	0.65
1:A:275:GLU:OE1	2:D:1:MET:N	2.32	0.62
1:C:445:ILE:O	1:C:719:LYS:NZ	2.24	0.62
1:A:445:ILE:HD12	1:A:712:LEU:HG	1.83	0.61
1:B:804:GLN:HE21	1:B:804:GLN:HA	1.65	0.60
1:C:656:LEU:HD11	1:C:743:PHE:CD2	2.37	0.60
1:A:783:LEU:HD13	1:A:812:ALA:HB3	1.86	0.58
1:A:279:ARG:HH22	1:A:304:GLU:CD	2.06	0.58
1:A:445:ILE:O	1:A:719:LYS:NZ	2.37	0.58
1:C:591:GLN:HE22	1:C:682:LYS:HG2	1.69	0.57
1:A:376:GLU:HG3	1:A:397:ARG:HB2	1.85	0.57
1:B:783:LEU:HD13	1:B:812:ALA:HB3	1.86	0.57
1:B:348:ILE:HG22	1:B:350:ILE:HD11	1.87	0.56
1:A:894:ALA:O	1:A:897:VAL:HG22	2.05	0.56
1:C:705:ARG:NH1	1:C:729:ASP:OD1	2.38	0.56
1:B:651:TYR:HB2	1:B:699:VAL:HB	1.88	0.56
1:B:279:ARG:HH22	1:B:304:GLU:CD	2.09	0.56
1:B:798:HIS:ND1	1:B:799:PRO:HD2	2.22	0.55
1:B:894:ALA:O	1:B:897:VAL:HG22	2.06	0.55
1:A:719:LYS:HG2	1:A:720:TYR:CD2	2.42	0.55
1:B:666:LEU:HD21	1:B:730:GLN:HE21	1.73	0.54
1:A:189:VAL:CG1	1:A:204:PRO:HA	2.38	0.54
1:B:552:LEU:HB3	1:B:567:THR:HG23	1.89	0.54
1:A:350:ILE:HG22	1:A:351:ASP:O	2.08	0.53
1:B:279:ARG:NH1	1:B:378:ILE:O	2.42	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:279:ARG:NH1	1:C:378:ILE:O	2.41	0.52
1:B:642:THR:HG21	1:B:705:ARG:NH1	2.23	0.52
1:B:160:ARG:NH2	1:B:275:GLU:OE1	2.42	0.52
1:C:500:ALA:HB1	1:C:501:PRO:HD2	1.92	0.52
1:C:675:GLN:HG2	1:C:678:ASN:HD22	1.75	0.52
1:B:350:ILE:HD12	1:B:350:ILE:N	2.25	0.52
1:C:446:TRP:CH2	1:C:716:GLY:HA2	2.46	0.51
1:A:767:GLN:O	1:A:768:ARG:HD2	2.11	0.51
1:B:260:GLU:HG3	1:B:313:ILE:HD13	1.92	0.51
1:A:591:GLN:HE22	1:A:682:LYS:CG	2.24	0.51
1:A:400:THR:O	1:A:442:THR:HA	2.12	0.50
1:C:150:ARG:NH1	1:C:327:ASP:OD2	2.45	0.50
1:A:113:LEU:HD21	1:A:169:TYR:CD1	2.46	0.49
1:B:399:GLN:OE1	1:B:794:ARG:NH1	2.45	0.49
1:B:858:GLN:HE22	1:B:875:HIS:HE1	1.59	0.49
1:C:814:GLN:HE21	1:C:817:LYS:NZ	2.10	0.49
1:C:651:TYR:HB2	1:C:699:VAL:HB	1.94	0.49
1:A:837:HIS:HD2	1:A:839:ALA:H	1.60	0.49
1:A:176:GLY:O	1:A:190:LYS:HA	2.13	0.49
1:C:433:VAL:O	1:C:493:ARG:NH2	2.46	0.49
1:A:782:THR:HA	1:A:811:VAL:HG22	1.93	0.49
1:A:500:ALA:HB1	1:A:501:PRO:CD	2.43	0.49
1:A:631:THR:HB	1:A:654:HIS:HE2	1.78	0.49
1:A:625:GLY:O	1:A:626:PRO:C	2.52	0.48
1:C:666:LEU:HD21	1:C:730:GLN:HE21	1.78	0.48
1:B:890:SER:OG	1:B:892:ILE:HG22	2.14	0.48
1:C:303:TYR:CZ	1:C:344:LYS:HB2	2.49	0.48
1:C:719:LYS:HG2	1:C:720:TYR:CD2	2.48	0.48
1:B:78:LYS:HD2	1:B:163:THR:HG21	1.95	0.48
