Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 10:17 PM GMT

PDB ID	:	4X96
Title	:	Low resolution crystal structure of Lecithin:Cholesterol Acyltransferase (LCAT; residues 21-397)
Authors	:	Glukhova, A.; Tesmer, J.J.G.
Deposited on	:	2014-12-11
Resolution	:	8.69 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:

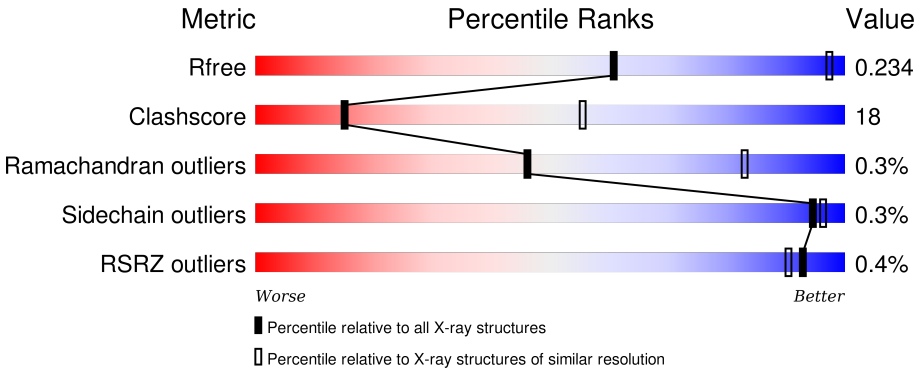
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 8.69 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	1015 (11.50-3.66)
Clashscore	102246	1064 (11.50-3.70)
Ramachandran outliers	100387	1036 (11.50-3.66)
Sidechain outliers	100360	1006 (11.50-3.66)
RSRZ outliers	91569	1014 (11.50-3.66)

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	383	% 74% 23% ·
1	B	383	73% 25% · ·
1	C	383	% 74% 23% · ·
1	D	383	72% 25% ·

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
2	NAG	A	504	-	-	X	-
2	NAG	B	501	-	-	X	-
2	NAG	C	504	-	-	X	-
2	NAG	D	504	-	-	X	-

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 12412 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 Phosphatidylcholine-sterol acyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	D	375	Total	C	N	O	S	0	0	0
			3011	1952	505	539	15			
1	A	375	Total	C	N	O	S	0	0	0
			3011	1952	505	539	15			
1	B	375	Total	C	N	O	S	0	0	0
			3011	1952	505	539	15			
1	C	375	Total	C	N	O	S	0	0	0
			3011	1952	505	539	15			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	398	HIS	TYR	conflict	UNP P04180
D	399	HIS	ARG	conflict	UNP P04180
D	400	HIS	GLN	conflict	UNP P04180
D	401	HIS	-	expression tag	UNP P04180
D	402	HIS	-	expression tag	UNP P04180
D	403	HIS	-	expression tag	UNP P04180
A	398	HIS	TYR	conflict	UNP P04180
A	399	HIS	ARG	conflict	UNP P04180
A	400	HIS	GLN	conflict	UNP P04180
A	401	HIS	-	expression tag	UNP P04180
A	402	HIS	-	expression tag	UNP P04180
A	403	HIS	-	expression tag	UNP P04180
B	398	HIS	TYR	conflict	UNP P04180
B	399	HIS	ARG	conflict	UNP P04180
B	400	HIS	GLN	conflict	UNP P04180
B	401	HIS	-	expression tag	UNP P04180
B	402	HIS	-	expression tag	UNP P04180
B	403	HIS	-	expression tag	UNP P04180
C	398	HIS	TYR	conflict	UNP P04180
C	399	HIS	ARG	conflict	UNP P04180
C	400	HIS	GLN	conflict	UNP P04180

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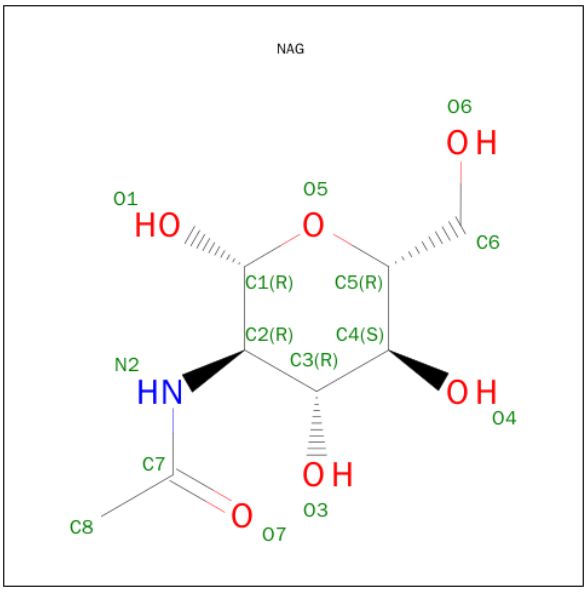
Chain	Residue	Modelled	Actual	Comment	Reference
C	401	HIS	-	expression tag	UNP P04180
C	402	HIS	-	expression tag	UNP P04180
C	403	HIS	-	expression tag	UNP P04180

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	D	1	Total C N O 14 8 1 5	0	0
2	D	1	Total C N O 14 8 1 5	0	0
2	D	1	Total C N O 14 8 1 5	0	0
2	D	1	Total C N O 14 8 1 5	0	0
2	D	1	Total C N O 14 8 1 5	0	0
2	A	1	Total C N O 14 8 1 5	0	0
2	A	1	Total C N O 14 8 1 5	0	0
2	A	1	Total C N O 14 8 1 5	0	0
2	A	1	Total C N O 14 8 1 5	0	0
2	A	1	Total C N O 14 8 1 5	0	0

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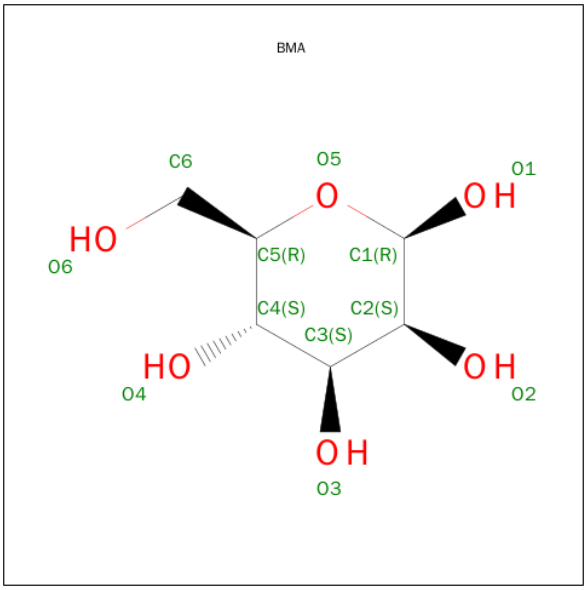
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total C N O 14 8 1 5	0	0
2	B	1	Total C N O 14 8 1 5	0	0
2	B	1	Total C N O 14 8 1 5	0	0
2	B	1	Total C N O 14 8 1 5	0	0
2	B	1	Total C N O 14 8 1 5	0	0
2	C	1	Total C N O 14 8 1 5	0	0
2	C	1	Total C N O 14 8 1 5	0	0
2	C	1	Total C N O 14 8 1 5	0	0
2	C	1	Total C N O 14 8 1 5	0	0
2	C	1	Total C N O 14 8 1 5	0	0

- Molecule 3 is BETA-D-MANNOSE (three-letter code: BMA) (formula: $C_6H_{12}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total C O 11 6 5	0	0

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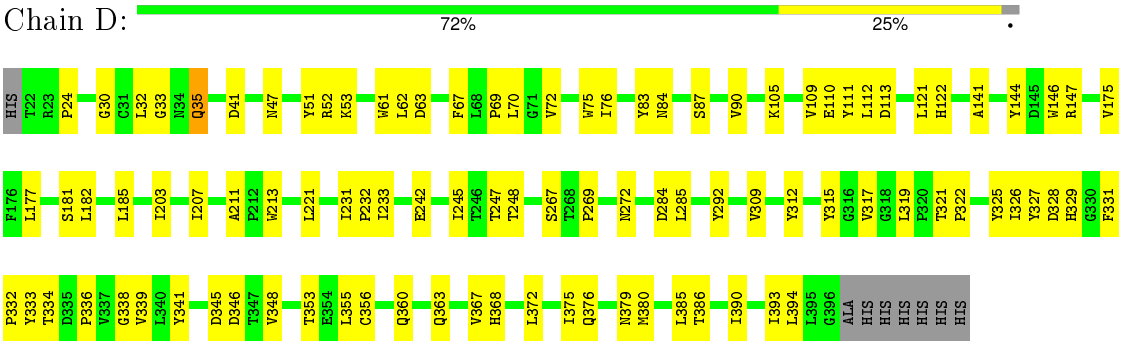
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	B	1	Total	C	O	0	0
			11	6	5		
3	C	1	Total	C	O	0	0
			11	6	5		
3	C	1	Total	C	O	0	0
			11	6	5		

3 Residue-property plots (i)

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.

