Full wwPDB X-ray Structure Validation Report ⓘ

Nov 7, 2023 – 12:52 PM JST

PDB ID	:	4U4M
Title	:	Crystal structure of 0.5M urea unfolded YagE, a KDG aldolase protein in complex with Pyruvate
Authors	:	Manoj Kumar, P.; Bhaskar, V.; Manicka, S.; Krishnaswamy, S.
Deposited on	:	2014-07-24
Resolution	:	3.09 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:

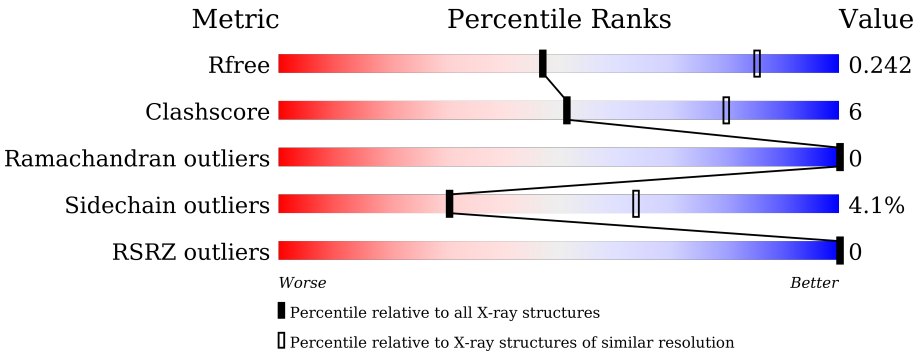
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, 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 3.09 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	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

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	298	88% 11% •
1	B	298	90% 9% •
1	C	298	89% 10% •
1	D	298	88% 10% •

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	URE	C	401	-	-	X	-
4	EDO	A	406	-	-	-	X

2 Entry composition (i)

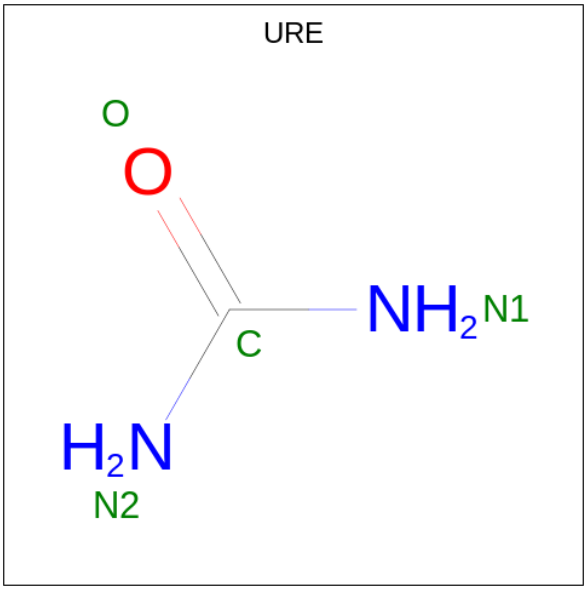
There are 5 unique types of molecules in this entry. The entry contains 9150 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 YagE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	298	Total	C	N	O	S	0	0	0
			2259	1446	386	421	6			
1	B	298	Total	C	N	O	S	0	0	0
			2257	1446	385	420	6			
1	C	298	Total	C	N	O	S	0	0	0
			2260	1446	387	421	6			
1	D	298	Total	C	N	O	S	0	1	0
			2271	1453	391	421	6			

- Molecule 2 is UREA (three-letter code: URE) (formula: CH_4N_2O).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			4	1	2	1		
2	A	1	Total	C	N	O	0	0
			4	1	2	1		

