Full wwPDB X-ray Structure Validation Report (i)

Dec 16, 2023 – 05:54 pm GMT

PDB ID	:	2Y2L
Title	:	PENICILLIN-BINDING PROTEIN 1B (PBP-1B) IN COMPLEX WITH AN ALKYL BORONATE (E06)
Authors	:	Contreras-Martel, C.; Amoroso, A.; Woon, E.C.; Zervosen, A.; Inglis, S.; Martins, A.; Verlaine, O.; Rydzik, A.; Job, V.; Luxen, A.; Joris, B.; Schofield, C.J.; Dessen, A.
Deposited on	:	2010-12-15
Resolution	:	2.07 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 (i)) were used in the production of this report:

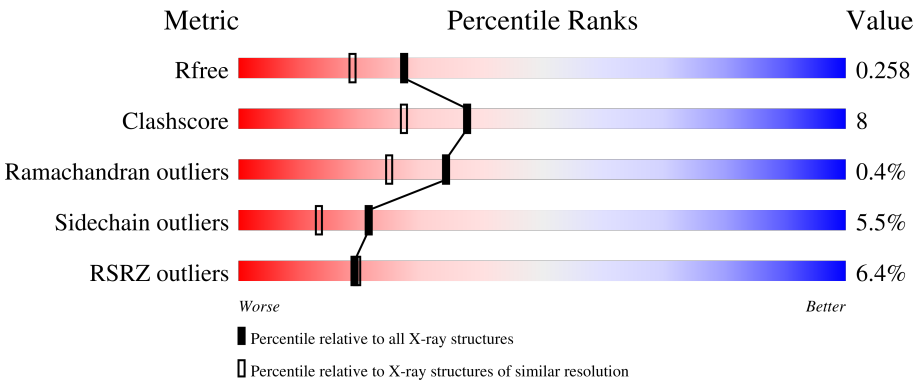
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.07 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	2684 (2.08-2.04)
Clashscore	141614	2801 (2.08-2.04)
Ramachandran outliers	138981	2768 (2.08-2.04)
Sidechain outliers	138945	2768 (2.08-2.04)
RSRZ outliers	127900	2646 (2.08-2.04)

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	494	5% 80% 13% • •
1	B	494	7% 78% 17% • •

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	CL	A	1221	-	-	-	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 7893 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.

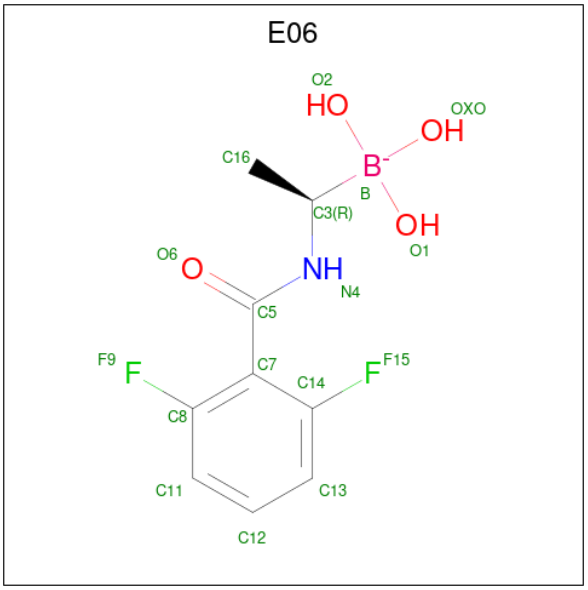
- Molecule 1 is a protein called PENICILLIN-BINDING PROTEIN 1B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	472	3647	2282	618	732	15	0	1	0
1	B	476	3671	2297	622	737	15	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

