Full wwPDB X-ray Structure Validation Report (i)

Jun 18, 2024 – 11:41 PM EDT

PDB ID	:	4DKD
Title	:	Crystal Structure of Human Interleukin-34 Bound to Human CSF-1R
Authors	:	Ma, X.; Bazan, J.F.; Starovasnik, M.A.
Deposited on	:	2012-02-03
Resolution	:	3.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

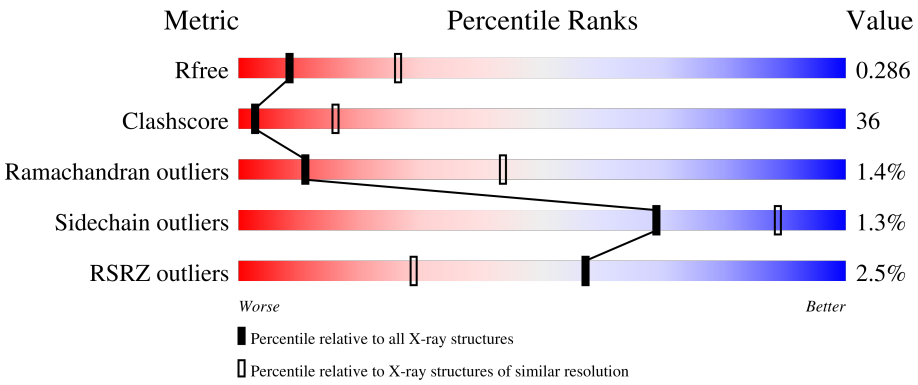
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 3.00 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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	185	50% 36% • 13%
1	B	185	% 45% 39% • 14%
2	C	292	5% 45% 46% • 7%
3	D	2	100%
3	E	2	50% 50%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 4872 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 Interleukin-34.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	161	1311	837	224	242	8	0	0	0
			Total	C	N	O	S			
1	B	160	1303	833	222	240	8	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	18	ALA	-	expression tag	UNP Q6ZMJ4
A	19	GLY	-	expression tag	UNP Q6ZMJ4
A	20	SER	-	expression tag	UNP Q6ZMJ4
A	194	GLY	-	expression tag	UNP Q6ZMJ4
A	195	ASN	-	expression tag	UNP Q6ZMJ4
A	196	SER	-	expression tag	UNP Q6ZMJ4
A	197	HIS	-	expression tag	UNP Q6ZMJ4
A	198	HIS	-	expression tag	UNP Q6ZMJ4
A	199	HIS	-	expression tag	UNP Q6ZMJ4
A	200	HIS	-	expression tag	UNP Q6ZMJ4
A	201	HIS	-	expression tag	UNP Q6ZMJ4
A	202	HIS	-	expression tag	UNP Q6ZMJ4
B	18	ALA	-	expression tag	UNP Q6ZMJ4
B	19	GLY	-	expression tag	UNP Q6ZMJ4
B	20	SER	-	expression tag	UNP Q6ZMJ4
B	194	GLY	-	expression tag	UNP Q6ZMJ4
B	195	ASN	-	expression tag	UNP Q6ZMJ4
B	196	SER	-	expression tag	UNP Q6ZMJ4
B	197	HIS	-	expression tag	UNP Q6ZMJ4
B	198	HIS	-	expression tag	UNP Q6ZMJ4
B	199	HIS	-	expression tag	UNP Q6ZMJ4
B	200	HIS	-	expression tag	UNP Q6ZMJ4
B	201	HIS	-	expression tag	UNP Q6ZMJ4
B	202	HIS	-	expression tag	UNP Q6ZMJ4

- Molecule 2 is a protein called Macrophage colony-stimulating factor 1 receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	272	2108	1335	374	389	10	0	0	0