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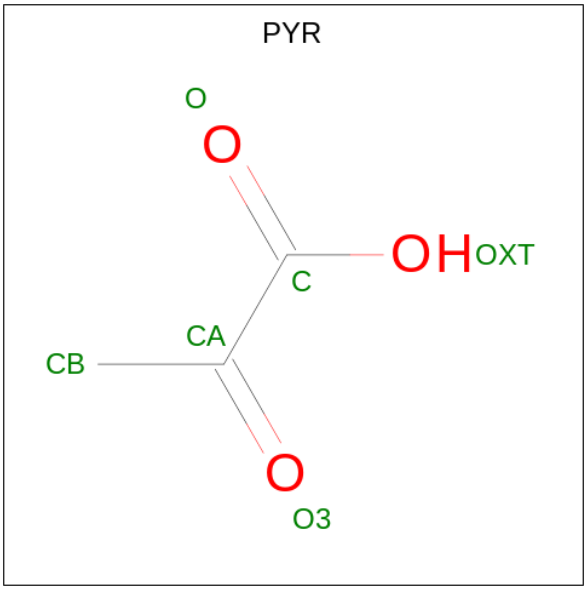
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C N O 4 1 2 1	0	0
2	B	1	Total C N O 4 1 2 1	0	0
2	B	1	Total C N O 4 1 2 1	0	0
2	B	1	Total C N O 4 1 2 1	0	0
2	B	1	Total C N O 4 1 2 1	0	0
2	C	1	Total C N O 4 1 2 1	0	0
2	D	1	Total C N O 4 1 2 1	0	0
2	D	1	Total C N O 4 1 2 1	0	0

- Molecule 3 is PYRUVIC ACID (three-letter code: PYR) (formula: $C_3H_4O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 5 3 2	0	0
3	B	1	Total C O 5 3 2	0	0
3	C	1	Total C O 5 3 2	0	0

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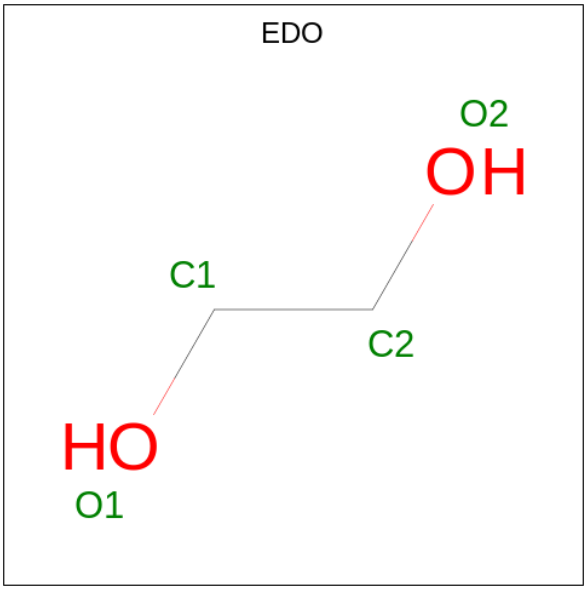
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total C O 5 3 2	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0

- Molecule 5 is water.

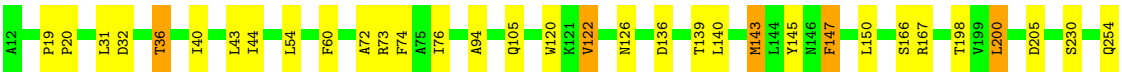
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total O 1 1	0	0
5	D	2	Total O 2 2	0	0

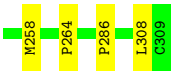
3 Residue-property plots (i)

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: YagE

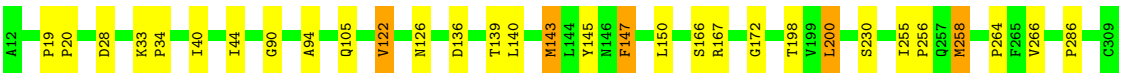
Chain A:





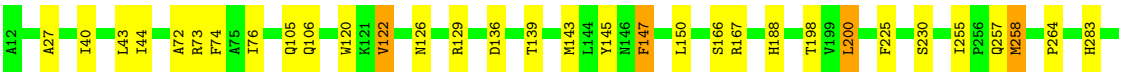
• Molecule 1: YagE

Chain B:



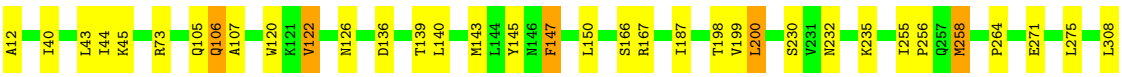
• Molecule 1: YagE

Chain C:



• Molecule 1: YagE

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	141.40Å 155.64Å 55.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.88 – 3.09 19.88 – 3.09	Depositor EDS
% Data completeness (in resolution range)	99.2 (19.88-3.09) 99.7 (19.88-3.09)	Depositor EDS
R_{merge}	0.22	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.83 (at 3.09Å)	Xtriage
Refinement program	REFMAC 5.7.0032	Depositor
R, R_{free}	0.212 , 0.243 0.214 , 0.242	Depositor DCC
R_{free} test set	1161 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	33.2	Xtriage
Anisotropy	0.030	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 18.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	9150	wwPDB-VP
Average B, all atoms (Å^2)	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 46.26 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.1752e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: URE, PYR, EDO

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	0.49	0/2307	0.70	0/3145
1	B	0.50	0/2305	0.70	0/3141
1	C	0.49	0/2308	0.68	0/3146
1	D	0.51	0/2322	0.72	1/3163 (0.0%)
All	All	0.50	0/9242	0.70	1/12595 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	73	ARG	NE-CZ-NH1	5.01	122.81	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2259	0	2274	29	0
1	B	2257	0	2278	27	0
1	C	2260	0	2278	31	0
1	D	2271	0	2300	25	0
2	A	12	0	12	1	0
2	B	16	0	16	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	4	0	4	2	0
2	D	8	0	8	0	0
3	A	5	0	0	0	0
3	B	5	0	0	0	0
3	C	5	0	0	0	0
3	D	5	0	0	0	0
4	A	16	0	24	2	0
4	B	12	0	18	2	0
4	D	12	0	18	2	0
5	A	1	0	0	0	0
5	D	2	0	0	0	0
All	All	9150	0	9230	102	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 6.