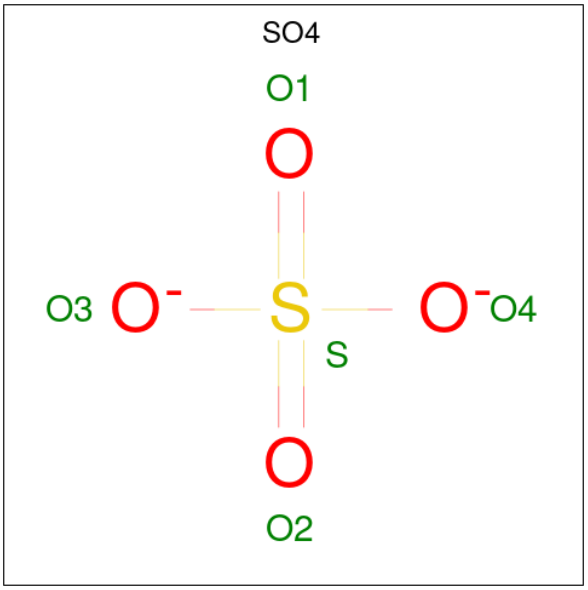
Chain	Residue	Modelled	Actual	Comment	Reference
A	656	GLY	ASN	engineered mutation	UNP Q7CRA4
A	686	GLN	ARG	engineered mutation	UNP Q7CRA4
A	687	GLN	ARG	engineered mutation	UNP Q7CRA4
B	656	GLY	ASN	engineered mutation	UNP Q7CRA4
B	686	GLN	ARG	engineered mutation	UNP Q7CRA4
B	687	GLN	ARG	engineered mutation	UNP Q7CRA4

- Molecule 2 is [(1R)-1-[(2,6-difluorophenyl)carbonylamino]ethyl]-trihydroxy-boron (three-letter code: E06) (formula: $C_9H_{11}BF_2NO_4$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	B	C	F	N	O		
2	A	1	16	1	9	2	1	3	0	0
			Total	B	C	F	N	O		
2	B	1	16	1	9	2	1	3	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
3	A	1	5	4	1	0	0
			Total	O	S		
3	B	1	5	4	1	0	0

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Cl		
4	A	16	16	16	0	0
			Total	Cl		
4	B	17	17	17	0	0

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Na		
5	A	1	1	1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Na		
5	B	1	1	1	0	0

- Molecule 6 is water.

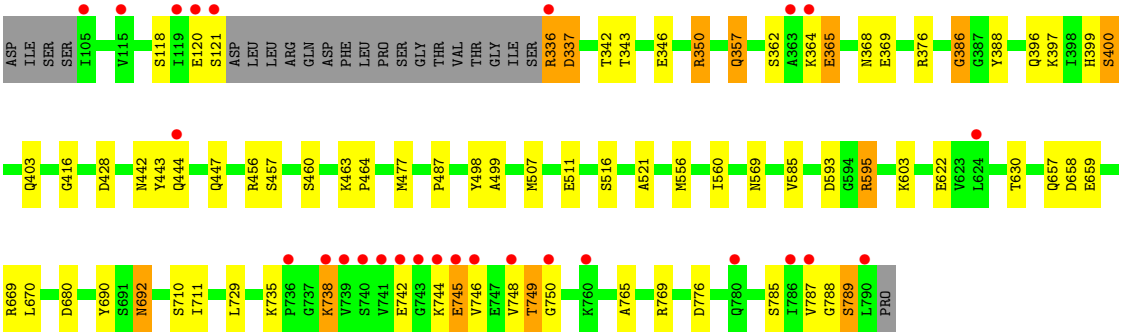
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	249	249	249	0	0
			Total	O		
6	B	249	249	249	0	0

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.

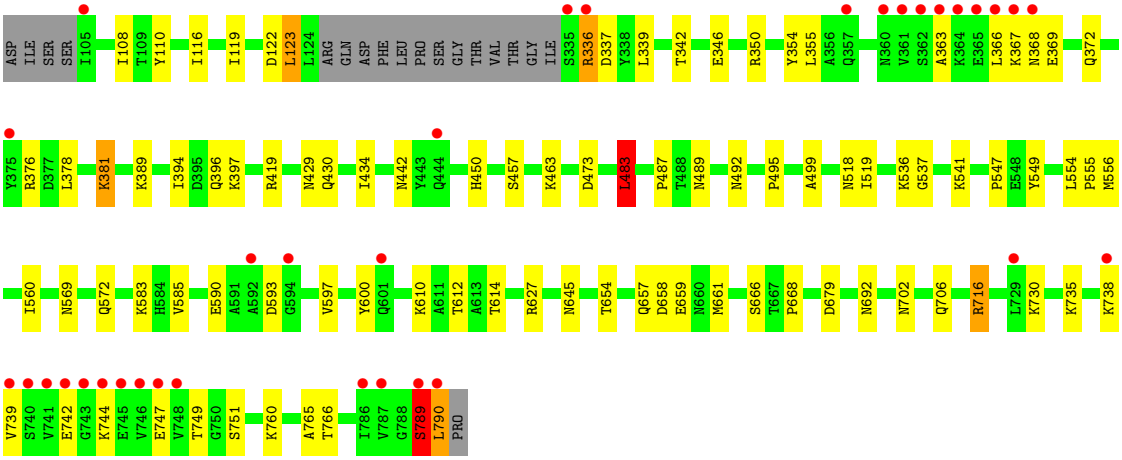
• Molecule 1: PENICILLIN-BINDING PROTEIN 1B