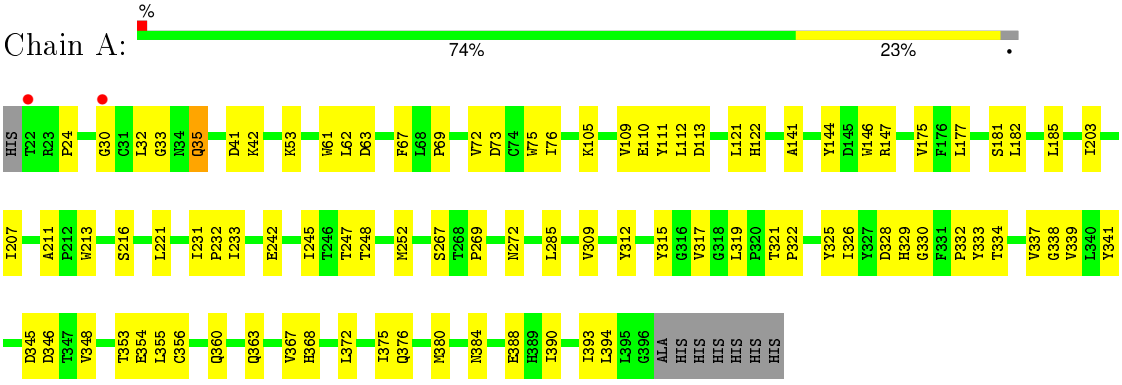
- Molecule 1: Phosphatidylcholine-sterol acyltransferase

Chain D:



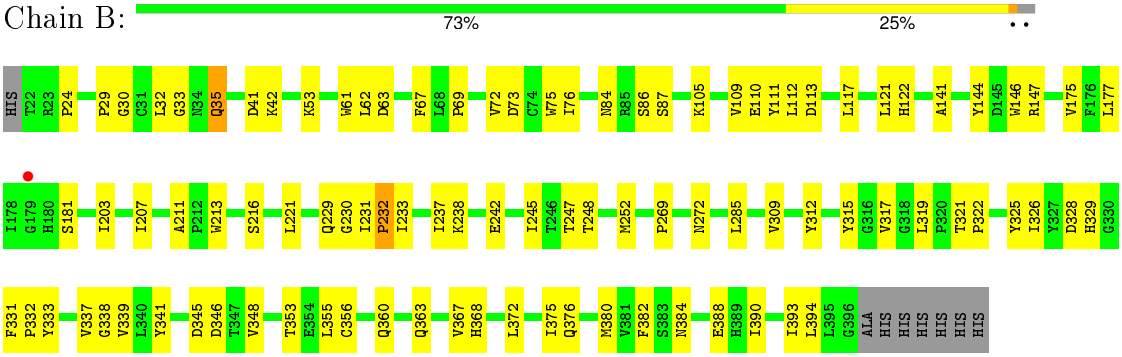
- Molecule 1: Phosphatidylcholine-sterol acyltransferase

Chain A:



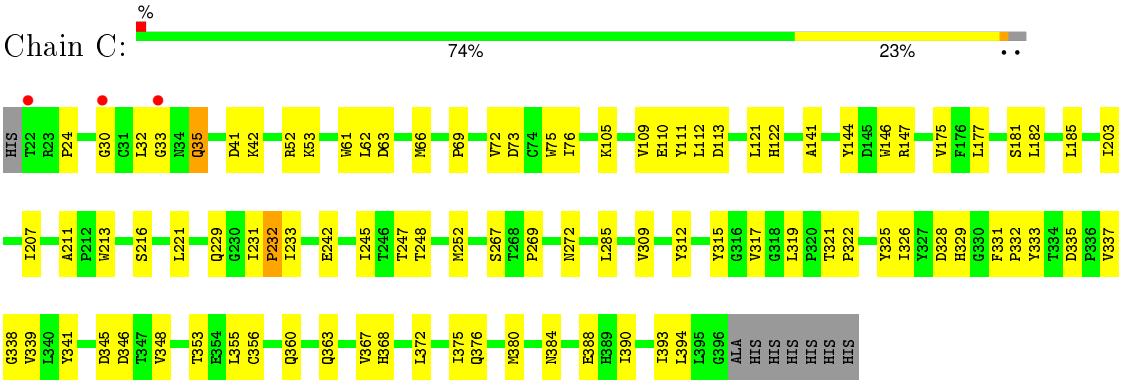
- Molecule 1: Phosphatidylcholine-sterol acyltransferase

Chain B:



• Molecule 1: Phosphatidylcholine-sterol acyltransferase

Chain C:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α, β, γ	367.26Å 367.26Å 187.07Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	30.00 – 8.69 29.91 – 8.69	Depositor EDS
% Data completeness (in resolution range)	94.2 (30.00-8.69) 96.6 (29.91-8.69)	Depositor EDS
R_{merge}	0.19	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.55 (at 8.13Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.210 , 0.229 0.209 , 0.234	Depositor DCC
R_{free} test set	367 reflections (5.28%)	DCC
Wilson B-factor (Å^2)	561.6	Xtriage
Anisotropy	0.035	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.20 , 196.2	EDS
Estimated twinning fraction	0.026 for h,-h-k,-l	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.38$, $< L^2 > = 0.20$	Xtriage
Outliers	0 of 7321 reflections	Xtriage
F_o,F_c correlation	0.87	EDS
Total number of atoms	12412	wwPDB-VP
Average B, all atoms (Å^2)	364.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.50% 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

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

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	0.31	0/3105	0.53	0/4236
1	B	0.32	0/3105	0.53	0/4236
1	C	0.32	0/3105	0.53	0/4236
1	D	0.33	0/3105	0.54	0/4236
All	All	0.32	0/12420	0.53	0/16944

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	3011	0	2930	86	0
1	B	3011	0	2930	110	0
1	C	3011	0	2930	120	0
1	D	3011	0	2929	112	0
2	A	70	0	61	11	0
2	B	70	0	61	15	0
2	C	70	0	61	10	0
2	D	70	0	61	12	0
3	A	22	0	20	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	22	0	20	1	0
3	C	22	0	20	2	0
3	D	22	0	20	1	0
All	All	12412	0	12043	429	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 18.

