Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 09:06 AM GMT

PDB ID	:	3H76
Title	:	Crystal structure of PqsD, a key enzyme in Pseudomonas aeruginosa quinolone signal biosynthesis pathway
Authors	:	Bera, A.K.; Atanasova, V.; Parsons, J.F.
Deposited on	:	2009-04-24
Resolution	:	1.80 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
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

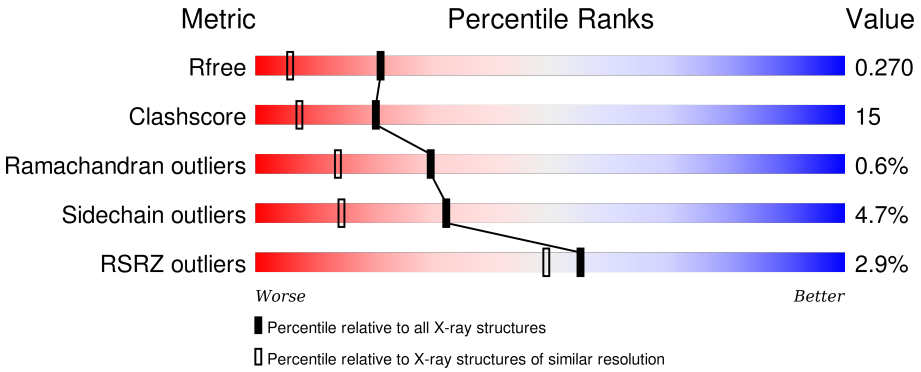
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 1.80 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	4533 (1.80-1.80)
Clashscore	102246	5383 (1.80-1.80)
Ramachandran outliers	100387	5320 (1.80-1.80)
Sidechain outliers	100360	5319 (1.80-1.80)
RSRZ outliers	91569	4547 (1.80-1.80)

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 >=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 <=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	359	3% 69% 19% • • 8%
1	B	359	3% 72% 18% • 8%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 5355 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 PQS biosynthetic enzyme.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	329	Total	C	N	O	S	0	3	0
			2501	1572	450	465	14			
1	B	329	Total	C	N	O	S	0	3	0
			2506	1574	453	465	14			

There are 46 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-22	GLY	-	EXPRESSION TAG	UNP P20582
A	-21	SER	-	EXPRESSION TAG	UNP P20582
A	-20	HIS	-	EXPRESSION TAG	UNP P20582
A	-19	MET	-	EXPRESSION TAG	UNP P20582
A	-18	ALA	-	EXPRESSION TAG	UNP P20582
A	-17	SER	-	EXPRESSION TAG	UNP P20582
A	-16	MET	-	EXPRESSION TAG	UNP P20582
A	-15	THR	-	EXPRESSION TAG	UNP P20582
A	-14	GLY	-	EXPRESSION TAG	UNP P20582
A	-13	GLY	-	EXPRESSION TAG	UNP P20582
A	-12	GLN	-	EXPRESSION TAG	UNP P20582
A	-11	GLN	-	EXPRESSION TAG	UNP P20582
A	-10	MET	-	EXPRESSION TAG	UNP P20582
A	-9	GLY	-	EXPRESSION TAG	UNP P20582
A	-8	ARG	-	EXPRESSION TAG	UNP P20582
A	-7	GLY	-	EXPRESSION TAG	UNP P20582
A	-6	SER	-	EXPRESSION TAG	UNP P20582
A	-5	GLU	-	EXPRESSION TAG	UNP P20582
A	-4	ASN	-	EXPRESSION TAG	UNP P20582
A	-3	LEU	-	EXPRESSION TAG	UNP P20582
A	-2	TYR	-	EXPRESSION TAG	UNP P20582
A	-1	PHE	-	EXPRESSION TAG	UNP P20582
A	0	GLN	-	EXPRESSION TAG	UNP P20582
B	-22	GLY	-	EXPRESSION TAG	UNP P20582
B	-21	SER	-	EXPRESSION TAG	UNP P20582