All (102) 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:255:ILE:HG23	1:C:258:MET:CE	1.88	1.04
1:D:12:ALA:N	4:D:405:EDO:HO1	1.64	0.96
1:C:255:ILE:HG23	1:C:258:MET:HE2	1.52	0.91
1:C:198:THR:HG22	1:C:200:LEU:HD13	1.65	0.79
1:A:198:THR:HG22	1:A:200:LEU:HD13	1.65	0.77
1:B:198:THR:HG22	1:B:200:LEU:HD13	1.66	0.77
1:D:198:THR:HG22	1:D:200:LEU:HD13	1.67	0.76
1:D:12:ALA:N	4:D:405:EDO:O1	2.20	0.75
1:A:105:GLN:HE21	1:A:140:LEU:HG	1.51	0.74
1:B:105:GLN:HE22	1:B:139:THR:H	1.33	0.73
1:D:105:GLN:HE21	1:D:140:LEU:HG	1.55	0.71
1:C:255:ILE:HG23	1:C:258:MET:HE3	1.71	0.71
1:D:105:GLN:HE22	1:D:139:THR:H	1.36	0.70
1:A:105:GLN:HE22	1:A:139:THR:H	1.39	0.70
1:C:296:LYS:NZ	2:C:401:URE:HN21	1.90	0.70
1:B:105:GLN:HE21	1:B:140:LEU:HG	1.57	0.70
1:D:255:ILE:O	1:D:258:MET:HG3	1.92	0.70
1:C:126:ASN:OD1	1:C:129:ARG:NH1	2.24	0.70
1:A:143:MET:CE	1:A:200:LEU:HD22	2.29	0.63
1:C:136:ASP:OD1	1:C:167:ARG:NH1	2.28	0.63
1:C:105:GLN:HE22	1:C:139:THR:H	1.46	0.62
1:B:143:MET:HE1	1:B:198:THR:HB	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:136:ASP:OD1	1:A:167:ARG:NH1	2.29	0.61
1:B:255:ILE:O	1:B:258:MET:HG3	2.01	0.60
1:B:198:THR:CG2	1:B:200:LEU:HD13	2.34	0.57
1:D:198:THR:CG2	1:D:200:LEU:HD13	2.35	0.56
1:A:60:PHE:CD1	4:A:407:EDO:O1	2.57	0.56
1:D:122:VAL:HG13	1:D:126:ASN:HB2	1.88	0.56
1:D:187:ILE:HG12	1:D:199:VAL:HG11	1.88	0.56
1:B:122:VAL:HG13	1:B:126:ASN:CB	2.36	0.56
1:A:143:MET:HE3	1:A:200:LEU:HD22	1.87	0.56
1:C:122:VAL:HG13	1:C:126:ASN:HB2	1.88	0.56
1:D:106:GLN:HG3	1:D:107:ALA:N	2.21	0.55
1:A:198:THR:CG2	1:A:200:LEU:HD13	2.35	0.55
1:B:122:VAL:HG13	1:B:126:ASN:HB2	1.88	0.55
1:C:198:THR:CG2	1:C:200:LEU:HD13	2.35	0.55
1:D:122:VAL:HG13	1:D:126:ASN:CB	2.38	0.54
1:C:122:VAL:HG13	1:C:126:ASN:CB	2.37	0.54
1:D:136:ASP:OD1	1:D:167:ARG:NH1	2.36	0.53
1:A:122:VAL:HG13	1:A:126:ASN:HB2	1.89	0.53
1:D:255:ILE:O	1:D:258:MET:CG	2.57	0.52
1:B:136:ASP:OD1	1:B:167:ARG:NH1	2.37	0.51
1:A:32:ASP:O	1:A:36:THR:HG22	2.10	0.51
1:B:90:GLY:HA3	4:B:406:EDO:H12	1.93	0.51
1:C:225:PHE:HZ	1:C:258:MET:HE3	1.76	0.51
1:A:122:VAL:HG13	1:A:126:ASN:CB	2.40	0.51
1:A:122:VAL:HG22	1:B:264:PRO:HD3	1.93	0.50
1:C:122:VAL:HG22	1:D:264:PRO:HD3	1.93	0.49
1:A:31:LEU:HD11	1:A:36:THR:HG21	1.94	0.49
1:C:296:LYS:HZ1	2:C:401:URE:HN21	1.57	0.49
1:C:120:TRP:HA	1:D:150:LEU:HD22	1.94	0.48
1:C:27:ALA:HA	1:C:283:HIS:CD2	2.48	0.48
1:A:54:LEU:O	4:A:407:EDO:H12	2.14	0.48
1:B:166:SER:O	1:B:167:ARG:HD3	2.14	0.48
1:D:166:SER:O	1:D:167:ARG:HD3	2.14	0.48
1:C:136:ASP:CG	1:C:167:ARG:HH11	2.14	0.47