All (429) 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:41:ASP:OD1	1:C:53:LYS:CE	1.72	1.35
1:C:61:TRP:CZ2	1:C:112:LEU:HB3	1.67	1.27
1:C:41:ASP:OD1	1:C:53:LYS:HE2	1.21	1.26
1:B:35:GLN:HA	1:B:61:TRP:HD1	1.09	1.18
1:C:62:LEU:CD2	1:C:113:ASP:HB2	1.72	1.17
1:C:62:LEU:HB3	1:C:113:ASP:CA	1.77	1.15
1:C:35:GLN:HA	1:C:61:TRP:HD1	1.08	1.15
1:D:35:GLN:HA	1:D:61:TRP:HD1	1.09	1.11
1:A:35:GLN:HA	1:A:61:TRP:HD1	1.09	1.11
1:C:62:LEU:HD23	1:C:113:ASP:CB	1.84	1.08
1:B:84:ASN:OD1	2:B:501:NAG:H82	1.52	1.07
1:C:62:LEU:HB3	1:C:113:ASP:HA	1.12	1.05
1:B:35:GLN:HA	1:B:61:TRP:CD1	1.94	1.03
1:A:35:GLN:HA	1:A:61:TRP:CD1	1.94	1.02
1:C:35:GLN:HA	1:C:61:TRP:CD1	1.94	1.02
1:D:35:GLN:HA	1:D:61:TRP:CD1	1.94	1.01
1:C:63:ASP:OD2	1:C:66:MET:CG	2.10	1.00
1:D:329:HIS:CE1	1:D:336:PRO:HA	1.97	0.99
1:C:41:ASP:OD1	1:C:53:LYS:NZ	1.97	0.95
1:D:285:LEU:HD12	1:D:333:TYR:CE1	2.00	0.95
1:C:325:TYR:CD2	1:C:339:VAL:HG22	2.01	0.95
1:C:63:ASP:OD2	1:C:66:MET:HG3	1.66	0.95
1:D:325:TYR:CD2	1:D:339:VAL:HG22	2.01	0.95
1:B:325:TYR:CD2	1:B:339:VAL:HG22	2.01	0.95
1:D:285:LEU:HD12	1:D:333:TYR:CZ	2.02	0.94
1:A:325:TYR:CD2	1:A:339:VAL:HG22	2.02	0.94
1:B:69:PRO:HG2	1:C:233:ILE:HG12	1.50	0.94
1:A:61:TRP:CZ2	1:A:112:LEU:HB3	2.09	0.88
1:D:61:TRP:CZ2	1:D:112:LEU:HB3	2.09	0.88
1:B:61:TRP:CZ2	1:B:112:LEU:HB3	2.09	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:221:LEU:HD21	1:C:325:TYR:CE2	2.10	0.87
1:B:221:LEU:HD21	1:B:325:TYR:CE2	2.10	0.87
1:D:221:LEU:HD21	1:D:325:TYR:CE2	2.09	0.87
1:A:221:LEU:HD21	1:A:325:TYR:CE2	2.10	0.87
1:C:62:LEU:CB	1:C:113:ASP:HA	2.03	0.85
1:D:285:LEU:CD1	1:D:333:TYR:CE1	2.58	0.85
1:B:41:ASP:OD1	1:B:53:LYS:HE2	1.77	0.85
1:D:41:ASP:OD1	1:D:53:LYS:HE2	1.77	0.84
1:A:325:TYR:CD2	1:A:339:VAL:CG2	2.61	0.84
1:A:41:ASP:OD1	1:A:53:LYS:HE2	1.77	0.84
1:C:325:TYR:CD2	1:C:339:VAL:CG2	2.61	0.84
1:B:325:TYR:CD2	1:B:339:VAL:CG2	2.61	0.84
1:C:62:LEU:HD23	1:C:113:ASP:HB2	0.89	0.84
1:B:322:PRO:HB3	1:B:339:VAL:HG11	1.60	0.83
1:D:322:PRO:HB3	1:D:339:VAL:HG11	1.60	0.83
1:A:322:PRO:HB3	1:A:339:VAL:HG11	1.60	0.83
1:D:325:TYR:CD2	1:D:339:VAL:CG2	2.61	0.83
1:C:322:PRO:HB3	1:C:339:VAL:HG11	1.60	0.82
1:C:63:ASP:OD2	1:C:66:MET:SD	2.37	0.82
1:A:330:GLY:HA3	1:A:334:THR:OG1	1.79	0.82
1:D:326:ILE:N	1:D:338:GLY:O	2.13	0.82
1:B:326:ILE:N	1:B:338:GLY:O	2.13	0.82
1:C:322:PRO:HB3	1:C:339:VAL:CG1	2.11	0.81
1:B:69:PRO:CG	1:C:233:ILE:HG12	2.11	0.81
1:C:326:ILE:N	1:C:338:GLY:O	2.13	0.81
1:B:322:PRO:HB3	1:B:339:VAL:CG1	2.11	0.81
1:D:329:HIS:NE2	1:D:336:PRO:HA	1.94	0.80
1:A:322:PRO:HB3	1:A:339:VAL:CG1	2.11	0.80
1:D:322:PRO:HB3	1:D:339:VAL:CG1	2.11	0.80
1:A:326:ILE:N	1:A:338:GLY:O	2.13	0.80
1:A:325:TYR:CE2	1:A:339:VAL:HG21	2.18	0.78
1:C:61:TRP:CZ3	1:C:62:LEU:HD13	2.18	0.78
1:C:325:TYR:CE2	1:C:339:VAL:HG21	2.19	0.78
1:C:61:TRP:CZ2	1:C:112:LEU:CB	2.59	0.77
1:B:325:TYR:CE2	1:B:339:VAL:HG21	2.18	0.77
1:D:325:TYR:CE2	1:D:339:VAL:HG21	2.18	0.77
1:B:86:SER:OG	2:B:501:NAG:C1	2.33	0.77
1:B:321:THR:OG1	1:B:346:ASP:N	2.19	0.76
1:D:272:ASN:OD1	2:D:504:NAG:C7	2.34	0.76
1:D:321:THR:OG1	1:D:346:ASP:N	2.19	0.75
1:C:321:THR:OG1	1:C:346:ASP:N	2.19	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:321:THR:OG1	1:A:346:ASP:N	2.19	0.73
1:B:84:ASN:HD22	1:B:87:SER:HB3	1.54	0.73
1:C:61:TRP:HZ2	1:C:112:LEU:HB3	1.41	0.72
1:B:390:ILE:O	1:B:394:LEU:HG	1.91	0.71
1:B:237:ILE:HD12	1:C:335:ASP:HB2	1.71	0.71
1:D:390:ILE:O	1:D:394:LEU:HG	1.91	0.70
1:C:41:ASP:HA	1:C:53:LYS:HG2	1.72	0.70
1:B:326:ILE:HB	1:B:338:GLY:HA3	1.74	0.70
1:C:390:ILE:O	1:C:394:LEU:HG	1.91	0.70
1:A:272:ASN:OD1	2:A:504:NAG:C7	2.40	0.70
1:D:326:ILE:HB	1:D:338:GLY:HA3	1.74	0.69
1:C:62:LEU:HB3	1:C:113:ASP:CB	2.21	0.69
1:A:390:ILE:O	1:A:394:LEU:HG	1.91	0.69
1:C:329:HIS:CE1	1:C:337:VAL:HB	2.27	0.69
1:A:329:HIS:CE1	1:A:337:VAL:HB	2.28	0.69
1:B:272:ASN:OD1	2:B:504:NAG:C7	2.41	0.69
1:B:329:HIS:CE1	1:B:337:VAL:HB	2.27	0.69
1:C:62:LEU:HB2	1:C:112:LEU:O	1.93	0.68
1:C:62:LEU:CB	1:C:113:ASP:CA	2.66	0.68
1:B:325:TYR:CE2	1:B:339:VAL:CG2	2.76	0.68
1:C:326:ILE:HB	1:C:338:GLY:HA3	1.74	0.68
1:C:325:TYR:CE2	1:C:339:VAL:CG2	2.76	0.68
1:A:325:TYR:CE2	1:A:339:VAL:CG2	2.76	0.68
1:D:325:TYR:CE2	1:D:339:VAL:CG2	2.76	0.68
1:A:326:ILE:HB	1:A:338:GLY:HA3	1.74	0.68
1:D:83:TYR:HB3	1:D:90:VAL:HA	1.78	0.66
1:C:272:ASN:OD1	2:C:504:NAG:C7	2.43	0.65
1:D:379:ASN:ND2	1:C:52:ARG:NH2	2.45	0.65
1:C:62:LEU:CG	1:C:113:ASP:HB2	2.26	0.64
2:B:502:NAG:H3	3:B:503:BMA:H2	1.78	0.64
1:D:284:ASP:O	1:D:333:TYR:OH	2.14	0.64
1:D:272:ASN:CG	2:D:504:NAG:N2	2.50	0.64
1:D:331:PHE:CG	1:D:332:PRO:HA	2.33	0.64
1:D:83:TYR:OH	1:D:292:TYR:CB	2.46	0.64
1:A:312:TYR:CE2	1:A:368:HIS:CG	2.87	0.63
1:A:24:PRO:HG2	1:A:175:VAL:HG12	1.81	0.63
1:C:312:TYR:CE2	1:C:368:HIS:CG	2.87	0.63
1:D:24:PRO:HG2	1:D:175:VAL:HG12	1.81	0.63
1:D:312:TYR:CE2	1:D:368:HIS:CG	2.86	0.63
1:A:319:LEU:HD22	1:A:346:ASP:N	2.14	0.63
1:B:345:ASP:OD1	1:B:348:VAL:N	2.31	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:24:PRO:HG2	1:B:175:VAL:HG12	1.81	0.63
1:B:61:TRP:CZ3	1:B:62:LEU:HD13	2.35	0.62
1:B:312:TYR:CE2	1:B:368:HIS:CG	2.87	0.62
1:C:146:TRP:O	1:C:248:THR:HG22	1.99	0.62
1:B:146:TRP:O	1:B:248:THR:HG22	1.99	0.62
1:C:24:PRO:HG2	1:C:175:VAL:HG12	1.81	0.62
1:A:61:TRP:CZ3	1:A:62:LEU:HD13	2.35	0.62
1:D:319:LEU:HD22	1:D:346:ASP:N	2.14	0.62
2:D:501:NAG:O3	2:D:501:NAG:O7	2.16	0.62
1:A:146:TRP:O	1:A:248:THR:HG22	1.99	0.62
1:C:61:TRP:CE3	1:C:62:LEU:HA	2.33	0.62
1:D:146:TRP:O	1:D:248:THR:HG22	1.99	0.61
1:B:319:LEU:HD22	1:B:346:ASP:N	2.14	0.61
1:D:61:TRP:CZ3	1:D:62:LEU:HD13	2.35	0.61
1:D:345:ASP:OD1	1:D:348:VAL:N	2.30	0.61
1:C:319:LEU:HD22	1:C:346:ASP:N	2.14	0.61
1:B:84:ASN:OD1	2:B:501:NAG:C8	2.40	0.61
1:B:272:ASN:CG	2:B:504:NAG:N2	2.54	0.60
1:A:345:ASP:OD1	1:A:348:VAL:N	2.31	0.60
2:A:504:NAG:H3	2:A:504:NAG:C8	2.32	0.60
2:B:504:NAG:O3	2:B:505:NAG:H83	2.02	0.60
1:D:69:PRO:HB2	1:B:232:PRO:HG2	1.84	0.60
2:D:504:NAG:O3	2:D:505:NAG:H83	2.01	0.59
1:A:272:ASN:CG	2:A:504:NAG:N2	2.55	0.59
1:D:272:ASN:OD1	2:D:504:NAG:N2	2.36	0.59
1:C:272:ASN:CG	2:C:504:NAG:N2	2.55	0.59
2:C:504:NAG:O3	2:C:505:NAG:H83	2.02	0.59
1:D:285:LEU:HD13	1:D:333:TYR:CE1	2.36	0.59
1:C:345:ASP:OD1	1:C:348:VAL:N	2.31	0.58
1:C:325:TYR:CG	1:C:339:VAL:HG22	2.39	0.58
1:B:237:ILE:CD1	1:C:335:ASP:HB2	2.34	0.58
1:C:41:ASP:OD1	1:C:53:LYS:CD	2.49	0.58