Chain A:



• Molecule 1: PENICILLIN-BINDING PROTEIN 1B

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	96.06Å 101.63Å 145.56Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.92 – 2.07 44.92 – 2.07	Depositor EDS
% Data completeness (in resolution range)	95.7 (44.92-2.07) 95.7 (44.92-2.07)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.05	Depositor
$< I/\sigma(I) >$ [1]	1.74 (at 2.07Å)	Xtriage
Refinement program	REFMAC 5.6.0095	Depositor
R, R_{free}	0.190 , 0.256 0.192 , 0.258	Depositor DCC
R_{free} test set	8403 reflections (10.05%)	wwPDB-VP
Wilson B-factor (Å^2)	35.0	Xtriage
Anisotropy	0.142	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 44.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	7893	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.18% 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: SO4, CL, E06, 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	0.65	1/3723 (0.0%)	0.74	3/5052 (0.1%)
1	B	0.67	1/3744 (0.0%)	1.04	5/5081 (0.1%)
All	All	0.66	2/7467 (0.0%)	0.90	8/10133 (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	1
1	B	0	2
All	All	0	3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	789	SER	C-N	-7.34	1.17	1.34
1	A	789	SER	C-N	-6.56	1.19	1.34

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	789	SER	O-C-N	-43.46	53.17	122.70
1	B	789	SER	CA-C-N	-21.66	69.56	117.20
1	B	789	SER	C-N-CA	-20.81	69.67	121.70
1	B	483	LEU	CA-CB-CG	7.00	131.41	115.30
1	A	456	ARG	NE-CZ-NH2	-6.28	117.16	120.30
1	B	123	LEU	CA-CB-CG	5.79	128.62	115.30
1	A	376	ARG	NE-CZ-NH1	5.13	122.87	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	428	ASP	CB-CG-OD1	5.08	122.87	118.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	416	GLY	Peptide
1	B	666	SER	Peptide
1	B	789	SER	Mainchain

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	3647	0	3518	49	0
1	B	3671	0	3542	62	0
2	A	16	0	10	1	0
2	B	16	0	10	0	0
3	A	5	0	0	0	0
3	B	5	0	0	0	0
4	A	16	0	0	2	0
4	B	17	0	0	2	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	249	0	0	15	0
6	B	249	0	0	16	0
All	All	7893	0	7080	112	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 8.