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-20	HIS	-	EXPRESSION TAG	UNP P20582
B	-19	MET	-	EXPRESSION TAG	UNP P20582
B	-18	ALA	-	EXPRESSION TAG	UNP P20582
B	-17	SER	-	EXPRESSION TAG	UNP P20582
B	-16	MET	-	EXPRESSION TAG	UNP P20582
B	-15	THR	-	EXPRESSION TAG	UNP P20582
B	-14	GLY	-	EXPRESSION TAG	UNP P20582
B	-13	GLY	-	EXPRESSION TAG	UNP P20582
B	-12	GLN	-	EXPRESSION TAG	UNP P20582
B	-11	GLN	-	EXPRESSION TAG	UNP P20582
B	-10	MET	-	EXPRESSION TAG	UNP P20582
B	-9	GLY	-	EXPRESSION TAG	UNP P20582
B	-8	ARG	-	EXPRESSION TAG	UNP P20582
B	-7	GLY	-	EXPRESSION TAG	UNP P20582
B	-6	SER	-	EXPRESSION TAG	UNP P20582
B	-5	GLU	-	EXPRESSION TAG	UNP P20582
B	-4	ASN	-	EXPRESSION TAG	UNP P20582
B	-3	LEU	-	EXPRESSION TAG	UNP P20582
B	-2	TYR	-	EXPRESSION TAG	UNP P20582
B	-1	PHE	-	EXPRESSION TAG	UNP P20582
B	0	GLN	-	EXPRESSION TAG	UNP P20582

- Molecule 2 is water.

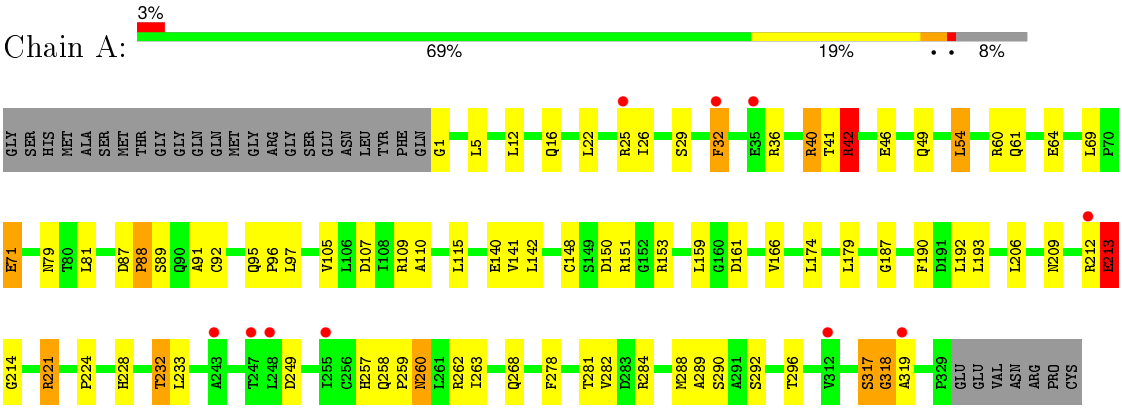
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	163	Total O 163 163	0	0
2	B	185	Total O 185 185	0	0

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.

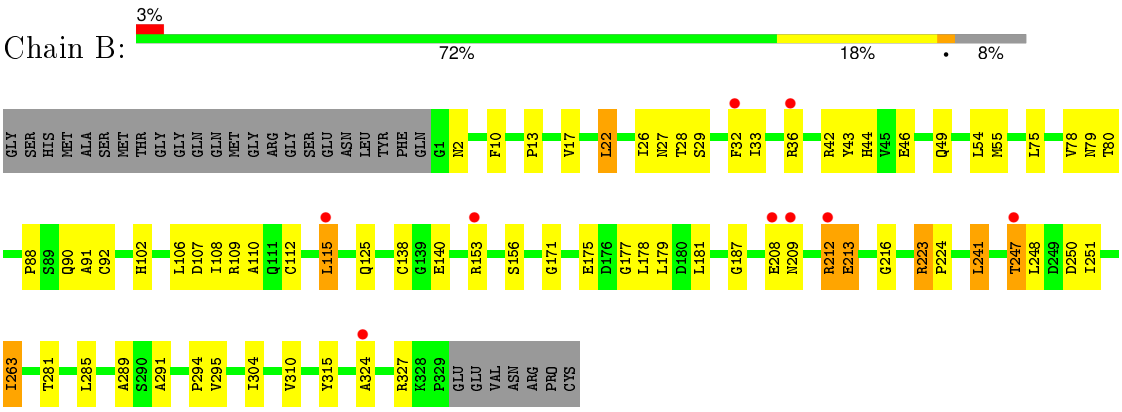
- Molecule 1: PQS biosynthetic enzyme

Chain A:



- Molecule 1: PQS biosynthetic enzyme

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	49.08Å 90.42Å 67.89Å 90.00° 95.38° 90.00°	Depositor
Resolution (Å)	25.60 – 1.80 25.56 – 1.80	Depositor EDS
% Data completeness (in resolution range)	91.4 (25.60-1.80) 91.4 (25.56-1.80)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.74 (at 1.80Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.198 , 0.266 0.208 , 0.270	Depositor DCC
R_{free} test set	2528 reflections (5.33%)	DCC
Wilson B-factor (Å^2)	28.4	Xtriage
Anisotropy	0.466	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 50.7	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.52$, $< L^2 > = 0.36$	Xtriage
Outliers	0 of 49932 reflections	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	5355	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.90% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	0.76	1/2555 (0.0%)	0.93	5/3472 (0.1%)
1	B	0.78	0/2560	0.87	2/3477 (0.1%)
All	All	0.77	1/5115 (0.0%)	0.90	7/6949 (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

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	318	GLY	C-O	-5.53	1.14	1.23

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	213	GLU	N-CA-C	9.49	136.62	111.00
1	A	213	GLU	CB-CA-C	-6.41	97.58	110.40
1	A	192	LEU	CA-CB-CG	5.80	128.64	115.30
1	A	54	LEU	CA-CB-CG	5.54	128.05	115.30
1	B	102	HIS	N-CA-C	-5.52	96.10	111.00
1	B	106	LEU	CB-CG-CD2	-5.35	101.90	111.00
1	A	42	ARG	NE-CZ-NH1	5.04	122.82	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	318	GLY	Peptide
1	A	88	PRO	Peptide

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	2501	0	2533	90	0
1	B	2506	0	2536	63	0
2	A	163	0	0	19	0
2	B	185	0	0	4	0
All	All	5355	0	5069	147	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 15.