1:C:61:TRP:HZ2	1:C:112:LEU:CB	2.09	0.58
1:D:325:TYR:CG	1:D:339:VAL:HG22	2.39	0.58
1:D:83:TYR:OH	1:D:292:TYR:HB3	2.04	0.58
2:C:504:NAG:H3	2:C:504:NAG:C8	2.33	0.58
2:A:501:NAG:O7	2:A:501:NAG:O3	2.22	0.58
2:D:504:NAG:C8	2:D:504:NAG:H3	2.34	0.57
1:A:325:TYR:CG	1:A:339:VAL:HG22	2.39	0.57
1:D:70:LEU:HB2	1:B:232:PRO:HD2	1.87	0.57
1:B:325:TYR:CG	1:B:339:VAL:HG22	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:504:NAG:O3	2:A:505:NAG:H83	2.06	0.56
1:B:213:TRP:NE1	1:B:356:CYS:SG	2.79	0.56
1:D:379:ASN:CG	1:C:52:ARG:HH21	2.09	0.55
1:D:70:LEU:HB2	1:B:232:PRO:CD	2.36	0.55
1:D:62:LEU:HD11	1:D:67:PHE:CE2	2.42	0.55
1:B:62:LEU:HD11	1:B:67:PHE:CE2	2.42	0.55
1:A:213:TRP:NE1	1:A:356:CYS:SG	2.79	0.55
1:D:213:TRP:NE1	1:D:356:CYS:SG	2.79	0.55
1:A:62:LEU:HD11	1:A:67:PHE:CE2	2.42	0.55
1:C:147:ARG:O	1:C:247:THR:OG1	2.23	0.54
1:C:72:VAL:O	1:C:76:ILE:N	2.40	0.54
1:D:70:LEU:HD13	1:B:230:GLY:O	2.08	0.54
1:D:267:SER:HB3	2:D:504:NAG:C8	2.37	0.54
1:A:111:TYR:OH	1:A:122:HIS:NE2	2.41	0.53
1:D:72:VAL:O	1:D:76:ILE:N	2.40	0.53
1:A:72:VAL:O	1:A:76:ILE:N	2.40	0.53
1:C:213:TRP:NE1	1:C:356:CYS:SG	2.79	0.53
1:D:69:PRO:HA	1:D:72:VAL:HG22	1.90	0.53
1:D:211:ALA:HB1	1:D:213:TRP:CE2	2.44	0.53
1:B:72:VAL:O	1:B:76:ILE:N	2.40	0.53
1:C:211:ALA:HB1	1:C:213:TRP:CE2	2.44	0.53
1:D:111:TYR:OH	1:D:122:HIS:NE2	2.42	0.53
1:C:61:TRP:HZ2	1:C:112:LEU:CG	2.22	0.53
1:A:211:ALA:HB1	1:A:213:TRP:CE2	2.44	0.52
1:C:62:LEU:HB2	1:C:112:LEU:C	2.29	0.52
1:D:285:LEU:CD1	1:D:333:TYR:CZ	2.85	0.52
1:B:111:TYR:OH	1:B:122:HIS:NE2	2.41	0.52
1:B:211:ALA:HB1	1:B:213:TRP:CE2	2.44	0.52
1:A:69:PRO:HA	1:A:72:VAL:HG22	1.91	0.52
1:C:111:TYR:OH	1:C:122:HIS:NE2	2.41	0.52
1:C:62:LEU:CB	1:C:112:LEU:O	2.57	0.52
1:D:267:SER:HB3	2:D:504:NAG:H81	1.90	0.52
1:B:147:ARG:O	1:B:247:THR:OG1	2.23	0.52
1:C:390:ILE:HA	1:C:393:ILE:HD12	1.91	0.52
1:D:51:TYR:CD2	1:B:117:LEU:HD21	2.44	0.52
1:B:69:PRO:HA	1:B:72:VAL:HG22	1.91	0.52
1:B:84:ASN:HB3	1:B:87:SER:HB3	1.92	0.52
1:B:390:ILE:HA	1:B:393:ILE:HD12	1.91	0.51
1:D:390:ILE:HA	1:D:393:ILE:HD12	1.91	0.51
1:D:147:ARG:O	1:D:247:THR:OG1	2.23	0.51
1:A:390:ILE:HA	1:A:393:ILE:HD12	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:30:GLY:HA3	1:B:181:SER:HB3	1.93	0.51
1:C:30:GLY:HA3	1:C:181:SER:HB3	1.93	0.51
1:C:42:LYS:O	1:C:52:ARG:NH1	2.38	0.51
1:A:30:GLY:HA3	1:A:181:SER:HB3	1.93	0.51
2:B:504:NAG:C8	2:B:504:NAG:H3	2.41	0.51
1:C:69:PRO:HA	1:C:72:VAL:HG22	1.91	0.51
1:B:345:ASP:O	1:B:346:ASP:HB3	2.12	0.50
1:A:111:TYR:HH	1:A:122:HIS:CE1	2.29	0.50
1:C:111:TYR:OH	1:C:122:HIS:CD2	2.65	0.50
1:B:84:ASN:HD22	1:B:87:SER:CB	2.24	0.50
1:C:345:ASP:O	1:C:346:ASP:HB3	2.12	0.50
1:A:345:ASP:O	1:A:346:ASP:HB3	2.12	0.50
1:D:69:PRO:HG2	1:B:233:ILE:HA	1.93	0.50
1:D:327:TYR:HE1	1:D:334:THR:O	1.95	0.50
1:D:30:GLY:HA3	1:D:181:SER:HB3	1.93	0.50
1:A:147:ARG:O	1:A:247:THR:OG1	2.23	0.50
2:D:501:NAG:O4	2:D:502:NAG:O7	2.30	0.50
1:A:111:TYR:OH	1:A:122:HIS:CD2	2.64	0.50
1:D:345:ASP:O	1:D:346:ASP:HB3	2.12	0.50
1:B:111:TYR:HH	1:B:122:HIS:CE1	2.29	0.50
1:B:111:TYR:OH	1:B:122:HIS:CD2	2.65	0.49
1:A:332:PRO:HG2	1:A:333:TYR:CE2	2.47	0.49
1:C:111:TYR:HH	1:C:122:HIS:CE1	2.30	0.49
1:D:47:ASN:OD1	1:B:229:GLN:O	2.30	0.49
1:D:111:TYR:OH	1:D:122:HIS:CD2	2.65	0.49
2:C:501:NAG:O6	2:C:502:NAG:N2	2.45	0.49
1:A:144:TYR:CZ	1:A:146:TRP:HB3	2.48	0.49
2:A:504:NAG:H83	2:A:504:NAG:H3	1.94	0.49
1:D:379:ASN:CG	1:C:52:ARG:NH2	2.66	0.49
1:C:144:TYR:CZ	1:C:146:TRP:HB3	2.48	0.49
1:D:144:TYR:CZ	1:D:146:TRP:HB3	2.48	0.49
1:D:83:TYR:OH	1:D:292:TYR:HB2	2.11	0.49
1:B:144:TYR:CZ	1:B:146:TRP:HB3	2.48	0.49
1:C:332:PRO:HG2	1:C:333:TYR:CE2	2.48	0.48
2:D:504:NAG:H82	2:D:504:NAG:H3	1.94	0.48
1:C:32:LEU:HD23	1:C:146:TRP:CZ3	2.49	0.48
1:C:63:ASP:OD2	1:C:66:MET:CB	2.61	0.48
1:C:62:LEU:HD12	1:C:63:ASP:N	2.29	0.48
1:D:319:LEU:HD11	1:D:376:GLN:HG2	1.95	0.48
1:D:332:PRO:HG2	1:D:333:TYR:CE2	2.49	0.48
1:A:32:LEU:HD23	1:A:146:TRP:CZ3	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:111:TYR:HH	1:D:122:HIS:CE1	2.31	0.48
1:D:62:LEU:HD12	1:D:63:ASP:N	2.28	0.48
1:D:32:LEU:HD23	1:D:146:TRP:CZ3	2.49	0.48
1:D:315:TYR:CG	1:D:353:THR:HB	2.49	0.48
1:B:332:PRO:HG2	1:B:333:TYR:CE2	2.48	0.48
1:A:62:LEU:HD12	1:A:63:ASP:N	2.28	0.48
1:C:315:TYR:CG	1:C:353:THR:HB	2.49	0.48
1:B:319:LEU:HD11	1:B:376:GLN:HG2	1.96	0.48
1:B:315:TYR:CG	1:B:353:THR:HB	2.49	0.47
1:B:32:LEU:HD23	1:B:146:TRP:CZ3	2.49	0.47
1:B:213:TRP:CB	1:B:355:LEU:HD12	2.44	0.47
1:D:213:TRP:CB	1:D:355:LEU:HD12	2.44	0.47
1:B:62:LEU:HD12	1:B:63:ASP:N	2.28	0.47
1:C:319:LEU:HD11	1:C:376:GLN:HG2	1.95	0.47
1:D:177:LEU:HD11	1:D:203:ILE:HD12	1.96	0.47
2:B:501:NAG:H4	2:B:502:NAG:O7	2.14	0.47
1:C:213:TRP:CB	1:C:355:LEU:HD12	2.44	0.47
1:A:312:TYR:CZ	1:A:368:HIS:CE1	3.02	0.47
1:C:177:LEU:HD11	1:C:203:ILE:HD12	1.96	0.47
1:B:177:LEU:HD11	1:B:203:ILE:HD12	1.96	0.47
1:B:87:SER:HB2	2:B:501:NAG:O5	2.13	0.47
1:A:319:LEU:HD11	1:A:376:GLN:HG2	1.96	0.47
1:B:207:ILE:HD11	1:B:393:ILE:HG21	1.97	0.47
1:D:207:ILE:HD11	1:D:393:ILE:HG21	1.97	0.47
2:A:501:NAG:O4	2:A:502:NAG:O7	2.33	0.47
1:C:207:ILE:HD11	1:C:393:ILE:HG21	1.97	0.47
1:A:177:LEU:HD11	1:A:203:ILE:HD12	1.96	0.47
1:A:315:TYR:CG	1:A:353:THR:HB	2.49	0.47
1:B:312:TYR:CZ	1:B:368:HIS:CE1	3.03	0.47
1:B:238:LYS:HZ3	1:C:229:GLN:HA	1.80	0.47
1:A:207:ILE:HD11	1:A:393:ILE:HG21	1.97	0.47
1:A:213:TRP:CB	1:A:355:LEU:HD12	2.44	0.47
1:C:312:TYR:CZ	1:C:368:HIS:CE1	3.03	0.46
1:D:312:TYR:CZ	1:D:368:HIS:CE1	3.03	0.46
1:B:238:LYS:NZ	1:C:229:GLN:HA	2.31	0.46
1:D:72:VAL:O	1:D:75:TRP:HB3	2.16	0.46
1:C:360:GLN:HG2	1:C:367:VAL:HB	1.98	0.46
1:B:272:ASN:OD1	2:B:504:NAG:N2	2.49	0.46
1:C:272:ASN:OD1	2:C:504:NAG:N2	2.49	0.46
1:B:238:LYS:HZ3	1:C:229:GLN:CD	2.19	0.45
1:D:52:ARG:NH2	1:B:382:PHE:CD1	2.84	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:360:GLN:HG2	1:D:367:VAL:HB	1.98	0.45
1:D:379:ASN:ND2	1:C:52:ARG:HH21	2.13	0.45
1:A:72:VAL:O	1:A:75:TRP:HB3	2.16	0.45
2:C:502:NAG:C7	3:C:503:BMA:O2	2.64	0.45
1:C:221:LEU:HD21	1:C:325:TYR:HE2	1.76	0.45
1:B:72:VAL:O	1:B:75:TRP:HB3	2.16	0.45
1:B:61:TRP:HA	1:B:62:LEU:HA	1.62	0.45
1:C:317:VAL:HG22	1:C:372:LEU:O	2.17	0.45
1:A:360:GLN:HG2	1:A:367:VAL:HB	1.99	0.45
1:D:312:TYR:OH	1:D:368:HIS:CE1	2.70	0.45
1:C:62:LEU:CB	1:C:113:ASP:CB	2.93	0.45
1:C:72:VAL:O	1:C:75:TRP:HB3	2.17	0.45
1:B:360:GLN:HG2	1:B:367:VAL:HB	1.98	0.44
1:C:312:TYR:OH	1:C:368:HIS:CE1	2.71	0.44
