Full wwPDB X-ray Structure Validation Report ⓘ

Jan 6, 2024 – 10:29 pm GMT

PDB ID	:	5OEY
Title	:	Crystal structure of Leishmania major fructose-1,6-bisphosphatase in holo form.
Authors	:	Yuan, M.; Vasquez-Valdivieso, M.G.; McNae, I.W.; Michels, P.A.M.; Fothergill-Gilmore, L.A.; Walkinshaw, M.D.
Deposited on	:	2017-07-10
Resolution	:	2.80 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
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:

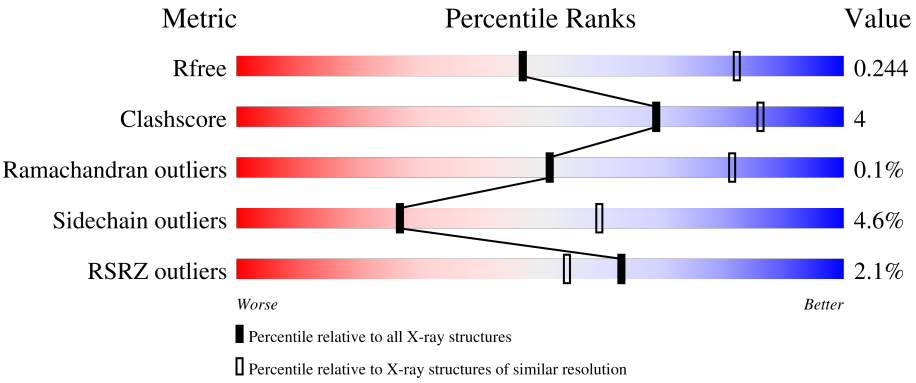
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 2.80 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}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 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	351	4% 82% 10% • 7%
1	B	351	% 79% 11% • 9%
1	C	351	83% 8% • 7%
1	D	351	3% 76% 9% • 14%

2 Entry composition (i)

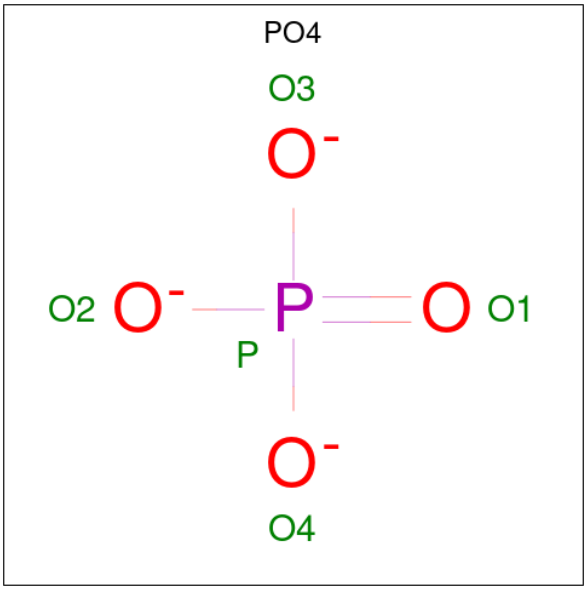
There are 6 unique types of molecules in this entry. The entry contains 10120 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 FBP protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	325	Total	C	N	O	S	0	0	0
			2531	1605	435	476	15			
1	B	319	Total	C	N	O	S	0	0	0
			2495	1585	429	466	15			
1	C	326	Total	C	N	O	S	0	1	0
			2539	1609	439	476	15			
1	D	301	Total	C	N	O	S	0	0	0
			2356	1504	402	435	15			

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	1	Total O P 5 4 1	0	0
2	D	1	Total O P 5 4 1	0	0