All (112) 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)
4:A:1212:CL:CL	6:A:2007:HOH:O	2.34	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:537:GLY:O	1:B:541:LYS:HG3	1.84	0.78
1:B:430:GLN:HG2	6:B:2040:HOH:O	1.85	0.77
1:B:419:ARG:HG3	6:B:2034:HOH:O	1.85	0.76
1:B:450:HIS:HE1	1:B:679:ASP:OD1	1.72	0.72
1:B:739:VAL:HG21	1:B:766:THR:HG22	1.72	0.70
1:B:489:ASN:HD22	1:B:495:PRO:HA	1.56	0.69
1:B:355:LEU:HD13	1:B:378:LEU:HG	1.75	0.68
1:A:120:GLU:HA	6:A:2001:HOH:O	1.94	0.68
1:A:507:MET:HG3	1:A:511:GLU:HB3	1.78	0.66
1:A:362:SER:OG	1:A:365:GLU:HG2	1.96	0.65
1:B:369:GLU:HG3	1:B:372:GLN:HE22	1.63	0.63
1:A:336:ARG:CZ	1:A:336:ARG:HB3	2.28	0.63
1:B:369:GLU:HA	1:B:372:GLN:HE21	1.63	0.63
1:A:593:ASP:HB3	6:A:2138:HOH:O	1.97	0.63
1:A:738:LYS:HG3	6:A:2229:HOH:O	1.99	0.63
1:A:692:ASN:HD22	1:A:692:ASN:N	1.98	0.62
1:B:610:LYS:O	1:B:614:THR:HG23	2.00	0.61
1:A:692:ASN:HD22	1:A:692:ASN:H	1.47	0.61
1:A:397:LYS:HG2	6:A:2028:HOH:O	2.01	0.60
1:B:336:ARG:HB3	1:B:336:ARG:CZ	2.30	0.60
1:B:369:GLU:HA	1:B:372:GLN:NE2	2.17	0.60
1:B:702:ASN:O	1:B:706:GLN:HG2	2.01	0.60
1:B:363:ALA:HA	1:B:366:LEU:HB2	1.83	0.59
1:A:399:HIS:O	1:A:403:GLN:HG2	2.04	0.57
1:A:776:ASP:HB2	4:A:1218:CL:CL	2.41	0.57
1:A:742:GLU:N	6:A:2230:HOH:O	2.38	0.56
1:B:645:ASN:O	1:B:716:ARG:NH2	2.34	0.55
1:B:499:ALA:HB3	6:B:2083:HOH:O	2.06	0.55
1:B:569:ASN:HD21	1:B:583:LYS:H	1.55	0.54
1:A:396:GLN:O	1:A:400:SER:HB2	2.07	0.54
1:B:569:ASN:ND2	1:B:583:LYS:H	2.07	0.53
1:B:369:GLU:HG3	1:B:372:GLN:NE2	2.24	0.53
1:A:729:LEU:HD13	1:A:748:VAL:HG12	1.90	0.53
1:A:357:GLN:HG2	6:A:2013:HOH:O	2.07	0.52
1:A:595:ARG:NE	6:A:2139:HOH:O	2.42	0.52
1:A:350:ARG:HD3	6:A:2012:HOH:O	2.09	0.52
1:A:362:SER:OG	1:A:365:GLU:CG	2.58	0.52
1:B:657:GLN:O	1:B:658:ASP:HB2	2.10	0.52
1:A:738:LYS:HA	1:A:746:VAL:O	2.10	0.52
1:B:593:ASP:HB3	4:B:1206:CL:CL	2.46	0.52
1:B:536:LYS:HG3	1:B:549:TYR:CE1	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:368:ASN:OD1	1:B:368:ASN:C	2.49	0.51
1:A:657:GLN:O	1:A:658:ASP:HB2	2.11	0.50
1:B:372:GLN:HB3	1:B:376:ARG:HH21	1.76	0.50
1:B:489:ASN:ND2	6:B:2072:HOH:O	2.43	0.50
1:A:622:GLU:HG3	6:A:2156:HOH:O	2.11	0.50
1:A:342:THR:O	1:A:346:GLU:HG2	2.12	0.50
1:A:680:ASP:OD1	1:A:680:ASP:C	2.50	0.50
1:A:460:SER:CB	1:A:463:LYS:HE3	2.41	0.49
1:B:463:LYS:NZ	1:B:518:ASN:ND2	2.60	0.49
1:A:337:ASP:CB	6:A:2004:HOH:O	2.60	0.49
1:B:381:LYS:NZ	6:B:2011:HOH:O	1.78	0.48
1:B:354:TYR:CZ	1:B:597:VAL:HG22	2.48	0.48
1:A:749:THR:HG23	1:A:750:GLY:N	2.29	0.48
1:A:362:SER:N	1:A:365:GLU:HG3	2.30	0.47
1:B:108:ILE:HG13	1:B:119:ILE:HD11	1.95	0.47