1:A:254:GLN:OE1	1:C:188:HIS:CE1	2.67	0.47
1:A:166:SER:O	1:A:167:ARG:HD3	2.15	0.47
1:C:150:LEU:HD22	1:D:120:TRP:HA	1.97	0.46
1:A:264:PRO:HD3	1:B:122:VAL:HG22	1.98	0.46
1:D:147:PHE:CE2	1:D:150:LEU:HD12	2.51	0.46
1:A:32:ASP:O	1:A:36:THR:CG2	2.63	0.46
1:A:120:TRP:HA	1:B:150:LEU:HD22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:147:PHE:CE2	1:A:150:LEU:HD12	2.51	0.46
1:B:40:ILE:O	1:B:44:ILE:HG13	2.16	0.45
1:C:166:SER:O	1:C:167:ARG:HD3	2.15	0.45
1:A:136:ASP:CG	1:A:167:ARG:HH11	2.16	0.45
1:B:255:ILE:O	1:B:258:MET:CG	2.63	0.45
1:C:147:PHE:CE2	1:C:150:LEU:HD12	2.51	0.45
1:D:40:ILE:O	1:D:44:ILE:HG13	2.16	0.45
1:A:40:ILE:O	1:A:44:ILE:HG13	2.17	0.44
1:C:73:ARG:CG	1:C:74:PHE:N	2.80	0.44
1:C:225:PHE:CZ	1:C:258:MET:HE3	2.53	0.44
1:B:147:PHE:CE2	1:B:150:LEU:HD12	2.53	0.43
1:D:232:ASN:HA	1:D:235:LYS:HG2	2.00	0.43
1:C:40:ILE:O	1:C:44:ILE:HG13	2.17	0.43
1:B:143:MET:HE1	1:B:172:GLY:HA3	2.00	0.43
1:D:271:GLU:O	1:D:275:LEU:HD12	2.18	0.43
1:C:72:ALA:O	1:C:76:ILE:HG13	2.19	0.43
1:C:255:ILE:CG2	1:C:258:MET:HE3	2.41	0.43
1:A:72:ALA:O	1:A:76:ILE:HG13	2.19	0.43
1:C:264:PRO:HD3	1:D:122:VAL:HG22	2.00	0.43
1:C:225:PHE:CZ	1:C:258:MET:CE	3.01	0.42
1:B:198:THR:CG2	1:B:200:LEU:CD1	2.97	0.42
1:B:90:GLY:CA	4:B:406:EDO:H12	2.50	0.42
1:D:105:GLN:HE22	1:D:139:THR:N	2.10	0.42
1:A:198:THR:CG2	1:A:200:LEU:CD1	2.98	0.41
1:B:19:PRO:HA	1:B:20:PRO:HD3	1.95	0.41
1:C:198:THR:CG2	1:C:200:LEU:CD1	2.98	0.41
1:A:205:ASP:OD1	2:A:402:URE:N1	2.54	0.41
1:D:198:THR:CG2	1:D:200:LEU:CD1	2.98	0.41
1:A:19:PRO:HA	1:A:20:PRO:HD3	1.94	0.41
1:A:94:ALA:HB3	1:B:286:PRO:HB2	2.02	0.41
1:C:255:ILE:O	1:C:258:MET:HG2	2.21	0.41
1:D:255:ILE:N	1:D:256:PRO:CD	2.84	0.41
1:B:255:ILE:N	1:B:256:PRO:CD	2.84	0.40
1:C:122:VAL:HG13	1:C:126:ASN:HB3	2.03	0.40
1:B:105:GLN:HE22	1:B:139:THR:N	2.09	0.40
1:B:122:VAL:HG13	1:B:126:ASN:HB3	2.01	0.40
1:A:73:ARG:CG	1:A:74:PHE:N	2.85	0.40
1:A:286:PRO:HB2	1:B:94:ALA:HB3	2.03	0.40
1:B:33:LYS:HB2	1:B:34:PRO:HD3	2.04	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	296/298 (99%)	292 (99%)	4 (1%)	0	100	100
1	B	296/298 (99%)	292 (99%)	4 (1%)	0	100	100
1	C	296/298 (99%)	290 (98%)	6 (2%)	0	100	100
1	D	297/298 (100%)	292 (98%)	5 (2%)	0	100	100
All	All	1185/1192 (99%)	1166 (98%)	19 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	241/243 (99%)	231 (96%)	10 (4%)	30	64
1	B	241/243 (99%)	232 (96%)	9 (4%)	34	66
1	C	242/243 (100%)	232 (96%)	10 (4%)	30	64
1	D	244/243 (100%)	233 (96%)	11 (4%)	27	60
All	All	968/972 (100%)	928 (96%)	40 (4%)	30	64