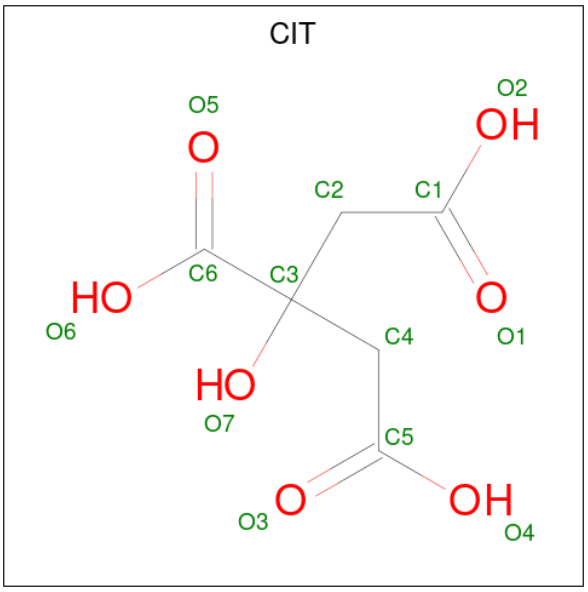
- Molecule 3 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total Mn 2 2	0	0
3	B	2	Total Mn 2 2	0	0
3	C	2	Total Mn 2 2	0	0
3	D	2	Total Mn 2 2	0	0

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total K 1 1	0	0
4	B	1	Total K 1 1	0	0
4	C	1	Total K 1 1	0	0
4	D	1	Total K 1 1	0	0

- Molecule 5 is CITRIC ACID (three-letter code: CIT) (formula: $C_6H_8O_7$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	1	Total C O 13 6 7	0	0
5	D	1	Total C O 13 6 7	0	0

- Molecule 6 is water.

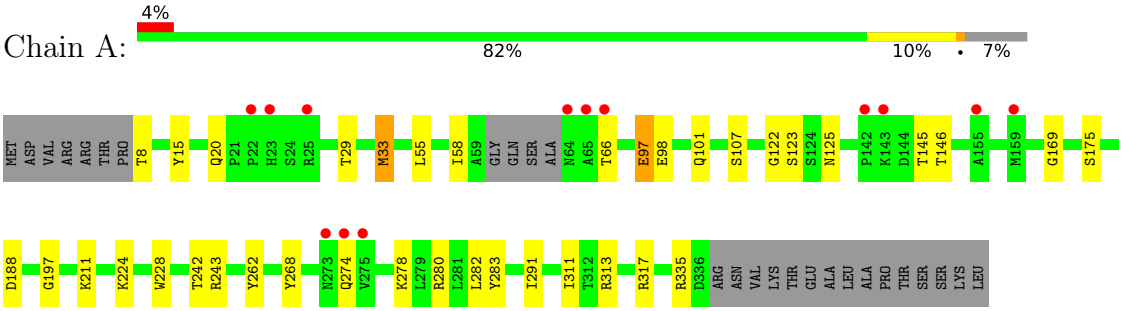
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	25	Total O 25 25	0	0
6	B	43	Total O 43 43	0	0
6	C	29	Total O 29 29	0	0
6	D	44	Total O 44 44	0	0

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.

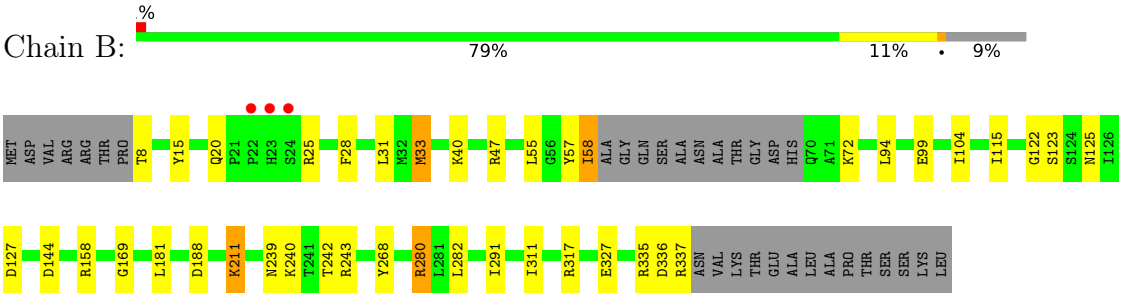
• Molecule 1: FBP protein

Chain A:



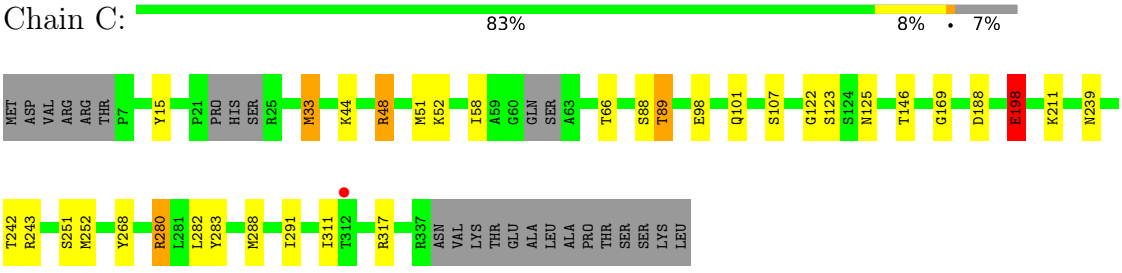
• Molecule 1: FBP protein

Chain B:



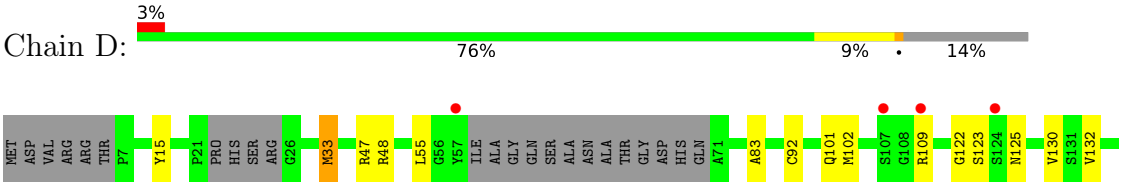
• Molecule 1: FBP protein

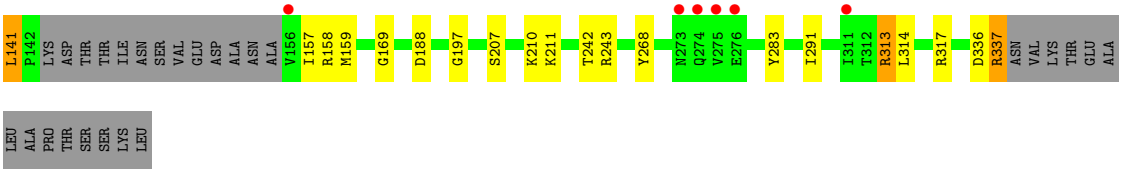
Chain C:



• Molecule 1: FBP protein

Chain D:




L141
P142
LYS
ASP
THR
THR
ILE
ASN
SER
VAL
GLU
ASP
ALA
ASN
ALA
V156
I157
R158
M159
G169
D188
G197
S207
K210
K211
T242
R243
Y268
N273
Q274
V275
E276
Y283
I291
I311
T312
R313
L314
R317
D336
R337
ASN
VAL
LYS
THR
GLU
ALA
LEU
ALA
PRO
THR
SER
SER
LYS
LEU

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	92.01Å 104.15Å 137.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	55.14 – 2.80 55.14 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.8 (55.14-2.80) 99.8 (55.14-2.80)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.50 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.193 , 0.241 0.198 , 0.244	Depositor DCC
R_{free} test set	1677 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	26.5	Xtriage
Anisotropy	0.246	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 32.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	10120	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.44% 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: PO4, CIT, MN, K

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	0.62	0/2582	0.83	5/3491 (0.1%)
1	B	0.63	0/2545	0.86	5/3439 (0.1%)
1	C	0.61	0/2591	0.85	7/3500 (0.2%)
1	D	0.66	0/2403	0.90	10/3242 (0.3%)
All	All	0.63	0/10121	0.86	27/13672 (0.2%)

There are no bond length outliers.