1:D:110:GLU:HA	1:D:121:LEU:HB2	2.00	0.44
2:B:502:NAG:C1	2:B:502:NAG:O7	2.65	0.44
1:A:42:LYS:HE3	1:A:42:LYS:HB3	1.78	0.44
1:A:319:LEU:CD1	1:A:376:GLN:HG2	2.48	0.44
2:C:502:NAG:H3	3:C:503:BMA:O2	2.17	0.44
1:B:331:PHE:HA	1:B:332:PRO:HA	1.72	0.44
1:A:317:VAL:HG22	1:A:372:LEU:O	2.17	0.44
1:B:110:GLU:HA	1:B:121:LEU:HB2	2.00	0.44
1:D:317:VAL:HG22	1:D:372:LEU:O	2.17	0.44
1:C:41:ASP:CG	1:C:53:LYS:HE2	2.21	0.44
1:C:35:GLN:HB2	1:C:61:TRP:O	2.18	0.44
1:C:345:ASP:O	1:C:346:ASP:CB	2.66	0.44
1:C:319:LEU:CD1	1:C:376:GLN:HG2	2.47	0.44
1:A:312:TYR:OH	1:A:368:HIS:CE1	2.70	0.43
1:C:110:GLU:HA	1:C:121:LEU:HB2	2.00	0.43
1:B:317:VAL:HG22	1:B:372:LEU:O	2.17	0.43
1:C:207:ILE:HD11	1:C:393:ILE:CG2	2.49	0.43
1:B:312:TYR:OH	1:B:368:HIS:CE1	2.70	0.43
1:B:69:PRO:O	1:B:72:VAL:HG22	2.18	0.43
1:B:319:LEU:CD1	1:B:376:GLN:HG2	2.48	0.43
1:A:345:ASP:O	1:A:346:ASP:CB	2.66	0.43
1:A:242:GLU:O	1:A:245:ILE:HG13	2.19	0.43
1:D:319:LEU:CD1	1:D:376:GLN:HG2	2.47	0.43
1:C:69:PRO:O	1:C:72:VAL:HG22	2.18	0.43
1:A:110:GLU:HA	1:A:121:LEU:HB2	2.00	0.43
1:D:375:ILE:HG22	1:D:380:MET:HG3	2.01	0.43
1:C:242:GLU:O	1:C:245:ILE:HG13	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:345:ASP:O	1:D:346:ASP:CB	2.66	0.43
1:A:207:ILE:HD11	1:A:393:ILE:CG2	2.49	0.43
1:B:42:LYS:HE3	1:B:42:LYS:HB3	1.79	0.43
1:C:375:ILE:HG22	1:C:380:MET:HG3	2.01	0.43
1:C:61:TRP:CE2	1:C:112:LEU:HB3	2.41	0.43
1:D:69:PRO:O	1:D:72:VAL:HG22	2.18	0.43
1:A:213:TRP:HB2	1:A:355:LEU:HD12	2.00	0.43
1:A:69:PRO:O	1:A:72:VAL:HG22	2.18	0.43
1:A:375:ILE:HG22	1:A:380:MET:HG3	2.01	0.43
1:B:35:GLN:HB2	1:B:61:TRP:O	2.19	0.43
1:B:29:PRO:O	1:B:144:TYR:OH	2.21	0.43
1:C:285:LEU:HD12	1:C:333:TYR:CE1	2.54	0.43
1:A:322:PRO:CB	1:A:339:VAL:HG11	2.42	0.42
1:C:213:TRP:HB2	1:C:355:LEU:HD12	2.01	0.42
1:D:105:LYS:O	1:D:141:ALA:HB3	2.19	0.42
1:A:231:ILE:HD11	1:A:233:ILE:HB	2.01	0.42
1:D:269:PRO:HD3	1:D:328:ASP:HA	2.01	0.42
1:A:312:TYR:CE2	1:A:368:HIS:CD2	3.07	0.42
1:B:231:ILE:HD11	1:B:233:ILE:HB	2.01	0.42
1:C:331:PHE:HA	1:C:332:PRO:HA	1.72	0.42
1:D:242:GLU:O	1:D:245:ILE:HG13	2.19	0.42
1:D:61:TRP:HZ2	1:D:112:LEU:HD22	1.84	0.42
1:D:35:GLN:HB2	1:D:61:TRP:O	2.19	0.42
2:D:505:NAG:O3	3:D:506:BMA:O5	2.38	0.42
1:A:272:ASN:OD1	2:A:504:NAG:N2	2.52	0.42
1:D:69:PRO:CG	1:B:233:ILE:HA	2.50	0.42
1:B:375:ILE:HG22	1:B:380:MET:HG3	2.01	0.42
1:B:105:LYS:O	1:B:141:ALA:HB3	2.19	0.42
1:A:269:PRO:HD3	1:A:328:ASP:HA	2.02	0.42
1:D:312:TYR:CE2	1:D:368:HIS:CD2	3.07	0.42
1:B:207:ILE:HD11	1:B:393:ILE:CG2	2.49	0.42
1:D:207:ILE:HD11	1:D:393:ILE:CG2	2.49	0.42
1:B:213:TRP:HB2	1:B:355:LEU:HD12	2.01	0.42
1:B:285:LEU:HD12	1:B:333:TYR:CE1	2.54	0.42
1:B:345:ASP:O	1:B:346:ASP:CB	2.66	0.42
1:A:384:ASN:O	1:A:388:GLU:HG2	2.20	0.42
1:C:384:ASN:O	1:C:388:GLU:HG2	2.20	0.42
1:B:269:PRO:HD3	1:B:328:ASP:HA	2.02	0.42
1:B:242:GLU:O	1:B:245:ILE:HG13	2.19	0.42
1:B:216:SER:N	1:B:252:MET:O	2.49	0.42
1:A:35:GLN:HB2	1:A:61:TRP:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:105:LYS:O	1:A:141:ALA:HB3	2.19	0.42
1:D:309:VAL:O	1:D:363:GLN:NE2	2.53	0.42
1:A:267:SER:HB3	2:A:504:NAG:C8	2.49	0.42
1:D:62:LEU:HB3	1:D:113:ASP:HA	2.01	0.42
1:D:231:ILE:HD11	1:D:233:ILE:HB	2.01	0.42
1:B:61:TRP:HZ2	1:B:112:LEU:HD22	1.84	0.41
1:A:61:TRP:HZ2	1:A:112:LEU:HD22	1.84	0.41
1:D:62:LEU:CD1	1:D:67:PHE:CZ	3.03	0.41
1:C:231:ILE:HD11	1:C:233:ILE:HB	2.01	0.41
1:A:216:SER:N	1:A:252:MET:O	2.49	0.41
1:C:105:LYS:O	1:C:141:ALA:HB3	2.19	0.41
1:B:62:LEU:CD1	1:B:67:PHE:CZ	3.03	0.41
2:B:501:NAG:O6	2:B:502:NAG:C7	2.69	0.41
1:C:312:TYR:CE2	1:C:368:HIS:CD2	3.07	0.41
1:B:312:TYR:CE2	1:B:368:HIS:CD2	3.08	0.41
1:D:385:LEU:O	1:D:386:THR:C	2.58	0.41
1:C:269:PRO:HD3	1:C:328:ASP:HA	2.02	0.41
2:B:501:NAG:O6	2:B:502:NAG:N2	2.53	0.41
1:A:312:TYR:CZ	1:A:368:HIS:ND1	2.89	0.41
1:A:33:GLY:O	1:A:109:VAL:HG13	2.21	0.41
1:B:62:LEU:HB3	1:B:113:ASP:HA	2.01	0.41
1:A:61:TRP:HA	1:A:62:LEU:HA	1.62	0.41
1:D:70:LEU:CD1	1:B:230:GLY:O	2.68	0.41
1:C:73:ASP:HA	1:C:76:ILE:HD12	2.02	0.41
1:C:309:VAL:O	1:C:363:GLN:NE2	2.53	0.41
1:A:62:LEU:CD1	1:A:67:PHE:CZ	3.03	0.41
1:B:86:SER:OG	2:B:501:NAG:H5	2.21	0.41
1:D:285:LEU:HD12	1:D:333:TYR:CD1	2.50	0.41
1:A:72:VAL:O	1:A:76:ILE:HG13	2.21	0.41
1:D:360:GLN:NE2	1:A:354:GLU:OE1	2.50	0.41
1:D:61:TRP:HA	1:D:62:LEU:HA	1.62	0.41
1:A:322:PRO:HG3	1:A:341:TYR:CE2	2.55	0.41
2:A:504:NAG:O6	2:A:505:NAG:O5	2.31	0.41
1:A:62:LEU:HB3	1:A:113:ASP:HA	2.01	0.41
1:D:322:PRO:HG3	1:D:341:TYR:CE2	2.55	0.41
1:B:69:PRO:HB2	1:C:232:PRO:HG2	2.02	0.41
1:D:312:TYR:CZ	1:D:368:HIS:ND1	2.89	0.41
1:C:72:VAL:O	1:C:76:ILE:HG13	2.21	0.41
1:C:62:LEU:CG	1:C:113:ASP:CB	2.97	0.41
1:B:322:PRO:HG3	1:B:341:TYR:CE2	2.55	0.41
1:B:72:VAL:O	1:B:76:ILE:HG13	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:504:NAG:C8	2:D:504:NAG:C3	2.99	0.41
1:A:312:TYR:CD2	1:A:368:HIS:HB2	2.56	0.41
1:D:312:TYR:CD2	1:D:368:HIS:HB2	2.56	0.41
1:D:213:TRP:HB2	1:D:355:LEU:HD12	2.01	0.41
1:C:216:SER:N	1:C:252:MET:O	2.49	0.41
1:B:384:ASN:O	1:B:388:GLU:HG2	2.20	0.41
1:B:33:GLY:O	1:B:109:VAL:HG13	2.21	0.41
1:D:33:GLY:O	1:D:109:VAL:HG13	2.20	0.41
1:D:332:PRO:HG2	1:D:333:TYR:CD2	2.56	0.41
1:C:322:PRO:HG3	1:C:341:TYR:CE2	2.55	0.41
1:B:73:ASP:HA	1:B:76:ILE:HD12	2.03	0.41
1:A:285:LEU:HD12	1:A:333:TYR:CE1	2.56	0.41
1:B:69:PRO:HG2	1:C:233:ILE:CG1	2.37	0.40
2:C:504:NAG:H3	2:C:504:NAG:H83	2.03	0.40
1:C:312:TYR:CZ	1:C:368:HIS:ND1	2.89	0.40
1:B:312:TYR:CD2	1:B:368:HIS:HB2	2.56	0.40
1:D:70:LEU:HB2	1:B:232:PRO:HD3	2.03	0.40
1:A:182:LEU:HD12	1:A:185:LEU:HD12	2.03	0.40
1:A:73:ASP:HA	1:A:76:ILE:HD12	2.02	0.40
1:B:309:VAL:O	1:B:363:GLN:NE2	2.53	0.40
1:A:309:VAL:O	1:A:363:GLN:NE2	2.53	0.40
1:D:182:LEU:HD12	1:D:185:LEU:HD12	2.03	0.40
1:C:33:GLY:O	1:C:109:VAL:HG13	2.21	0.40
1:D:329:HIS:HE2	1:D:336:PRO:HA	1.78	0.40
1:D:84:ASN:ND2	1:D:87:SER:OG	2.53	0.40
1:C:267:SER:HB3	2:C:504:NAG:C8	2.51	0.40
1:B:312:TYR:CZ	1:B:368:HIS:ND1	2.89	0.40
1:A:267:SER:HB3	2:A:504:NAG:H81	2.02	0.40
1:D:72:VAL:O	1:D:76:ILE:HG13	2.21	0.40
1:C:182:LEU:HD12	1:C:185:LEU:HD12	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	373/383 (97%)	353 (95%)	19 (5%)	1 (0%)	46 83
1	B	373/383 (97%)	352 (94%)	20 (5%)	1 (0%)	46 83
1	C	373/383 (97%)	353 (95%)	19 (5%)	1 (0%)	46 83
1	D	373/383 (97%)	351 (94%)	21 (6%)	1 (0%)	46 83
All	All	1492/1532 (97%)	1409 (94%)	79 (5%)	4 (0%)	46 83