1:B:346:GLU:HG3	1:B:585:VAL:HG22	1.96	0.47
1:A:556:MET:HB3	2:A:1000:E06:C14	2.45	0.47
1:A:443:TYR:O	1:A:447:GLN:NE2	2.48	0.47
1:A:670:LEU:HD11	1:A:711:ILE:HG13	1.97	0.46
1:B:342:THR:O	1:B:346:GLU:HG2	2.16	0.46
1:B:430:GLN:CG	6:B:2040:HOH:O	2.53	0.46
1:A:498:TYR:O	1:A:499:ALA:HB3	2.16	0.46
1:A:690:TYR:OH	1:B:627:ARG:HD3	2.16	0.46
1:A:386:GLY:HA3	1:A:388:TYR:CE2	2.51	0.46
1:A:769:ARG:NH2	1:A:776:ASP:OD1	2.49	0.45
1:B:742:GLU:HA	6:B:2228:HOH:O	2.15	0.45
1:B:760:LYS:HA	1:B:760:LYS:HD2	1.65	0.45
1:A:463:LYS:HB2	1:A:464:PRO:HD3	1.99	0.45
1:B:692:ASN:HD22	1:B:692:ASN:H	1.65	0.45
1:B:789:SER:HB2	1:B:790:LEU:HD23	1.97	0.45
1:A:397:LYS:HD3	6:A:2030:HOH:O	2.16	0.45
1:B:473:ASP:HA	1:B:612:THR:OG1	2.17	0.45
1:B:518:ASN:ND2	1:B:556:MET:HG2	2.32	0.45
1:B:657:GLN:HB2	1:B:659:GLU:CD	2.38	0.45
1:B:434:ILE:HB	1:B:585:VAL:HG12	1.99	0.44
1:A:369:GLU:HB2	6:A:2016:HOH:O	2.17	0.44
1:B:492:ASN:OD1	1:B:492:ASN:C	2.55	0.44
1:A:343:THR:HG22	1:A:585:VAL:CG1	2.48	0.44
1:A:622:GLU:CG	6:A:2156:HOH:O	2.66	0.44
1:B:735:LYS:HB2	1:B:765:ALA:HA	2.00	0.44
1:B:554:LEU:N	1:B:555:PRO:HD2	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:744:LYS:HD2	1:B:744:LYS:HA	1.74	0.43
1:A:692:ASN:N	1:A:692:ASN:ND2	2.66	0.43
1:B:350:ARG:HD3	6:B:2007:HOH:O	2.19	0.43
1:A:735:LYS:HB2	1:A:765:ALA:HA	2.01	0.42
4:B:1212:CL:CL	6:B:2005:HOH:O	2.59	0.42
1:B:483:LEU:CD2	1:B:483:LEU:N	2.82	0.42
1:B:108:ILE:O	1:B:116:ILE:HB	2.19	0.42
1:B:600:TYR:HE2	6:B:2145:HOH:O	2.02	0.42
1:A:657:GLN:HB2	1:A:659:GLU:CD	2.40	0.42
1:B:627:ARG:HH11	1:B:627:ARG:HD2	1.69	0.42
1:B:339:LEU:HD11	1:B:394:ILE:HG13	2.00	0.42
1:A:365:GLU:O	1:A:368:ASN:HB3	2.20	0.42
1:A:463:LYS:HD3	1:A:521:ALA:HB2	2.02	0.42
1:B:519:ILE:HG13	6:B:2067:HOH:O	2.20	0.42
1:B:547:PRO:HD2	6:B:2119:HOH:O	2.20	0.42
1:A:336:ARG:O	1:A:336:ARG:HG2	2.19	0.41
1:A:738:LYS:HD2	1:A:745:GLU:OE2	2.20	0.41
1:B:654:THR:HG23	1:B:661:MET:SD	2.61	0.41
1:B:108:ILE:CG1	1:B:119:ILE:HD11	2.51	0.41
1:B:110:TYR:CG	1:B:396:GLN:HB2	2.55	0.41
1:B:536:LYS:HE2	6:B:2111:HOH:O	2.19	0.41
1:B:747:GLU:HB3	6:B:2229:HOH:O	2.19	0.41
1:B:457:SER:HA	1:B:560:ILE:O	2.21	0.41
1:A:346:GLU:HG3	6:A:2007:HOH:O	2.22	0.40
1:A:350:ARG:HD3	1:A:350:ARG:HA	1.86	0.40
1:B:397:LYS:NZ	6:B:2020:HOH:O	2.44	0.40
1:B:429:ASN:HA	1:B:572:GLN:HG2	2.02	0.40
1:A:457:SER:HA	1:A:560:ILE:O	2.22	0.40
1:B:668:PRO:HD2	6:B:2205:HOH:O	2.22	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	469/494 (95%)	447 (95%)	19 (4%)	3 (1%)	25 15
1	B	472/494 (96%)	447 (95%)	24 (5%)	1 (0%)	47 39
All	All	941/988 (95%)	894 (95%)	43 (5%)	4 (0%)	34 25