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	317	ARG	CG-CD-NE	-7.65	95.74	111.80
1	D	314	LEU	CB-CG-CD2	-7.26	98.66	111.00
1	B	94	LEU	CA-CB-CG	6.93	131.25	115.30
1	D	243	ARG	NE-CZ-NH2	-6.44	117.08	120.30
1	D	313	ARG	NE-CZ-NH1	6.44	123.52	120.30
1	C	317	ARG	NE-CZ-NH2	-6.41	117.09	120.30
1	D	55	LEU	N-CA-C	6.18	127.69	111.00
1	B	47	ARG	NE-CZ-NH1	5.99	123.30	120.30
1	A	243	ARG	NE-CZ-NH2	-5.99	117.31	120.30
1	D	48	ARG	NE-CZ-NH1	5.96	123.28	120.30
1	C	48[A]	ARG	NE-CZ-NH1	-5.89	117.36	120.30
1	C	48[B]	ARG	NE-CZ-NH1	-5.89	117.36	120.30
1	C	198	GLU	CA-CB-CG	5.83	126.23	113.40
1	C	48[A]	ARG	NE-CZ-NH2	5.81	123.20	120.30
1	C	48[B]	ARG	NE-CZ-NH2	5.81	123.20	120.30
1	D	317	ARG	NE-CZ-NH2	-5.78	117.41	120.30
1	A	224	LYS	CD-CE-NZ	5.72	124.87	111.70
1	D	47	ARG	NE-CZ-NH1	5.66	123.13	120.30
1	C	317	ARG	NE-CZ-NH1	5.60	123.10	120.30
1	B	55	LEU	CB-CA-C	-5.49	99.76	110.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	243	ARG	CG-CD-NE	5.44	123.22	111.80
1	A	313	ARG	NE-CZ-NH1	5.38	122.99	120.30
1	A	243	ARG	NE-CZ-NH1	5.31	122.95	120.30
1	B	144	ASP	CB-CG-OD1	5.24	123.01	118.30
1	B	158	ARG	NE-CZ-NH1	5.21	122.91	120.30
1	A	243	ARG	CG-CD-NE	5.09	122.48	111.80
1	D	337	ARG	NE-CZ-NH1	5.04	122.82	120.30