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	232	PRO
1	D	232	PRO
1	A	232	PRO
1	C	232	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	325/332 (98%)	324 (100%)	1 (0%)	94 96
1	B	325/332 (98%)	324 (100%)	1 (0%)	94 96
1	C	325/332 (98%)	324 (100%)	1 (0%)	94 96
1	D	325/332 (98%)	324 (100%)	1 (0%)	94 96
All	All	1300/1328 (98%)	1296 (100%)	4 (0%)	94 96

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	35	GLN
1	A	35	GLN
1	B	35	GLN
1	C	35	GLN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	127	ASN
1	D	131	ASN
1	D	180	HIS
1	D	296	GLN
1	D	368	HIS
1	D	391	ASN
1	A	127	ASN
1	A	131	ASN
1	A	180	HIS
1	A	296	GLN
1	A	368	HIS
1	A	391	ASN
1	B	131	ASN
1	B	180	HIS
1	B	296	GLN
1	B	368	HIS
1	B	391	ASN
1	C	127	ASN
1	C	131	ASN
1	C	180	HIS
1	C	296	GLN
1	C	368	HIS
1	C	391	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 (i)

28 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	$\#\|Z\| > 2$
2	NAG	A	501	1,2	14,14,15	0.52	0	15,19,21	1.08	1 (6%)
2	NAG	A	502	3,2	14,14,15	0.50	0	15,19,21	1.12	1 (6%)
3	BMA	A	503	2	11,11,12	0.65	0	14,15,17	0.87	0
2	NAG	A	504	1,2	14,14,15	0.55	0	15,19,21	2.34	4 (26%)
2	NAG	A	505	3,2	14,14,15	0.60	0	15,19,21	1.77	5 (33%)
3	BMA	A	506	2	11,11,12	0.65	0	14,15,17	0.40	0
2	NAG	A	507	1	14,14,15	0.51	0	15,19,21	0.64	0
2	NAG	B	501	1,2	14,14,15	0.55	0	15,19,21	4.17	6 (40%)
2	NAG	B	502	3,2	14,14,15	0.43	0	15,19,21	1.26	1 (6%)
3	BMA	B	503	2	11,11,12	0.57	0	14,15,17	0.72	0
2	NAG	B	504	1,2	14,14,15	0.56	0	15,19,21	2.54	4 (26%)
2	NAG	B	505	3,2	14,14,15	0.61	0	15,19,21	1.87	5 (33%)
3	BMA	B	506	2	11,11,12	0.63	0	14,15,17	0.63	0
2	NAG	B	507	1	14,14,15	0.55	0	15,19,21	0.59	0
2	NAG	C	501	1,2	14,14,15	0.62	0	15,19,21	1.41	2 (13%)
2	NAG	C	502	3,2	14,14,15	0.50	0	15,19,21	1.35	3 (20%)
3	BMA	C	503	2	11,11,12	0.63	0	14,15,17	1.05	1 (7%)
2	NAG	C	504	1,2	14,14,15	0.62	0	15,19,21	2.53	4 (26%)
2	NAG	C	505	3,2	14,14,15	0.66	0	15,19,21	1.94	6 (40%)
3	BMA	C	506	2	11,11,12	0.65	0	14,15,17	0.59	0
2	NAG	C	507	1	14,14,15	0.57	0	15,19,21	0.68	0
2	NAG	D	501	1,2	14,14,15	0.57	0	15,19,21	1.25	2 (13%)
2	NAG	D	502	3,2	14,14,15	0.55	0	15,19,21	1.11	2 (13%)
3	BMA	D	503	2	11,11,12	0.66	0	14,15,17	0.89	0
2	NAG	D	504	1,2	14,14,15	0.55	0	15,19,21	2.53	4 (26%)
2	NAG	D	505	3,2	14,14,15	0.59	0	15,19,21	1.82	4 (26%)
3	BMA	D	506	2	11,11,12	0.62	0	14,15,17	0.64	0
2	NAG	D	507	1	14,14,15	0.57	0	15,19,21	0.59	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
2	NAG	A	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	503	2	-	0/2/19/22	0/1/1/1
2	NAG	A	504	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	505	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	506	2	-	0/2/19/22	0/1/1/1
2	NAG	A	507	1	-	0/6/23/26	0/1/1/1
2	NAG	B	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	503	2	-	0/2/19/22	0/1/1/1
2	NAG	B	504	1,2	-	0/6/23/26	0/1/1/1
2	NAG	B	505	3,2	-	0/6/23/26	0/1/1/1
3	BMA	B	506	2	-	0/2/19/22	0/1/1/1
2	NAG	B	507	1	-	0/6/23/26	0/1/1/1
2	NAG	C	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	C	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	C	503	2	-	0/2/19/22	0/1/1/1
2	NAG	C	504	1,2	-	0/6/23/26	0/1/1/1
2	NAG	C	505	3,2	-	0/6/23/26	0/1/1/1
3	BMA	C	506	2	-	0/2/19/22	0/1/1/1
2	NAG	C	507	1	-	0/6/23/26	0/1/1/1
2	NAG	D	501	1,2	-	0/6/23/26	0/1/1/1
2	NAG	D	502	3,2	-	0/6/23/26	0/1/1/1
3	BMA	D	503	2	-	0/2/19/22	0/1/1/1
2	NAG	D	504	1,2	-	0/6/23/26	0/1/1/1
2	NAG	D	505	3,2	-	0/6/23/26	0/1/1/1
3	BMA	D	506	2	-	0/2/19/22	0/1/1/1
2	NAG	D	507	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (55) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	501	NAG	C3-C2-N2	-5.59	97.16	110.56
2	B	501	NAG	O7-C7-C8	-3.77	115.15	122.06
2	D	505	NAG	O7-C7-C8	-2.38	117.69	122.06
2	C	505	NAG	O7-C7-C8	-2.36	117.73	122.06
2	B	505	NAG	O7-C7-C8	-2.33	117.79	122.06