All (147) 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:A:290:SER:HB3	2:A:409:HOH:O	1.24	1.34
1:A:290:SER:CB	2:A:409:HOH:O	1.84	1.17
1:B:212:ARG:NH1	1:B:212:ARG:HB3	1.62	1.14
1:B:212:ARG:CZ	1:B:212:ARG:HB3	1.87	1.03
1:A:36:ARG:HD2	2:A:370:HOH:O	1.58	1.01
1:A:292:SER:O	1:A:296[A]:THR:HG23	1.61	1.00
1:A:268:GLN:HB3	2:A:353:HOH:O	1.61	0.99
1:B:208:GLU:O	1:B:209:ASN:HB2	1.61	0.97
1:A:212:ARG:O	1:A:213:GLU:HB2	1.63	0.95
1:B:263:ILE:HD11	2:B:453:HOH:O	1.65	0.94
1:A:212:ARG:O	1:A:213:GLU:CB	2.14	0.94
1:A:29:SER:HG	1:A:32:PHE:HD1	0.98	0.93
1:B:179:LEU:HD11	1:B:327:ARG:HB2	1.52	0.89
1:A:140:GLU:OE2	2:A:409:HOH:O	1.90	0.88
1:A:292:SER:O	1:A:296[B]:THR:HG22	1.73	0.87
1:A:29:SER:OG	1:A:32:PHE:HD1	1.62	0.82
1:A:71:GLU:HG3	2:A:495:HOH:O	1.80	0.82
1:B:212:ARG:CB	1:B:212:ARG:NH1	2.44	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:MET:CE	2:A:352:HOH:O	2.30	0.79
1:B:79:ASN:HD21	1:B:110:ALA:H	1.31	0.78
1:B:46:GLU:H	1:B:49:GLN:HE21	1.31	0.78
1:B:212:ARG:O	1:B:213:GLU:HB2	1.82	0.77
1:B:291:ALA:O	1:B:295:VAL:HG13	1.86	0.76
1:A:71:GLU:CG	2:A:495:HOH:O	2.32	0.76
1:A:288:MET:HE2	2:A:352:HOH:O	1.87	0.75
1:B:212:ARG:CB	1:B:212:ARG:CZ	2.64	0.75
1:A:142:LEU:HD11	1:A:289:ALA:HB2	1.69	0.75
1:A:12:LEU:CD2	1:A:288:MET:HE1	2.17	0.74
1:A:161:ASP:O	1:A:288:MET:CE	2.35	0.73
1:A:41[A]:THR:HG23	1:A:284:ARG:O	1.87	0.73
1:A:29:SER:O	1:A:32:PHE:HB2	1.87	0.73
1:A:228:HIS:O	1:A:232:THR:CG2	2.36	0.73
1:A:228:HIS:O	1:A:232:THR:HG23	1.89	0.72
1:B:212:ARG:O	1:B:213:GLU:CB	2.37	0.72
1:A:69:LEU:HD12	2:A:461:HOH:O	1.89	0.72
1:A:46:GLU:H	1:A:49:GLN:HE21	1.38	0.71
1:A:79:ASN:HD21	1:A:110:ALA:H	1.37	0.71
1:A:260:ASN:C	1:A:260:ASN:HD22	1.94	0.70
1:A:221:ARG:HH11	1:A:221:ARG:HG2	1.55	0.70
1:A:161:ASP:O	1:A:288:MET:HE2	1.92	0.70
1:A:60:ARG:NH2	1:A:97:LEU:O	2.24	0.70
1:A:12:LEU:HD23	1:A:288:MET:HE1	1.73	0.69
1:A:148:CYS:SG	2:A:459:HOH:O	2.46	0.69
1:A:221:ARG:HB3	1:A:224:PRO:HG2	1.75	0.69
1:A:258:GLN:HE22	1:A:281:THR:H	1.42	0.68
1:A:260:ASN:HD21	1:A:263:ILE:H	1.39	0.68
1:A:281:THR:OG1	1:A:296[A]:THR:HG22	1.94	0.67
1:A:5:LEU:HD22	1:A:166:VAL:HG21	1.76	0.66
1:A:209:ASN:OD1	1:A:212:ARG:NH2	2.30	0.65
1:B:79:ASN:HD22	1:B:108:ILE:HG13	1.60	0.65
1:A:107:ASP:HB2	1:B:109:ARG:HB2	1.78	0.65
1:A:260:ASN:ND2	1:A:263:ILE:H	1.95	0.64
1:A:1:GLY:HA2	1:A:174:LEU:HD23	1.79	0.64
1:A:16:GLN:HG3	1:A:41[B]:THR:CG2	2.27	0.64
1:A:258:GLN:NE2	1:A:281:THR:H	1.97	0.63
1:B:78:VAL:HG13	1:B:91:ALA:HB2	1.81	0.62
1:A:161:ASP:O	1:A:288:MET:HE1	2.00	0.61
1:A:64:GLU:HB3	2:A:422:HOH:O	2.01	0.61
1:A:288:MET:HE3	2:A:352:HOH:O	1.95	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:141:VAL:HG12	1:A:141:VAL:O	2.02	0.60
1:B:28:THR:HG21	1:B:33:ILE:HD11	1.84	0.60
1:B:177:GLY:O	1:B:179:LEU:HD12	2.02	0.59
1:A:92:CYS:O	1:B:187:GLY:HA3	2.02	0.59
1:A:61:GLN:NE2	2:A:496:HOH:O	2.35	0.58
1:A:12:LEU:CD2	1:A:288:MET:CE	2.81	0.58
1:A:140:GLU:HG3	1:A:289:ALA:HB3	1.86	0.57
1:A:25:ARG:NH2	2:A:459:HOH:O	2.32	0.56
1:B:223:ARG:HB3	1:B:224:PRO:HD3	1.86	0.56
1:B:179:LEU:HD11	1:B:327:ARG:CB	2.28	0.56
1:B:241:LEU:HD11	1:B:251:ILE:HD11	1.88	0.56
1:A:42:ARG:HD3	2:A:337:HOH:O	2.05	0.56
1:A:105:VAL:HG23	1:A:105:VAL:O	2.04	0.56
1:B:212:ARG:HH11	1:B:212:ARG:CG	2.20	0.55
1:A:26:ILE:HG23	1:A:153:ARG:HG2	1.89	0.54
1:A:209:ASN:O	1:A:212:ARG:O	2.25	0.54