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	2531	0	2524	25	0
1	B	2495	0	2500	23	0
1	C	2539	0	2535	15	0
1	D	2356	0	2367	15	0
2	A	5	0	0	0	0
2	B	5	0	0	1	0
2	C	5	0	0	0	0
2	D	5	0	0	0	0
3	A	2	0	0	0	0
3	B	2	0	0	1	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	C	13	0	5	1	0
5	D	13	0	5	0	0
6	A	25	0	0	0	0
6	B	43	0	0	1	0
6	C	29	0	0	1	0
6	D	44	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	10120	0	9936	73	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 (73) 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:66:THR:OG1	1:C:280:ARG:NH2	1.82	1.13
1:B:33:MET:SD	1:C:33:MET:SD	2.67	0.92
1:A:66:THR:HG21	1:A:280:ARG:NH1	1.87	0.90
1:B:31:LEU:HD11	1:B:115:ILE:CD1	2.06	0.86
1:B:239:ASN:O	1:B:243:ARG:NH2	2.10	0.85
1:A:33:MET:SD	1:D:33:MET:SD	2.76	0.84
1:C:239:ASN:O	1:C:243:ARG:NH2	2.12	0.82
1:B:8:THR:O	1:B:8:THR:HG22	1.87	0.74
1:A:97:GLU:HB2	1:A:283:TYR:CE1	2.23	0.74
1:D:210:LYS:NZ	6:D:801:HOH:O	2.19	0.73
1:B:335:ARG:O	1:B:337:ARG:N	2.22	0.72
2:B:701:PO4:O1	3:B:703:MN:MN	1.46	0.71
1:A:262:TYR:OH	1:B:127:ASP:OD1	2.06	0.70
1:B:31:LEU:HD11	1:B:115:ILE:HD13	1.77	0.67
1:C:88:SER:O	1:C:89:THR:HG22	1.97	0.64
1:A:66:THR:CB	1:A:280:ARG:HH11	2.12	0.63
1:B:31:LEU:HD11	1:B:115:ILE:HD11	1.79	0.62
1:A:66:THR:HG23	1:A:317:ARG:HH22	1.64	0.62
1:A:66:THR:HG21	1:A:280:ARG:HH11	1.61	0.61
1:A:66:THR:CG2	1:A:280:ARG:HH11	2.13	0.61
1:D:102:MET:SD	1:D:157:ILE:HD11	2.41	0.60
1:A:66:THR:CG2	1:A:280:ARG:NH1	2.63	0.60
1:B:280:ARG:HD2	1:B:317:ARG:HG2	1.84	0.58
1:B:99:GLU:HB2	6:B:817:HOH:O	2.04	0.57
1:B:57:TYR:O	1:B:58:ILE:HG23	2.05	0.57
1:A:97:GLU:HG2	1:A:98:GLU:OE2	2.05	0.56
1:B:31:LEU:CD1	1:B:115:ILE:HD11	2.34	0.56
1:C:44:LYS:O	1:C:48[B]:ARG:NH2	2.39	0.56
1:C:66:THR:CB	1:C:280:ARG:HH21	2.18	0.56
1:B:31:LEU:CD1	1:B:115:ILE:CD1	2.81	0.53
1:D:102:MET:CE	1:D:157:ILE:HD11	2.40	0.52
1:A:97:GLU:OE2	1:A:280:ARG:CZ	2.59	0.50
1:A:66:THR:CG2	1:A:66:THR:O	2.60	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:8:THR:O	1:B:8:THR:CG2	2.58	0.49
1:B:20:GLN:NE2	1:B:28:PHE:HB3	2.26	0.49
1:B:122:GLY:O	1:B:125:ASN:HB2	2.13	0.48
1:B:211:LYS:HG2	1:B:327:GLU:OE2	2.13	0.48
1:A:197:GLY:HA3	1:D:197:GLY:HA3	1.95	0.48
1:A:282:LEU:HD21	1:A:311:ILE:HG23	1.96	0.48
1:C:52:LYS:HD3	5:C:705:CIT:O7	2.14	0.47
1:A:66:THR:HB	1:A:280:ARG:HH11	1.77	0.47
1:D:158:ARG:HG2	1:D:158:ARG:HH21	1.79	0.47
1:B:15:TYR:OH	1:B:188:ASP:OD2	2.34	0.46
1:D:15:TYR:OH	1:D:188:ASP:OD2	2.34	0.46
1:A:8:THR:HG21	1:D:83:ALA:HB1	1.98	0.45
1:C:282:LEU:HD21	1:C:311:ILE:HG23	1.99	0.45
1:A:122:GLY:O	1:A:125:ASN:HB2	2.17	0.45
1:A:274:GLN:HE22	1:A:278:LYS:HD3	1.82	0.45
1:D:336:ASP:O	1:D:337:ARG:HB2	2.17	0.44
1:A:20:GLN:NE2	1:A:29:THR:OG1	2.50	0.44
1:A:97:GLU:OE2	1:A:280:ARG:NH1	2.50	0.44
1:C:122:GLY:O	1:C:125:ASN:HB2	2.18	0.44
1:D:157:ILE:HG13	1:D:157:ILE:O	2.18	0.44
1:D:122:GLY:O	1:D:125:ASN:HB2	2.18	0.44
1:A:55:LEU:HD23	1:A:55:LEU:HA	1.87	0.43
1:A:274:GLN:HE22	1:A:278:LYS:CD	2.32	0.43
1:C:15:TYR:OH	1:C:188:ASP:OD2	2.34	0.43
1:D:169:GLY:HA2	1:D:291:ILE:HD11	2.00	0.43
1:C:280:ARG:HG2	1:C:283:TYR:CZ	2.54	0.42
1:A:228:TRP:CE2	1:A:335:ARG:HG3	2.54	0.42
1:B:282:LEU:HD11	1:B:311:ILE:HG23	2.00	0.42
1:B:104:ILE:N	1:B:104:ILE:HD12	2.34	0.42
1:B:57:TYR:CG	1:B:58:ILE:N	2.88	0.42
1:D:122:GLY:O	1:D:132:VAL:HG12	2.19	0.42
1:A:15:TYR:OH	1:A:188:ASP:OD2	2.34	0.41
1:D:125:ASN:OD1	1:D:130:VAL:CG1	2.69	0.41
1:D:92:CYS:SG	1:D:141:LEU:HD23	2.61	0.41
1:A:169:GLY:HA2	1:A:291:ILE:HD11	2.02	0.41
1:C:252:MET:HE2	1:C:288:MET:HG3	2.02	0.41
1:C:169:GLY:HA2	1:C:291:ILE:HD11	2.03	0.41
1:B:169:GLY:HA2	1:B:291:ILE:HD11	2.03	0.40
1:B:40:LYS:NZ	1:C:198:GLU:OE1	2.49	0.40
1:C:98:GLU:OE2	6:C:801: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	321/351 (92%)	310 (97%)	11 (3%)	0	100 100
1	B	315/351 (90%)	306 (97%)	8 (2%)	1 (0%)	41 72
1	C	321/351 (92%)	313 (98%)	8 (2%)	0	100 100
1	D	293/351 (84%)	284 (97%)	9 (3%)	0	100 100
All	All	1250/1404 (89%)	1213 (97%)	36 (3%)	1 (0%)	51 81