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	505	NAG	O7-C7-C8	-2.26	117.91	122.06
2	C	505	NAG	C4-C3-C2	-2.25	107.73	111.23
2	D	501	NAG	O7-C7-C8	-2.25	117.94	122.06
2	B	502	NAG	O7-C7-C8	-2.01	118.37	122.06
2	C	502	NAG	C3-C2-N2	2.00	115.36	110.56
2	A	505	NAG	C3-C4-C5	2.02	113.72	110.20
2	D	502	NAG	C2-N2-C7	2.04	125.67	123.04
2	B	505	NAG	C3-C4-C5	2.11	113.88	110.20
2	D	505	NAG	C3-C2-N2	2.12	115.64	110.56
2	A	501	NAG	C2-N2-C7	2.20	125.87	123.04
2	C	505	NAG	C3-C4-C5	2.28	114.17	110.20
2	C	501	NAG	C3-C2-N2	2.29	116.05	110.56
2	D	501	NAG	C2-N2-C7	2.33	126.03	123.04
2	C	502	NAG	C2-N2-C7	2.35	126.06	123.04
2	C	502	NAG	C8-C7-N2	2.37	120.65	116.11
2	D	502	NAG	C4-C3-C2	2.38	114.94	111.23
2	A	505	NAG	C3-C2-N2	2.40	116.30	110.56
2	B	505	NAG	C3-C2-N2	2.66	116.93	110.56
2	A	502	NAG	C1-O5-C5	2.85	115.86	112.25
3	C	503	BMA	C1-C2-C3	3.11	113.22	109.54
2	A	504	NAG	C3-C4-C5	3.13	115.65	110.20
2	B	504	NAG	C8-C7-N2	3.21	122.25	116.11
2	C	505	NAG	C3-C2-N2	3.25	118.35	110.56
2	D	504	NAG	C3-C4-C5	3.26	115.87	110.20
2	A	505	NAG	C2-N2-C7	3.38	127.38	123.04
2	D	504	NAG	C8-C7-N2	3.39	122.58	116.11
2	B	504	NAG	C3-C4-C5	3.47	116.24	110.20
2	C	501	NAG	C2-N2-C7	3.48	127.51	123.04
2	A	505	NAG	C8-C7-N2	3.49	122.78	116.11
2	C	505	NAG	C8-C7-N2	3.50	122.80	116.11
2	C	504	NAG	C8-C7-N2	3.51	122.82	116.11
2	C	504	NAG	C3-C4-C5	3.55	116.38	110.20
2	A	504	NAG	C8-C7-N2	3.55	122.90	116.11
2	B	505	NAG	C8-C7-N2	3.58	122.95	116.11
2	C	505	NAG	C2-N2-C7	3.61	127.67	123.04
2	D	505	NAG	C2-N2-C7	3.67	127.76	123.04
2	B	505	NAG	C2-N2-C7	3.72	127.82	123.04
2	D	505	NAG	C8-C7-N2	3.84	123.46	116.11
2	A	504	NAG	C3-C2-N2	4.46	121.25	110.56
2	C	504	NAG	C3-C2-N2	4.77	121.99	110.56
2	A	504	NAG	C2-N2-C7	4.84	129.26	123.04
2	D	504	NAG	C3-C2-N2	4.85	122.19	110.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	504	NAG	C3-C2-N2	5.15	122.90	110.56
2	B	501	NAG	C8-C7-N2	5.39	126.41	116.11
2	C	504	NAG	C2-N2-C7	5.77	130.45	123.04
2	B	504	NAG	C2-N2-C7	5.94	130.66	123.04
2	D	504	NAG	C2-N2-C7	6.05	130.81	123.04
2	B	501	NAG	C4-C3-C2	6.44	121.24	111.23
2	B	501	NAG	C2-N2-C7	7.89	133.17	123.04
2	B	501	NAG	C1-O5-C5	8.45	122.97	112.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