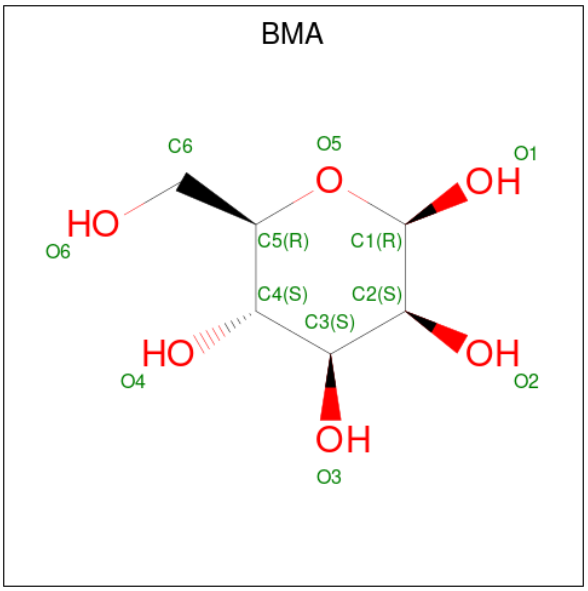
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	17	ALA	-	expression tag	UNP P07333
C	18	GLY	-	expression tag	UNP P07333
C	19	SER	-	expression tag	UNP P07333
C	300	GLY	-	expression tag	UNP P07333
C	301	ASN	-	expression tag	UNP P07333
C	302	SER	-	expression tag	UNP P07333
C	303	HIS	-	expression tag	UNP P07333
C	304	HIS	-	expression tag	UNP P07333
C	305	HIS	-	expression tag	UNP P07333
C	306	HIS	-	expression tag	UNP P07333
C	307	HIS	-	expression tag	UNP P07333
C	308	HIS	-	expression tag	UNP P07333

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

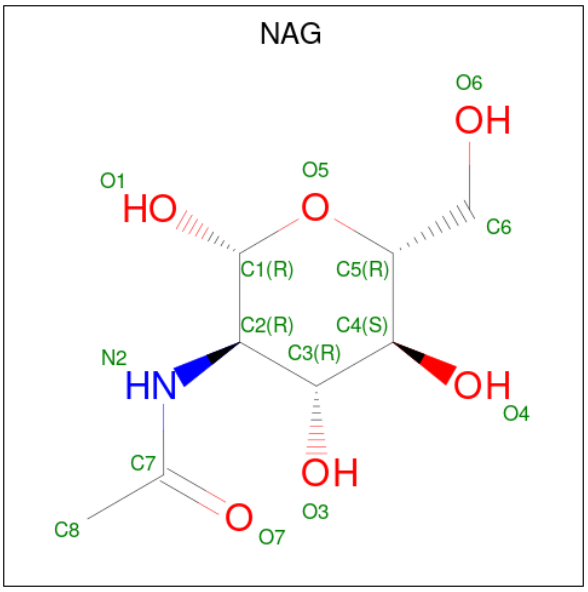
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	D	2	28	16	2	10	0	0	0
			Total	C	N	O			
3	E	2	28	16	2	10	0	0	0

- Molecule 4 is beta-D-mannopyranose (three-letter code: BMA) (formula: $C_6H_{12}O_6$).



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

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

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

- Molecule 6 is water.

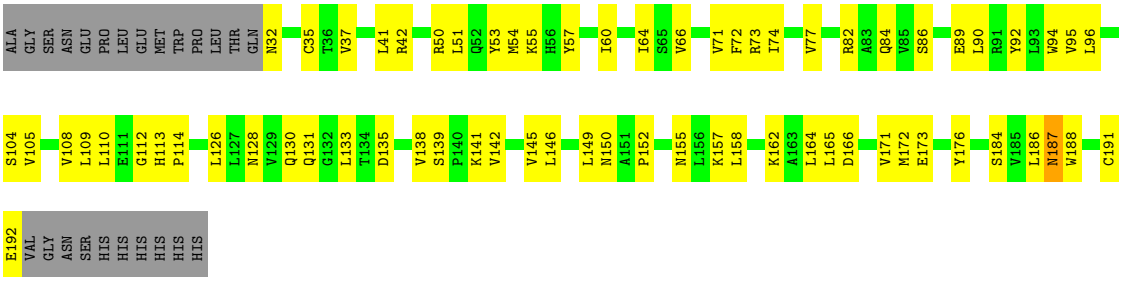
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	4	4	4	0	0
6	B	8	8	8	0	0
6	C	4	4	4	0	0

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: Interleukin-34

Chain A:

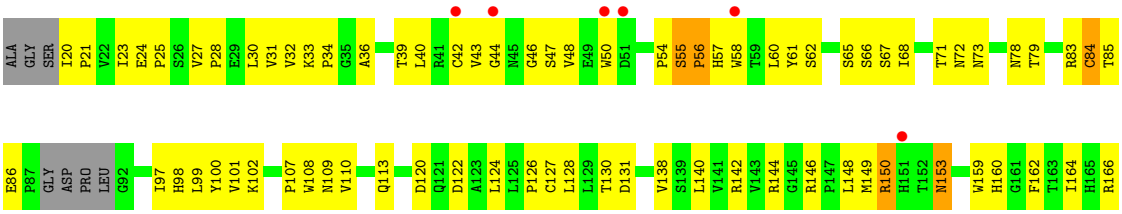


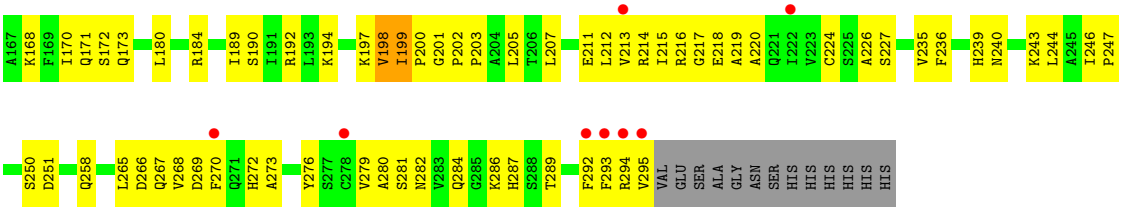
• Molecule 1: Interleukin-34

Chain B:

• Molecule 2: Macrophage colony-stimulating factor 1 receptor

Chain C:





• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	101.36Å 101.36Å 175.25Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.00 – 3.00 48.69 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.0 (50.00-3.00) 99.0 (48.69-3.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	2.74 (at 3.01Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.252 , 0.287 0.251 , 0.286	Depositor DCC
R_{free} test set	1096 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å^2)	90.6	Xtriage
Anisotropy	0.150	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 63.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.019 for -h,-k,l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	4872	wwPDB-VP
Average B, all atoms (Å^2)	97.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.51% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

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

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	0.43	0/1337	0.48	0/1815
1	B	0.42	0/1329	0.48	0/1804
2	C	0.44	0/2160	0.52	1/2946 (0.0%)
All	All	0.43	0/4826	0.50	1/6565 (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})
2	C	224	CYS	CA-CB-SG	-6.21	102.81	114.00

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	1311	0	1320	72	0
1	B	1303	0	1314	82	0
2	C	2108	0	2080	199	0
3	D	28	0	25	5	0
3	E	28	0	25	4	0
4	A	11	0	10	1	0
4	B	11	0	10	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	56	0	52	7	0
6	A	4	0	0	0	0
6	B	8	0	0	1	0
6	C	4	0	0	0	0
All	All	4872	0	4836	348	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 36.