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	336	ASP

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	273/295 (92%)	261 (96%)	12 (4%)	28 61
1	B	270/295 (92%)	259 (96%)	11 (4%)	30 64
1	C	272/295 (92%)	258 (95%)	14 (5%)	24 55
1	D	254/295 (86%)	242 (95%)	12 (5%)	26 59
All	All	1069/1180 (91%)	1020 (95%)	49 (5%)	27 60

All (49) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	33	MET
1	A	58	ILE
1	A	97	GLU
1	A	101	GLN
1	A	107	SER
1	A	123	SER
1	A	145	THR
1	A	146	THR
1	A	175	SER
1	A	211	LYS
1	A	242	THR
1	A	268	TYR
1	B	25	ARG
1	B	33	MET
1	B	58	ILE
1	B	72	LYS
1	B	123	SER
1	B	181	LEU
1	B	211	LYS
1	B	240	LYS
1	B	242	THR
1	B	268	TYR
1	B	280	ARG
1	C	33	MET
1	C	51	MET
1	C	58	ILE
1	C	89	THR
1	C	101	GLN
1	C	107	SER
1	C	123	SER
1	C	146	THR
1	C	198	GLU
1	C	211	LYS
1	C	242	THR
1	C	251	SER
1	C	268	TYR
1	C	280	ARG
1	D	33	MET
1	D	101	GLN
1	D	109	ARG
1	D	123	SER
1	D	141	LEU
1	D	159	MET

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Mol	Chain	Res	Type
1	D	207	SER
1	D	211	LYS
1	D	242	THR
1	D	268	TYR
1	D	283	TYR
1	D	313	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	20	GLN
1	A	274	GLN
1	B	20	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 18 ligands modelled in this entry, 12 are monoatomic - leaving 6 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	PO4	B	701	4	4,4,4	0.53	0	6,6,6	0.96	0
2	PO4	C	701	3,4	4,4,4	1.16	0	6,6,6	0.81	0
2	PO4	D	701	3,4	4,4,4	1.33	0	6,6,6	0.88	0
5	CIT	C	705	-	12,12,12	1.17	1 (8%)	17,17,17	1.73	3 (17%)
2	PO4	A	701	3,4	4,4,4	1.07	0	6,6,6	1.27	0
5	CIT	D	705	-	12,12,12	1.00	0	17,17,17	1.45	2 (11%)

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
5	CIT	C	705	-	-	5/16/16/16	-
5	CIT	D	705	-	-	9/16/16/16	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	705	CIT	O4-C5	-2.00	1.24	1.30