19 monomers are involved in 48 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	NAG	2	0
2	A	502	NAG	1	0
2	A	504	NAG	9	0
2	A	505	NAG	2	0
2	B	501	NAG	8	0
2	B	502	NAG	5	0
3	B	503	BMA	1	0
2	B	504	NAG	5	0
2	B	505	NAG	1	0
2	C	501	NAG	1	0
2	C	502	NAG	3	0
3	C	503	BMA	2	0
2	C	504	NAG	7	0
2	C	505	NAG	1	0
2	D	501	NAG	2	0
2	D	502	NAG	1	0
2	D	504	NAG	9	0
2	D	505	NAG	2	0
3	D	506	BMA	1	0

5.7 Other polymers (i)

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	375/383 (97%)	-0.42	2 (0%) 91 88	224, 384, 466, 555	1 (0%)
1	B	375/383 (97%)	-0.38	1 (0%) 94 92	202, 350, 463, 569	1 (0%)
1	C	375/383 (97%)	-0.40	3 (0%) 87 84	202, 347, 466, 559	1 (0%)
1	D	375/383 (97%)	-0.46	0 100 100	195, 360, 471, 558	1 (0%)
All	All	1500/1532 (97%)	-0.41	6 (0%) 93 90	195, 359, 469, 569	4 (0%)

All (6) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	30	GLY	3.2
1	A	30	GLY	2.5
1	C	22	THR	2.5
1	B	179	GLY	2.1
1	A	22	THR	2.0
1	C	33	GLY	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

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. LLDF column lists the quality of electron

density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å^2)	Q<0.9
2	NAG	C	504	14/15	0.95	0.12	-0.62	355,373,374,381	0
2	NAG	A	504	14/15	0.96	0.12	-0.78	363,374,384,398	0
2	NAG	B	504	14/15	0.94	0.13	-0.86	336,369,378,380	0
3	BMA	A	503	11/12	0.77	0.69	-	481,492,510,513	0
2	NAG	D	501	14/15	0.84	0.31	-	505,525,538,543	0
2	NAG	C	505	14/15	0.89	0.22	-	364,403,427,434	0
3	BMA	D	506	11/12	0.90	0.21	-	431,433,439,440	0
3	BMA	D	503	11/12	0.71	0.38	-	503,523,540,544	0
2	NAG	B	502	14/15	0.85	0.26	-	475,487,492,497	0
2	NAG	C	502	14/15	0.79	0.56	-	522,535,548,550	0
3	BMA	C	503	11/12	0.59	0.45	-	485,489,497,503	0
3	BMA	B	506	11/12	0.87	0.21	-	427,440,443,444	0
2	NAG	B	507	14/15	0.79	0.40	-	318,329,338,339	0
2	NAG	A	507	14/15	0.79	0.45	-	359,397,404,408	0
3	BMA	C	506	11/12	0.89	0.38	-	443,447,457,459	0
3	BMA	A	506	11/12	0.85	0.19	-	416,426,428,428	0
2	NAG	A	502	14/15	0.65	0.64	-	525,544,557,559	0
2	NAG	A	501	14/15	0.71	0.43	-	494,518,541,550	0
2	NAG	D	504	14/15	0.89	0.23	-	349,373,381,382	0
2	NAG	D	505	14/15	0.89	0.18	-	391,404,420,426	0
2	NAG	B	505	14/15	0.90	0.21	-	403,419,436,436	0
2	NAG	D	502	14/15	0.70	0.42	-	516,553,563,575	0
2	NAG	B	501	14/15	0.91	0.23	-	471,489,507,519	0
2	NAG	A	505	14/15	0.94	0.16	-	419,429,438,447	0
2	NAG	C	501	14/15	0.81	0.36	-	477,487,501,517	0
3	BMA	B	503	11/12	0.88	0.34	-	462,488,500,505	0
2	NAG	D	507	14/15	0.84	0.39	-	330,345,352,356	0
2	NAG	C	507	14/15	0.84	0.33	-	349,372,378,379	0

6.5 Other polymers (i)

There are no such residues in this entry.