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	36	THR
1	A	43	LEU

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Mol	Chain	Res	Type
1	A	122	VAL
1	A	143	MET
1	A	145	TYR
1	A	147	PHE
1	A	200	LEU
1	A	230	SER
1	A	258	MET
1	A	308	LEU
1	B	28	ASP
1	B	122	VAL
1	B	143	MET
1	B	145	TYR
1	B	147	PHE
1	B	200	LEU
1	B	230	SER
1	B	258	MET
1	B	266	VAL
1	C	43	LEU
1	C	106	GLN
1	C	122	VAL
1	C	143	MET
1	C	145	TYR
1	C	147	PHE
1	C	200	LEU
1	C	230	SER
1	C	257	GLN
1	C	258	MET
1	D	43	LEU
1	D	45	LYS
1	D	106	GLN
1	D	122	VAL
1	D	143	MET
1	D	145	TYR
1	D	147	PHE
1	D	200	LEU
1	D	230	SER
1	D	258	MET
1	D	308	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	62	GLN
1	A	105	GLN
1	A	188	HIS
1	A	232	ASN
1	B	62	GLN
1	B	105	GLN
1	C	62	GLN
1	C	105	GLN
1	C	188	HIS
1	D	62	GLN
1	D	105	GLN
1	D	126	ASN
1	D	133	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

24 ligands are modelled in this entry.

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	$\#\|Z\| > 2$
4	EDO	B	407	-	3,3,3	0.52	0	2,2,2	0.34	0
2	URE	A	403	-	3,3,3	0.68	0	3,3,3	0.28	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	EDO	A	406	-	3,3,3	0.55	0	2,2,2	0.32	0
4	EDO	B	408	-	3,3,3	0.76	0	2,2,2	0.21	0
4	EDO	D	406	-	3,3,3	0.55	0	2,2,2	0.33	0
2	URE	B	403	-	3,3,3	0.81	0	3,3,3	0.63	0
4	EDO	D	404	-	3,3,3	0.53	0	2,2,2	0.46	0
4	EDO	A	405	-	3,3,3	0.62	0	2,2,2	0.26	0
4	EDO	B	406	-	3,3,3	0.28	0	2,2,2	0.80	0
2	URE	B	402	-	3,3,3	0.56	0	3,3,3	0.64	0
4	EDO	D	405	-	3,3,3	0.63	0	2,2,2	0.12	0
2	URE	B	401	-	3,3,3	0.60	0	3,3,3	0.89	0
2	URE	D	401	-	3,3,3	0.62	0	3,3,3	1.41	1 (33%)
2	URE	A	401	-	3,3,3	0.51	0	3,3,3	0.60	0
3	PYR	C	402	1	4,4,5	0.96	0	4,4,6	0.70	0
2	URE	A	402	-	3,3,3	0.95	0	3,3,3	0.49	0
2	URE	D	402	-	3,3,3	0.38	0	3,3,3	0.97	0
2	URE	C	401	-	3,3,3	0.97	0	3,3,3	1.73	1 (33%)
3	PYR	A	404	1	4,4,5	0.96	0	4,4,6	1.05	0
3	PYR	B	405	1	4,4,5	1.04	0	4,4,6	0.78	0
4	EDO	A	407	-	3,3,3	0.50	0	2,2,2	0.10	0
4	EDO	A	408	-	3,3,3	0.43	0	2,2,2	0.46	0
3	PYR	D	403	1	4,4,5	0.96	0	4,4,6	1.12	0
2	URE	B	404	-	3,3,3	0.69	0	3,3,3	0.85	0