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	C	705	CIT	O7-C3-C6	-4.94	101.92	108.86
5	C	705	CIT	O6-C6-C3	3.13	118.48	113.05
5	D	705	CIT	O7-C3-C6	-2.82	104.91	108.86
5	C	705	CIT	O5-C6-C3	-2.41	118.84	122.25
5	D	705	CIT	O6-C6-C3	2.03	116.57	113.05

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	C	705	CIT	O7-C3-C6-O5
5	C	705	CIT	O7-C3-C6-O6
5	C	705	CIT	C4-C3-C6-O5
5	C	705	CIT	C4-C3-C6-O6
5	D	705	CIT	C2-C3-C6-O5
5	D	705	CIT	C2-C3-C6-O6

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Mol	Chain	Res	Type	Atoms
5	D	705	CIT	O7-C3-C6-O5
5	D	705	CIT	O7-C3-C6-O6
5	D	705	CIT	O7-C3-C4-C5
5	D	705	CIT	C2-C3-C4-C5
5	C	705	CIT	C2-C3-C6-O5
5	D	705	CIT	C1-C2-C3-C6
5	D	705	CIT	O1-C1-C2-C3
5	D	705	CIT	O2-C1-C2-C3

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	701	PO4	1	0
5	C	705	CIT	1	0

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

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	325/351 (92%)	-0.04	13 (4%)	38	28	13, 32, 79, 117	0
1	B	319/351 (90%)	-0.31	3 (0%)	84	80	10, 23, 62, 122	0
1	C	326/351 (92%)	-0.18	1 (0%)	94	93	12, 29, 61, 88	0
1	D	301/351 (85%)	-0.12	10 (3%)	46	36	13, 28, 73, 111	0
All	All	1271/1404 (90%)	-0.16	27 (2%)	63	54	10, 28, 71, 122	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	22	PRO	7.2
1	B	23	HIS	5.5
1	A	22	PRO	4.7
1	A	23	HIS	4.1
1	A	274	GLN	3.5
1	A	159	MET	3.1
1	D	275	VAL	2.9
1	D	311	ILE	2.9
1	A	65	ALA	2.9
1	D	156	VAL	2.8
1	A	66	THR	2.7
1	A	273	ASN	2.6
1	D	274	GLN	2.5
1	A	275	VAL	2.5
1	D	124	SER	2.4
1	A	143	LYS	2.4
1	D	276	GLU	2.4
1	D	273	ASN	2.4
1	A	155	ALA	2.3
1	D	57	TYR	2.3
1	A	64	ASN	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	25	ARG	2.2
1	C	312	THR	2.2
1	D	107	SER	2.2
1	D	109	ARG	2.2
1	A	142	PRO	2.1
1	B	24	SER	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, 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
5	CIT	D	705	13/13	0.82	0.24	52,59,62,73	0
5	CIT	C	705	13/13	0.90	0.17	42,50,56,60	0
4	K	B	704	1/1	0.90	0.12	63,63,63,63	0
2	PO4	D	701	5/5	0.92	0.24	81,83,85,87	0
3	MN	D	702	1/1	0.93	0.18	70,70,70,70	0
4	K	C	704	1/1	0.94	0.17	25,25,25,25	0
4	K	A	704	1/1	0.95	0.06	27,27,27,27	0
4	K	D	704	1/1	0.95	0.10	12,12,12,12	0
2	PO4	B	701	5/5	0.97	0.10	39,40,45,49	0
2	PO4	C	701	5/5	0.97	0.10	35,38,41,41	0
3	MN	C	702	1/1	0.98	0.06	31,31,31,31	0
2	PO4	A	701	5/5	0.98	0.09	34,34,36,40	0
3	MN	B	703	1/1	0.99	0.07	21,21,21,21	0
3	MN	A	702	1/1	0.99	0.07	35,35,35,35	0
3	MN	A	703	1/1	0.99	0.03	34,34,34,34	0
3	MN	D	703	1/1	0.99	0.03	27,27,27,27	0
3	MN	B	702	1/1	0.99	0.08	15,15,15,15	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	MN	C	703	1/1	1.00	0.04	20,20,20,20	0

6.5 Other polymers (i)

There are no such residues in this entry.