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	442	ASN
1	B	442	ASN
1	A	788	GLY
1	A	386	GLY

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	389/408 (95%)	362 (93%)	27 (7%)	15 8
1	B	392/408 (96%)	376 (96%)	16 (4%)	30 23
All	All	781/816 (96%)	738 (94%)	43 (6%)	21 13

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	118	SER
1	A	121	SER
1	A	336	ARG
1	A	337	ASP
1	A	350	ARG
1	A	357	GLN
1	A	364	LYS
1	A	365	GLU
1	A	400	SER
1	A	444	GLN
1	A	477	MET
1	A	487	PRO

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Mol	Chain	Res	Type
1	A	516	SER
1	A	569	ASN
1	A	595	ARG
1	A	603	LYS
1	A	630	THR
1	A	669	ARG
1	A	692	ASN
1	A	710	SER
1	A	738	LYS
1	A	744	LYS
1	A	745	GLU
1	A	749	THR
1	A	785	SER
1	A	787	VAL
1	A	789	SER
1	B	122	ASP
1	B	123	LEU
1	B	336	ARG
1	B	337	ASP
1	B	367	LYS
1	B	381	LYS
1	B	389	LYS
1	B	483	LEU
1	B	487	PRO
1	B	590	GLU
1	B	716	ARG
1	B	730	LYS
1	B	738	LYS
1	B	749	THR
1	B	751	SER
1	B	790	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	360	ASN
1	A	424	ASN
1	A	692	ASN
1	A	699	HIS
1	A	706	GLN
1	A	714	ASN
1	B	372	GLN

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Mol	Chain	Res	Type
1	B	385	ASN
1	B	403	GLN
1	B	424	ASN
1	B	429	ASN
1	B	448	ASN
1	B	450	HIS
1	B	489	ASN
1	B	500	ASN
1	B	518	ASN
1	B	569	ASN
1	B	635	ASN
1	B	692	ASN

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 39 ligands modelled in this entry, 35 are monoatomic - leaving 4 for Mogul analysis.

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	E06	A	1000	1	13,16,17	1.83	1 (7%)	17,22,25	1.79	2 (11%)
3	SO4	A	1100	-	4,4,4	0.61	0	6,6,6	0.59	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	SO4	B	1100	-	4,4,4	0.58	0	6,6,6	0.36	0
2	E06	B	1000	5,1	13,16,17	1.81	2 (15%)	17,22,25	1.52	3 (17%)

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	E06	A	1000	1	-	2/7/12/14	0/1/1/1
2	E06	B	1000	5,1	-	1/7/12/14	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1000	E06	C5-N4	5.41	1.45	1.34
2	A	1000	E06	C5-N4	5.31	1.45	1.34
2	B	1000	E06	C16-C3	-2.11	1.48	1.53

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1000	E06	O6-C5-N4	-4.24	114.64	122.45
2	A	1000	E06	C7-C5-N4	4.00	126.62	115.12
2	B	1000	E06	C7-C5-N4	3.26	124.48	115.12
2	B	1000	E06	O6-C5-C7	-2.86	116.64	120.95
2	B	1000	E06	C14-C7-C5	-2.15	119.26	122.27

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1000	E06	O6-C5-N4-C3
2	A	1000	E06	C16-C3-N4-C5
2	B	1000	E06	C16-C3-N4-C5

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1000	E06	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1
1	B	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	789:SER	C	790:LEU	N	1.19
1	B	789:SER	C	790:LEU	N	1.17

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	472/494 (95%)	0.07	27 (5%)	23	24	29, 43, 81, 121	0
1	B	476/494 (96%)	0.18	34 (7%)	16	16	28, 41, 86, 119	0
All	All	948/988 (95%)	0.12	61 (6%)	19	19	28, 42, 83, 121	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	364	LYS	7.6
1	B	744	LYS	6.7
1	A	121	SER	6.4
1	B	363	ALA	6.4
1	B	790	LEU	5.7
1	A	336	ARG	5.6
1	B	741	VAL	5.6
1	B	362	SER	5.3
1	B	335	SER	5.2
1	B	105	ILE	5.1
1	B	366	LEU	4.5
1	B	746	VAL	4.5
1	B	743	GLY	4.4
1	B	360	ASN	4.3
1	B	787	VAL	4.2
1	B	738	LYS	4.2
1	B	739	VAL	4.1
1	A	742	GLU	3.9
1	B	742	GLU	3.8
1	A	744	LYS	3.8
1	A	790	LEU	3.8
1	B	368	ASN	3.7
1	A	120	GLU	3.6
1	A	743	GLY	3.5