All (348) 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)
2:C:199:ILE:HD13	2:C:199:ILE:O	1.31	1.27
2:C:48:VAL:HG21	2:C:84:CYS:SG	1.74	1.26
2:C:199:ILE:HD13	2:C:199:ILE:C	1.63	1.17
2:C:58:TRP:HE1	2:C:78:ASN:ND2	1.42	1.16
2:C:98:HIS:CD2	2:C:159:TRP:HD1	1.66	1.12
2:C:48:VAL:CG2	2:C:84:CYS:SG	2.38	1.10
1:B:38:THR:HB	1:B:172:MET:CE	1.83	1.08
2:C:44:GLY:O	2:C:65:SER:HB3	1.56	1.02
2:C:239:HIS:HD2	2:C:276:TYR:CE1	1.80	0.99
2:C:20:ILE:N	2:C:21:PRO:HD3	1.79	0.97
2:C:23:ILE:HG22	2:C:40:LEU:HD11	1.46	0.96
1:B:91:ARG:HD3	1:B:176:TYR:CZ	2.01	0.96
2:C:239:HIS:CD2	2:C:276:TYR:CE1	2.55	0.94
2:C:24:GLU:O	2:C:40:LEU:HD12	1.65	0.94
2:C:218:GLU:HG2	2:C:219:ALA:N	1.80	0.93
1:B:183:SER:O	1:B:184:SER:HB3	1.67	0.92
1:B:38:THR:HB	1:B:172:MET:HE2	1.52	0.91
2:C:198:VAL:O	2:C:199:ILE:HD12	1.70	0.91
2:C:276:TYR:HE2	2:C:293:PHE:HB2	1.35	0.91
2:C:98:HIS:CD2	2:C:159:TRP:CD1	2.58	0.89
2:C:215:ILE:O	2:C:216:ARG:HG2	1.72	0.89
2:C:21:PRO:CG	2:C:48:VAL:HG11	2.02	0.88
2:C:292:PHE:CE2	5:C:404:NAG:H82	2.09	0.88
1:B:135:ASP:OD1	1:B:136:VAL:N	2.08	0.87
2:C:23:ILE:CG2	2:C:40:LEU:HD11	2.03	0.87
2:C:199:ILE:C	2:C:199:ILE:CD1	2.38	0.87
1:B:103:GLU:HG3	1:B:104:SER:N	1.87	0.87
1:B:183:SER:OG	1:B:185:VAL:HB	1.75	0.86
2:C:32:VAL:HG12	2:C:33:LYS:O	1.76	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:48:VAL:HG12	2:C:85:THR:O	1.74	0.86
2:C:213:VAL:HG22	2:C:294:ARG:HG3	1.56	0.86
2:C:199:ILE:O	2:C:199:ILE:CD1	2.21	0.85
1:B:45:LEU:O	1:B:50:ARG:HD3	1.76	0.85
1:A:173:GLU:OE2	1:A:192:GLU:N	2.10	0.84
1:B:138:VAL:CG2	1:B:142:VAL:HB	2.07	0.84
2:C:197:LYS:O	2:C:198:VAL:HG12	1.77	0.84
1:A:41:LEU:HD11	1:A:126:LEU:HD23	1.59	0.83
2:C:30:LEU:HD23	2:C:31:VAL:N	1.94	0.83
2:C:54:PRO:CA	2:C:55:SER:HB3	2.09	0.82
1:B:154:PRO:O	1:B:156:LEU:HG	1.80	0.82
2:C:21:PRO:HG2	2:C:48:VAL:HG11	1.60	0.81
2:C:32:VAL:CG1	2:C:36:ALA:HB3	2.11	0.81
2:C:54:PRO:HA	2:C:55:SER:HB3	1.63	0.81
1:A:32:ASN:HA	1:A:35:CYS:HB2	1.62	0.80
2:C:198:VAL:HG13	2:C:199:ILE:N	1.95	0.80
1:B:139:SER:HB2	1:B:140:PRO:HD2	1.64	0.80
1:B:33:GLU:O	1:B:36:THR:HG22	1.82	0.79
2:C:20:ILE:N	2:C:21:PRO:CD	2.46	0.79
2:C:83:ARG:HG2	2:C:84:CYS:H	1.47	0.79
1:B:105:VAL:HG11	1:B:119:LEU:HD11	1.65	0.79
1:B:186:LEU:O	1:B:189:GLN:OE1	2.01	0.78
1:B:105:VAL:CG1	1:B:119:LEU:HD11	2.14	0.78