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
3	PYR	A	404	1	-	2/2/2/4	-
3	PYR	B	405	1	-	0/2/2/4	-
4	EDO	B	407	-	-	1/1/1/1	-
4	EDO	B	406	-	-	1/1/1/1	-
4	EDO	A	407	-	-	1/1/1/1	-
3	PYR	C	402	1	-	0/2/2/4	-
4	EDO	A	406	-	-	1/1/1/1	-
4	EDO	A	408	-	-	0/1/1/1	-
4	EDO	B	408	-	-	0/1/1/1	-
4	EDO	D	406	-	-	1/1/1/1	-
3	PYR	D	403	1	-	0/2/2/4	-
4	EDO	D	405	-	-	0/1/1/1	-
4	EDO	D	404	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	405	-	-	1/1/1/1	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	401	URE	O-C-N1	2.38	126.40	121.02
2	D	401	URE	N2-C-N1	2.11	121.78	117.82

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	406	EDO	O1-C1-C2-O2
4	B	407	EDO	O1-C1-C2-O2
4	D	406	EDO	O1-C1-C2-O2
3	A	404	PYR	OXT-C-CA-CB
4	A	406	EDO	O1-C1-C2-O2
3	A	404	PYR	O-C-CA-CB
4	D	404	EDO	O1-C1-C2-O2
4	A	405	EDO	O1-C1-C2-O2
4	A	407	EDO	O1-C1-C2-O2

There are no ring outliers.

5 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	406	EDO	2	0
4	D	405	EDO	2	0
2	A	402	URE	1	0
2	C	401	URE	2	0
4	A	407	EDO	2	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	298/298 (100%)	-0.45	0	100	100	16, 26, 38, 46	0
1	B	298/298 (100%)	-0.54	0	100	100	14, 21, 32, 46	0
1	C	298/298 (100%)	-0.48	0	100	100	17, 26, 37, 51	0
1	D	298/298 (100%)	-0.54	0	100	100	12, 23, 33, 47	0
All	All	1192/1192 (100%)	-0.50	0	100	100	12, 24, 36, 51	0

There are no RSRZ outliers to report.

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 monosaccharides in this entry.

6.4 Ligands

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
4	EDO	D	405	4/4	0.67	0.29	33,34,34,34	0
4	EDO	A	405	4/4	0.69	0.35	33,35,36,37	0
4	EDO	A	406	4/4	0.77	0.41	27,28,28,28	0
4	EDO	D	404	4/4	0.77	0.31	17,18,18,18	4

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	URE	A	401	4/4	0.77	0.34	46,47,49,49	0
2	URE	B	404	4/4	0.80	0.30	30,30,30,32	0
2	URE	B	401	4/4	0.82	0.34	10,11,11,11	4
4	EDO	B	408	4/4	0.82	0.34	21,22,22,23	0
4	EDO	A	408	4/4	0.84	0.32	37,38,38,39	0
2	URE	B	402	4/4	0.84	0.24	28,29,29,29	0
2	URE	D	402	4/4	0.87	0.21	33,35,35,35	0
2	URE	B	403	4/4	0.88	0.24	32,32,32,33	0
4	EDO	D	406	4/4	0.88	0.28	27,28,28,28	0
2	URE	C	401	4/4	0.89	0.33	38,38,38,40	0
2	URE	D	401	4/4	0.89	0.33	24,26,26,26	4
3	PYR	B	405	5/6	0.91	0.20	15,17,19,20	0
3	PYR	D	403	5/6	0.92	0.17	16,18,19,20	0
4	EDO	B	406	4/4	0.93	0.20	24,26,27,30	0
4	EDO	A	407	4/4	0.94	0.21	27,27,27,28	0
2	URE	A	403	4/4	0.94	0.28	38,39,40,41	0
2	URE	A	402	4/4	0.94	0.28	30,30,30,31	0
4	EDO	B	407	4/4	0.94	0.19	28,29,29,29	0
3	PYR	A	404	5/6	0.95	0.22	18,20,23,24	0
3	PYR	C	402	5/6	0.96	0.25	16,17,18,18	0

6.5 Other polymers (i)

There are no such residues in this entry.