1:B:22:LEU:HG	1:B:26:ILE:HD12	1.89	0.54
1:B:46:GLU:H	1:B:49:GLN:NE2	2.02	0.54
1:A:212:ARG:O	1:A:213:GLU:HB3	2.06	0.54
1:B:46:GLU:N	1:B:49:GLN:HE21	2.03	0.53
1:A:228:HIS:O	1:A:232:THR:HG22	2.08	0.53
1:A:16:GLN:HG3	1:A:41[B]:THR:HG23	1.89	0.53
1:A:260:ASN:ND2	1:A:260:ASN:C	2.61	0.53
1:A:71:GLU:HG2	2:A:495:HOH:O	2.03	0.53
1:B:79:ASN:ND2	1:B:110:ALA:H	2.03	0.53
1:B:212:ARG:CB	1:B:212:ARG:HH11	2.21	0.53
1:A:151:ARG:NH1	2:A:450:HOH:O	2.41	0.53
1:A:25:ARG:NE	2:A:459:HOH:O	2.41	0.53
1:B:43:TYR:O	1:B:44:HIS:HD2	1.93	0.52
1:B:209:ASN:H	1:B:212:ARG:HG2	1.76	0.51
1:A:91:ALA:HB1	1:A:105:VAL:HB	1.92	0.51
1:B:140:GLU:HG3	1:B:289:ALA:HB3	1.93	0.50
1:B:138:CYS:HB2	1:B:294:PRO:HG3	1.94	0.50
1:A:40[A]:ARG:HG3	1:A:40[A]:ARG:HH11	1.77	0.50
1:B:304:ILE:HD13	1:B:310:VAL:HG21	1.93	0.50
1:A:1:GLY:HA2	1:A:174:LEU:CD2	2.42	0.50
1:A:213:GLU:CG	1:A:213:GLU:O	2.57	0.49
1:B:212:ARG:O	1:B:213:GLU:HG3	2.13	0.49
1:A:150:ASP:HA	1:A:153:ARG:HG3	1.95	0.48
1:A:187:GLY:HA3	1:B:92:CYS:O	2.13	0.48
1:B:112:CYS:HB2	1:B:315:TYR:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:ARG:O	1:B:213:GLU:CG	2.61	0.48
1:B:80:THR:O	1:B:80:THR:HG23	2.14	0.48
1:B:32:PHE:HZ	1:B:36:ARG:HH11	1.62	0.48
1:B:209:ASN:O	1:B:213:GLU:OE1	2.31	0.47
1:A:258:GLN:HE21	1:A:282:VAL:H	1.62	0.47
1:B:208:GLU:O	1:B:209:ASN:CB	2.44	0.47
1:A:105:VAL:O	1:A:105:VAL:CG2	2.63	0.47
1:A:95:GLN:HB3	1:A:96:PRO:CD	2.45	0.47
1:A:109:ARG:HB2	1:B:107:ASP:HB2	1.96	0.47
1:B:10:PHE:HB2	1:B:295:VAL:HB	1.98	0.46
1:A:151:ARG:HH22	1:A:214:GLY:CA	2.29	0.46
1:B:156:SER:HB3	2:B:451:HOH:O	2.15	0.46
1:B:55:MET:HE1	1:B:90:GLN:HG2	1.96	0.46
1:B:109:ARG:NH2	2:B:465:HOH:O	2.35	0.46
1:B:247:THR:OG1	1:B:248:LEU:N	2.47	0.46
1:B:109:ARG:NE	2:B:465:HOH:O	2.28	0.46
1:B:178:LEU:O	1:B:178:LEU:HG	2.16	0.46
1:A:16:GLN:HG3	1:A:41[B]:THR:HG21	1.96	0.46
1:A:142:LEU:HD13	1:A:159:LEU:HD22	1.97	0.45
1:B:115:LEU:HG	1:B:294:PRO:HB3	1.99	0.45
1:A:142:LEU:HD11	1:A:289:ALA:CB	2.42	0.44
1:A:233:LEU:HD11	1:A:257:HIS:HB3	2.00	0.44
1:B:28:THR:OG1	1:B:29:SER:N	2.49	0.44
1:B:75:LEU:HD22	1:B:125:GLN:HG3	1.99	0.44
1:A:87:ASP:HB2	1:A:88:PRO:HA	2.00	0.44
1:A:41[A]:THR:HG22	1:A:284:ARG:HA	2.00	0.44
1:B:281:THR:HB	1:B:285:LEU:HD22	2.00	0.44
1:B:247:THR:HG22	1:B:250:ASP:OD2	2.18	0.43
1:A:193:LEU:HB3	1:A:317:SER:HB2	2.00	0.43
1:A:190:PHE:CE1	1:B:88:PRO:HG2	2.53	0.43
1:B:17:VAL:CG1	1:B:22:LEU:HD13	2.49	0.43
1:A:16:GLN:CG	1:A:41[B]:THR:HG23	2.49	0.43
1:A:259:PRO:HG2	1:A:263:ILE:HD13	2.01	0.42
1:B:27:ASN:O	1:B:153:ARG:HD3	2.20	0.41
1:B:26:ILE:CG2	1:B:153:ARG:HG2	2.50	0.41
1:A:268:GLN:HG2	1:A:278:PHE:CD2	2.55	0.41
1:A:61:GLN:HA	1:A:64:GLU:HG2	2.02	0.41
1:B:181:LEU:HD13	1:B:324:ALA:HB2	2.02	0.41
1:A:151:ARG:HH12	1:A:214:GLY:HA3	1.86	0.41
1:A:257:HIS:CD2	1:A:259:PRO:HD3	2.56	0.40
1:A:88:PRO:HB2	1:A:89:SER:H	1.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:206:LEU:CD1	1:B:216:GLY:HA3	2.51	0.40
1:B:223:ARG:CB	1:B:224:PRO:HD3	2.51	0.40
1:B:13:PRO:HD2	1:B:43:TYR:CB	2.52	0.40
1:B:78:VAL:O	1:B:107:ASP:HA	2.21	0.40
1:A:95:GLN:HB3	1:A:96:PRO:HD3	2.04	0.40
1:B:2:ASN:O	1:B:171:GLY:HA3	2.20	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	330/359 (92%)	320 (97%)	7 (2%)	3 (1%)	21 7
1	B	330/359 (92%)	319 (97%)	10 (3%)	1 (0%)	46 29
All	All	660/718 (92%)	639 (97%)	17 (3%)	4 (1%)	30 14