1:C:406:LEU:HD11	1:C:464:ILE:HD13	1.96	0.48
1:A:64:LEU:O	1:A:68:THR:HG23	2.14	0.48
1:B:72:HIS:CE1	1:B:627:LEU:HD21	2.49	0.47
1:C:831:PHE:HB3	1:C:861:PRO:HA	1.96	0.47
1:C:118:ILE:HD12	1:C:599:LEU:CD2	2.45	0.47
1:A:654:HIS:ND1	1:A:694:SER:CA	2.78	0.47
1:B:645:THR:O	1:B:710:ARG:NH1	2.40	0.47
1:C:649:MET:HG3	1:C:677:VAL:HG22	1.97	0.47
1:C:298:ILE:HG12	1:C:349:MET:HG3	1.97	0.47
1:B:627:LEU:HD12	1:B:628:PRO:CD	2.44	0.47
1:A:159:LYS:HD3	1:A:161:ILE:HD11	1.96	0.47
1:B:348:ILE:HG22	1:B:350:ILE:CD1	2.44	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:72:HIS:CE1	1:C:627:LEU:HD21	2.50	0.46
1:A:571:TYR:HB2	1:A:573:HIS:CE1	2.50	0.46
1:B:123:ASN:HD21	1:B:125:ALA:HB3	1.80	0.46
1:C:213:ASN:H	1:C:232:HIS:HE1	1.64	0.46
1:A:573:HIS:HD2	1:A:586:SER:OG	1.98	0.46
1:B:263:ALA:HB2	1:B:330:ARG:HH21	1.80	0.46
1:A:666:LEU:HD21	1:A:730:GLN:HE21	1.80	0.45
1:C:248:ARG:HD3	1:C:251:TYR:CE2	2.52	0.45
1:A:519:TRP:CG	1:A:544:LYS:HA	2.51	0.45
1:B:519:TRP:CG	1:B:544:LYS:HA	2.51	0.45
1:B:553:TYR:HB3	1:B:563:VAL:HG12	1.97	0.45
1:A:829:HIS:HD2	1:A:841:THR:OG1	2.00	0.45
1:A:173:GLN:NE2	1:A:579:GLN:HE22	2.15	0.45
1:B:118:ILE:HD12	1:B:599:LEU:CD2	2.47	0.45
1:B:55:ARG:HD2	1:B:892:ILE:CG2	2.47	0.45
1:B:308:GLU:HA	1:B:311:VAL:HG23	1.99	0.45
1:B:351:ASP:HA	1:B:357:ILE:HD11	1.98	0.45
1:B:666:LEU:HD12	1:B:700:VAL:O	2.16	0.45
1:B:473:LYS:HG3	1:B:480:TYR:CZ	2.52	0.44
1:C:350:ILE:HG22	1:C:351:ASP:O	2.17	0.44
1:A:863:GLU:HA	1:A:863:GLU:OE1	2.17	0.44
1:B:80:PRO:HB2	1:B:83:PHE:CZ	2.53	0.44
1:B:416:GLU:O	1:B:422:ARG:HD2	2.16	0.44
1:C:49:GLU:O	1:C:660:LYS:HA	2.18	0.44
1:C:154:LEU:O	1:C:158:ARG:HG2	2.17	0.44
1:C:262:ASP:O	1:C:263:ALA:HB3	2.17	0.44
1:B:596:CYS:SG	1:B:623:SER:HB2	2.58	0.44
1:C:734:LEU:HD21	1:C:749:VAL:HG11	1.99	0.44
1:A:64:LEU:C	1:A:64:LEU:HD23	2.39	0.44
1:C:173:GLN:NE2	1:C:579:GLN:HE22	2.16	0.44
1:A:300:ARG:NH1	1:A:347:GLU:OE2	2.51	0.44
1:B:606:GLU:H	1:B:606:GLU:HG2	1.65	0.43
1:A:719:LYS:HG2	1:A:720:TYR:CE2	2.53	0.43
1:B:569:ARG:NH1	1:B:569:ARG:HB3	2.33	0.43
1:B:882:HIS:CE1	1:B:886:GLU:HG3	2.52	0.43
1:B:333:LYS:HG3	1:B:785:ILE:O	2.18	0.43
1:C:544:LYS:HE2	1:C:563:VAL:HB	2.01	0.43
1:B:755:SER:OG	2:E:2:PRO:HB2	2.18	0.43
1:C:479:LEU:HG	1:C:521:VAL:HG21	2.01	0.43
1:B:78:LYS:CD	1:B:163:THR:HG21	2.49	0.43