2:C:58:TRP:NE1	2:C:78:ASN:ND2	2.27	0.77
2:C:214:ARG:NH1	2:C:219:ALA:O	2.17	0.77
5:C:404:NAG:O7	5:C:404:NAG:H3	1.82	0.77
1:B:91:ARG:HD3	1:B:176:TYR:OH	1.84	0.77
2:C:50:TRP:CE3	2:C:83:ARG:O	2.38	0.77
2:C:276:TYR:CE2	2:C:293:PHE:HB2	2.19	0.77
2:C:48:VAL:CG1	2:C:85:THR:O	2.33	0.76
2:C:99:LEU:HD23	2:C:100:TYR:N	2.00	0.76
2:C:180:LEU:O	2:C:184:ARG:O	2.03	0.76
2:C:197:LYS:O	2:C:198:VAL:CG1	2.34	0.76
2:C:197:LYS:O	2:C:198:VAL:CB	2.32	0.76
1:A:113:HIS:ND1	1:A:114:PRO:HD2	2.01	0.75
2:C:149:MET:O	2:C:150:ARG:HB3	1.85	0.74
2:C:203:PRO:HD3	2:C:282:ASN:ND2	2.02	0.73
2:C:83:ARG:HG2	2:C:84:CYS:N	2.03	0.73
2:C:198:VAL:CG1	2:C:199:ILE:N	2.51	0.73
2:C:217:GLY:O	2:C:267:GLN:HG2	1.88	0.73
1:B:38:THR:HB	1:B:172:MET:HE1	1.67	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:197:LYS:O	2:C:198:VAL:HB	1.89	0.72
5:C:404:NAG:O7	5:C:404:NAG:C3	2.38	0.72
2:C:168:LYS:H	2:C:171:GLN:HG3	1.52	0.72
2:C:27:VAL:HG12	2:C:28:PRO:HD2	1.71	0.72
2:C:218:GLU:CG	2:C:219:ALA:N	2.53	0.71
1:A:109:LEU:HD22	1:A:113:HIS:CD2	2.25	0.71
1:A:186:LEU:HD23	1:A:186:LEU:O	1.90	0.70
1:B:38:THR:CB	1:B:172:MET:CE	2.66	0.70
1:A:72:PHE:HD1	3:D:1:NAG:H82	1.55	0.70
2:C:102:LYS:HB2	2:C:131:ASP:HB2	1.74	0.70
4:B:303:BMA:O3	6:B:402:HOH:O	2.09	0.69
2:C:202:PRO:HB2	2:C:287:HIS:CD2	2.27	0.69
2:C:251:ASP:OD1	2:C:258:GLN:HB3	1.92	0.69
2:C:54:PRO:CB	2:C:55:SER:HB3	2.23	0.68
2:C:172:SER:O	2:C:173:GLN:HG2	1.94	0.68
2:C:48:VAL:HG23	2:C:84:CYS:SG	2.32	0.68
2:C:142:ARG:NH1	2:C:149:MET:SD	2.67	0.68
1:B:138:VAL:HG23	1:B:142:VAL:HB	1.75	0.67
1:A:72:PHE:CD1	3:D:1:NAG:H82	2.30	0.67
2:C:24:GLU:C	2:C:40:LEU:HD12	2.15	0.67
1:B:87:GLU:O	1:B:91:ARG:HG3	1.94	0.67
4:A:303:BMA:C1	3:D:2:NAG:O4	2.42	0.67
2:C:202:PRO:HB2	2:C:287:HIS:CE1	2.30	0.66
1:B:92:TYR:O	1:B:95:VAL:HG12	1.96	0.66
1:A:138:VAL:HG12	1:A:139:SER:O	1.96	0.66
2:C:172:SER:C	2:C:173:GLN:HG2	2.15	0.66
1:B:183:SER:O	1:B:184:SER:CB	2.43	0.65
2:C:212:LEU:HD22	2:C:293:PHE:HE2	1.62	0.64
1:B:91:ARG:HB3	1:B:176:TYR:OH	1.98	0.64
2:C:33:LYS:HB3	2:C:34:PRO:HD2	1.80	0.64
2:C:128:LEU:HD23	2:C:160:HIS:O	1.97	0.64
1:A:150:ASN:ND2	2:C:146:ARG:HH11	1.96	0.64
2:C:43:VAL:HG12	2:C:66:SER:HB2	1.79	0.64
1:B:91:ARG:HD3	1:B:176:TYR:CE1	2.33	0.63
1:A:138:VAL:HG13	1:A:142:VAL:HB	1.80	0.63
2:C:56:PRO:O	2:C:57:HIS:CG	2.52	0.63