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	319	ALA
1	B	213	GLU
1	A	32	PHE
1	A	213	GLU

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	268/289 (93%)	252 (94%)	16 (6%)	24 8
1	B	268/289 (93%)	258 (96%)	10 (4%)	41 23
All	All	536/578 (93%)	510 (95%)	26 (5%)	32 13

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	22	LEU
1	A	40[A]	ARG
1	A	40[B]	ARG
1	A	42	ARG
1	A	54	LEU
1	A	71	GLU
1	A	81	LEU
1	A	115	LEU
1	A	179	LEU
1	A	213	GLU
1	A	221	ARG
1	A	232	THR
1	A	249	ASP
1	A	260	ASN
1	A	262	ARG
1	A	317	SER
1	B	22	LEU
1	B	42	ARG
1	B	54	LEU
1	B	115	LEU
1	B	175	GLU
1	B	212	ARG
1	B	223	ARG
1	B	241	LEU
1	B	247	THR
1	B	263	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	GLN
1	A	79	ASN

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Mol	Chain	Res	Type
1	A	111	GLN
1	A	258	GLN
1	A	260	ASN
1	B	44	HIS
1	B	49	GLN
1	B	79	ASN

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 carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

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	329/359 (91%)	0.17	10 (3%) 54 48	19, 33, 46, 53	6 (1%)
1	B	329/359 (91%)	0.07	9 (2%) 58 53	20, 31, 44, 56	9 (2%)
All	All	658/718 (91%)	0.12	19 (2%) 55 49	19, 33, 45, 56	15 (2%)

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	32	PHE	6.6
1	B	212	ARG	5.2
1	B	209	ASN	4.9
1	B	32	PHE	4.3
1	A	312	VAL	3.7
1	A	243	ALA	3.5
1	A	248	LEU	3.2
1	B	208	GLU	3.0
1	B	36	ARG	2.9
1	A	212	ARG	2.7
1	A	35	GLU	2.6
1	A	255	ILE	2.4
1	B	153	ARG	2.3
1	B	324	ALA	2.3
1	A	247	THR	2.3
1	B	115	LEU	2.3
1	A	319	ALA	2.1
1	B	247	THR	2.1
1	A	25	ARG	2.0

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

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

6.3 Carbohydrates

There are no carbohydrates in this entry.

6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.