1:B:791:TYR:O	1:B:795:TYR:HD1	2.01	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:776:ILE:HD13	1:C:880:LEU:HD12	2.00	0.43
1:B:719:LYS:HG3	1:B:720:TYR:CD2	2.54	0.43
1:A:212:PRO:HD2	1:A:232:HIS:CE1	2.54	0.43
1:A:279:ARG:NH1	1:A:378:ILE:O	2.52	0.43
1:B:159:LYS:HD3	1:B:161:ILE:HD11	2.00	0.43
1:C:113:LEU:HD21	1:C:169:TYR:CD1	2.54	0.42
1:A:434:THR:HG21	1:A:489:SER:HB2	2.01	0.42
1:B:174:GLY:O	1:B:194:PRO:HD3	2.19	0.42
1:C:416:GLU:O	1:C:422:ARG:HD2	2.19	0.42
1:C:882:HIS:CE1	1:C:886:GLU:HG3	2.54	0.42
1:C:839:ALA:O	1:C:843:ILE:HG22	2.19	0.42
1:B:502:SER:HA	1:B:505:LYS:HG3	2.01	0.42
1:B:831:PHE:HB3	1:B:861:PRO:HA	2.01	0.42
1:A:157:GLU:OE2	1:A:868:ARG:NH1	2.51	0.42
1:A:651:TYR:HB2	1:A:699:VAL:HB	2.02	0.42
1:A:829:HIS:HE1	1:A:836:VAL:O	2.03	0.42
1:B:279:ARG:NH2	1:B:304:GLU:OE2	2.49	0.42
1:B:445:ILE:O	1:B:719:LYS:NZ	2.41	0.42
1:A:105:SER:HB2	1:A:109:ARG:HD3	2.02	0.42
1:B:837:HIS:HD2	1:B:839:ALA:H	1.67	0.42
1:C:80:PRO:HB2	1:C:83:PHE:CZ	2.55	0.41
1:C:277:PHE:O	1:C:278:ASP:C	2.58	0.41
1:C:333:LYS:HG2	1:C:336:THR:HG23	2.02	0.41
1:A:238:ILE:HG12	1:A:249:LEU:HD21	2.00	0.41
1:A:491:TYR:CD2	1:A:499:PRO:HB3	2.55	0.41
1:A:78:LYS:HD2	1:A:163:THR:CG2	2.50	0.41
1:C:464:ILE:O	1:C:464:ILE:HG23	2.20	0.41
1:A:189:VAL:HG13	1:A:204:PRO:HA	2.02	0.41
1:B:252:VAL:HG12	1:B:264:ARG:HB3	2.01	0.41
1:A:628:PRO:O	1:A:629:ASP:HB2	2.20	0.41
1:A:719:LYS:HE2	1:A:720:TYR:CZ	2.55	0.41
1:C:719:LYS:HE2	1:C:720:TYR:CE2	2.56	0.41
1:C:829:HIS:HD2	1:C:841:THR:OG1	2.04	0.41
1:A:104:MET:O	1:A:105:SER:C	2.59	0.41
1:A:734:LEU:HD21	1:A:749:VAL:HG11	2.02	0.41
1:A:756:TYR:O	1:A:759:TYR:HB3	2.21	0.41
1:A:446:TRP:CH2	1:A:716:GLY:HA2	2.56	0.41
1:A:248:ARG:HD3	1:A:251:TYR:CE1	2.56	0.41
1:C:244:ARG:HD2	1:A:720:TYR:CD2	2.56	0.40
1:C:419:VAL:HG13	1:C:420:MET:HE3	2.04	0.40
1:A:627:LEU:HD12	1:A:628:PRO:CD	2.47	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:217:ASP:N	1:C:218:PRO:CD	2.85	0.40
1:C:275:GLU:HA	1:C:275:GLU:OE1	2.22	0.40
1:C:376:GLU:HG3	1:C:397:ARG:HB2	2.02	0.40
1:B:394:LEU:HD12	1:B:405:VAL:HG21	2.03	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	825/898 (92%)	779 (94%)	44 (5%)	2 (0%)	47	79
1	B	825/898 (92%)	779 (94%)	44 (5%)	2 (0%)	47	79
1	C	825/898 (92%)	771 (94%)	49 (6%)	5 (1%)	25	64
All	All	2475/2694 (92%)	2329 (94%)	137 (6%)	9 (0%)	34	69