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Mol	Chain	Res	Type	RSRZ
1	A	105	ILE	3.5
1	B	789	SER	3.3
1	A	748	VAL	3.2
1	B	336	ARG	3.1
1	B	748	VAL	3.1
1	B	365	GLU	3.0
1	A	739	VAL	3.0
1	A	787	VAL	2.9
1	B	747	GLU	2.8
1	A	736	PRO	2.7
1	A	746	VAL	2.7
1	A	760	LYS	2.6
1	B	357	GLN	2.6
1	A	745	GLU	2.6
1	B	444	GLN	2.6
1	A	740	SER	2.5
1	A	115	VAL	2.5
1	B	740	SER	2.4
1	B	745	GLU	2.4
1	A	444	GLN	2.4
1	B	367	LYS	2.4
1	A	363	ALA	2.3
1	B	361	VAL	2.3
1	A	786	ILE	2.3
1	B	601	GLN	2.2
1	B	786	ILE	2.2
1	A	741	VAL	2.2
1	A	780	GLN	2.1
1	A	750	GLY	2.1
1	B	594	GLY	2.1
1	A	738	LYS	2.1
1	A	364	LYS	2.1
1	B	729	LEU	2.1
1	B	592	ALA	2.1
1	B	375	TYR	2.1
1	A	119	ILE	2.0
1	A	624	LEU	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
4	CL	A	1221	1/1	0.66	0.54	100,100,100,100	0
4	CL	B	1792	1/1	0.71	0.16	70,70,70,70	0
4	CL	A	1218	1/1	0.77	0.26	82,82,82,82	0
4	CL	B	1219	1/1	0.79	0.16	69,69,69,69	0
4	CL	A	1216	1/1	0.87	0.11	72,72,72,72	0
4	CL	A	1215	1/1	0.88	0.10	67,67,67,67	0
4	CL	B	1202	1/1	0.88	0.20	63,63,63,63	0
2	E06	A	1000	16/17	0.89	0.13	32,47,58,80	0
4	CL	B	1218	1/1	0.91	0.36	86,86,86,86	0
4	CL	B	1206	1/1	0.91	0.30	86,86,86,86	0
4	CL	B	1217	1/1	0.91	0.11	70,70,70,70	0
2	E06	B	1000	16/17	0.92	0.12	30,45,59,68	0
4	CL	A	1208	1/1	0.93	0.30	72,72,72,72	0
4	CL	B	1221	1/1	0.93	0.58	98,98,98,98	0
4	CL	B	1215	1/1	0.93	0.09	62,62,62,62	0
4	CL	A	1217	1/1	0.95	0.16	76,76,76,76	0
4	CL	B	1220	1/1	0.95	0.07	56,56,56,56	0
4	CL	A	1229	1/1	0.95	0.08	52,52,52,52	0
4	CL	B	1208	1/1	0.95	0.12	59,59,59,59	0
4	CL	A	1214	1/1	0.96	0.05	57,57,57,57	0
4	CL	B	1214	1/1	0.96	0.07	56,56,56,56	0
4	CL	A	1202	1/1	0.96	0.23	70,70,70,70	0
4	CL	B	1216	1/1	0.96	0.10	58,58,58,58	0
4	CL	A	1212	1/1	0.96	0.04	59,59,59,59	0
4	CL	A	1220	1/1	0.97	0.06	59,59,59,59	0
4	CL	A	1200	1/1	0.98	0.09	43,43,43,43	0
4	CL	B	1212	1/1	0.98	0.09	57,57,57,57	0
4	CL	B	1213	1/1	0.98	0.09	63,63,63,63	0
4	CL	A	1791	1/1	0.99	0.18	39,39,39,39	0
4	CL	B	1200	1/1	0.99	0.08	46,46,46,46	0
4	CL	B	1201	1/1	0.99	0.05	44,44,44,44	0
4	CL	A	1201	1/1	0.99	0.05	42,42,42,42	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CL	A	1213	1/1	0.99	0.10	58,58,58,58	0
3	SO4	B	1100	5/5	0.99	0.06	43,52,58,66	0
4	CL	B	1211	1/1	0.99	0.12	42,42,42,42	0
3	SO4	A	1100	5/5	0.99	0.10	43,45,54,54	0
4	CL	A	1211	1/1	0.99	0.10	50,50,50,50	0
5	NA	A	1300	1/1	0.99	0.27	26,26,26,26	0
5	NA	B	1300	1/1	0.99	0.27	28,28,28,28	0

6.5 Other polymers (i)

There are no such residues in this entry.