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	259	MET
1	A	626	PRO
1	A	445	ILE
1	C	91	PRO
1	C	626	PRO
1	C	445	ILE
1	B	453	PHE
1	C	332	PRO
1	B	332	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	741/795 (93%)	720 (97%)	21 (3%)	43	74
1	B	741/795 (93%)	708 (96%)	33 (4%)	27	63
1	C	741/795 (93%)	719 (97%)	22 (3%)	41	73
2	D	2/2 (100%)	2 (100%)	0	100	100
2	E	2/2 (100%)	2 (100%)	0	100	100
2	F	2/2 (100%)	2 (100%)	0	100	100
All	All	2229/2391 (93%)	2153 (97%)	76 (3%)	37	70

All (76) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	97	ASP
1	C	200	GLN
1	C	270	THR
1	C	304	GLU
1	C	316	VAL
1	C	322	GLU
1	C	346	SER
1	C	360	ILE
1	C	386	GLU
1	C	420	MET
1	C	424	ARG
1	C	502	SER
1	C	545	ASP
1	C	556	SER
1	C	576	CYS
1	C	718	PHE
1	C	801	GLN
1	C	813	MET
1	C	821	GLU
1	C	834	GLU
1	C	846	SER
1	C	862	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	71	TYR
1	A	97	ASP
1	A	129	MET
1	A	164	VAL
1	A	203	ARG
1	A	300	ARG
1	A	316	VAL
1	A	346	SER
1	A	376	GLU
1	A	444	ASP
1	A	474	THR
1	A	487	LYS
1	A	492	LYS
1	A	545	ASP
1	A	603	SER
1	A	610	THR
1	A	718	PHE
1	A	743	PHE
1	A	755	SER
1	A	785	ILE
1	A	834	GLU
1	B	71	TYR
1	B	89	ASN
1	B	97	ASP
1	B	213	ASN
1	B	259	MET
1	B	304	GLU
1	B	306	ASN
1	B	314	ILE
1	B	322	GLU
1	B	329	PHE
1	B	346	SER
1	B	373	GLU
1	B	396	ASP
1	B	459	SER
1	B	461	GLU
1	B	474	THR
1	B	492	LYS
1	B	502	SER
1	B	505	LYS
1	B	512	ILE
1	B	545	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	559	ASN
1	B	596	CYS
1	B	603	SER
1	B	604	SER
1	B	655	ASP
1	B	690	ASN
1	B	718	PHE
1	B	804	GLN
1	B	813	MET
1	B	834	GLU
1	B	841	THR
1	B	846	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (59) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	72	HIS
1	C	173	GLN
1	C	199	GLN
1	C	232	HIS
1	C	274	GLN
1	C	403	GLN
1	C	573	HIS
1	C	591	GLN
1	C	675	GLN
1	C	690	ASN
1	C	704	ASN
1	C	730	GLN
1	C	814	GLN
1	C	829	HIS
1	C	837	HIS
1	C	858	GLN
1	C	882	HIS
1	C	885	GLN
1	A	123	ASN
1	A	199	GLN
1	A	232	HIS
1	A	254	ASN
1	A	274	GLN
1	A	573	HIS
1	A	579	GLN
1	A	591	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	657	GLN
1	A	675	GLN
1	A	704	ASN
1	A	709	HIS
1	A	730	GLN
1	A	829	HIS
1	A	837	HIS
1	A	858	GLN
1	A	862	GLN
1	A	885	GLN
1	B	89	ASN
1	B	195	GLN
1	B	200	GLN
1	B	213	ASN
1	B	232	HIS
1	B	274	GLN
1	B	306	ASN
1	B	573	HIS
1	B	591	GLN
1	B	657	GLN
1	B	675	GLN
1	B	690	ASN
1	B	704	ASN
1	B	709	HIS
1	B	730	GLN
1	B	801	GLN
1	B	804	GLN
1	B	814	GLN
1	B	829	HIS
1	B	837	HIS
1	B	858	GLN
1	B	882	HIS
1	B	885	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 1 ligands modelled in this entry, 1 is 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, 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	833/898 (92%)	-0.18	3 (0%)	92	89	58, 85, 131, 179	0
1	B	833/898 (92%)	-0.16	3 (0%)	92	89	61, 89, 132, 183	0
1	C	833/898 (92%)	-0.16	2 (0%)	95	94	61, 87, 130, 184	0
2	D	2/2 (100%)	0.42	0	100	100	102, 102, 102, 115	0
2	E	2/2 (100%)	0.53	0	100	100	112, 112, 112, 118	0
2	F	2/2 (100%)	0.26	0	100	100	99, 99, 99, 118	0
All	All	2505/2700 (92%)	-0.17	8 (0%)	94	92	58, 87, 131, 184	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	71	TYR	3.6
1	C	261	GLU	2.5
1	B	150	ARG	2.2
1	A	105	SER	2.2
1	B	138	LEU	2.1
1	C	71	TYR	2.0
1	B	71	TYR	2.0
1	A	110	GLU	2.0

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

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

6.3 Carbohydrates (i)

There are no 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	NA	C	901	1/1	0.85	0.38	70,70,70,70	0

6.5 Other polymers (i)

There are no such residues in this entry.