2:C:198:VAL:O	2:C:199:ILE:CD1	2.46	0.63
1:A:60:ILE:CG1	1:B:110:LEU:CD1	2.77	0.63
2:C:54:PRO:CA	2:C:55:SER:CB	2.77	0.63
2:C:44:GLY:O	2:C:65:SER:CB	2.41	0.62
1:A:54:MET:HG3	1:A:165:LEU:HD22	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:189:GLN:OE1	1:B:189:GLN:N	2.31	0.62
1:B:82:ARG:O	1:B:84:GLN:NE2	2.33	0.62
2:C:213:VAL:HG13	2:C:294:ARG:CB	2.29	0.62
2:C:140:LEU:O	2:C:148:LEU:HD21	2.00	0.61
1:B:71:VAL:HG21	1:B:157:LYS:HD3	1.83	0.61
2:C:102:LYS:HG3	2:C:102:LYS:O	2.01	0.61
2:C:100:TYR:HB3	2:C:130:THR:O	2.01	0.61
1:A:41:LEU:HD11	1:A:126:LEU:CD2	2.31	0.61
2:C:203:PRO:HG2	2:C:280:ALA:HB1	1.83	0.61
2:C:202:PRO:HB2	2:C:287:HIS:NE2	2.17	0.60
1:A:96:LEU:HD13	1:A:146:LEU:HD22	1.82	0.60
1:A:60:ILE:HG12	1:B:110:LEU:HD11	1.82	0.60
1:A:86:SER:OG	1:A:89:GLU:HG3	2.02	0.60
2:C:268:VAL:HG11	2:C:293:PHE:CE1	2.36	0.60
2:C:60:LEU:HD11	2:C:67:SER:OG	2.02	0.59
2:C:102:LYS:CB	2:C:131:ASP:HB2	2.31	0.59
2:C:198:VAL:O	2:C:199:ILE:HG23	2.01	0.59
2:C:268:VAL:HG12	2:C:269:ASP:N	2.18	0.59
2:C:218:GLU:HG2	2:C:219:ALA:H	1.62	0.59
1:B:105:VAL:CG1	1:B:119:LEU:CD1	2.81	0.58
2:C:21:PRO:HG3	2:C:48:VAL:HG11	1.83	0.58
1:A:60:ILE:HG12	1:B:110:LEU:CD1	2.32	0.58
1:A:113:HIS:CE1	1:A:114:PRO:HD2	2.38	0.58
2:C:43:VAL:HG12	2:C:66:SER:CB	2.33	0.58
2:C:268:VAL:HG11	2:C:293:PHE:HE1	1.69	0.58
2:C:109:ASN:O	2:C:128:LEU:HB2	2.03	0.58
2:C:272:HIS:O	2:C:276:TYR:OH	2.13	0.58
2:C:215:ILE:O	2:C:216:ARG:CG	2.48	0.58
1:B:94:TRP:CZ2	1:B:172:MET:HG3	2.39	0.57
2:C:27:VAL:CG1	2:C:28:PRO:HD2	2.35	0.57
1:B:177:CYS:O	1:B:181:LYS:HB2	2.04	0.56
2:C:205:LEU:HD23	2:C:226:ALA:HB2	1.87	0.56
2:C:281:SER:HB3	2:C:286:LYS:HG2	1.87	0.56
1:B:113:HIS:ND1	1:B:114:PRO:HD2	2.21	0.56
2:C:153:ASN:OD1	2:C:153:ASN:N	2.38	0.56
2:C:215:ILE:C	2:C:216:ARG:CG	2.73	0.56
2:C:99:LEU:HD23	2:C:99:LEU:C	2.25	0.56
2:C:99:LEU:HD21	2:C:101:VAL:HG23	1.87	0.56
2:C:198:VAL:CG1	2:C:199:ILE:H	2.17	0.55
1:A:138:VAL:CG1	1:A:142:VAL:HB	2.36	0.55
1:B:91:ARG:O	1:B:94:TRP:HB3	2.05	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:97:ILE:HG12	2:C:98:HIS:N	2.22	0.55
2:C:149:MET:O	2:C:150:ARG:CB	2.51	0.55
1:B:41:LEU:O	1:B:45:LEU:HB2	2.06	0.55
2:C:239:HIS:CD2	2:C:276:TYR:CZ	2.95	0.55
2:C:292:PHE:CE2	5:C:404:NAG:C8	2.88	0.54
1:A:42:ARG:HD2	1:A:188:TRP:CD2	2.42	0.54
2:C:239:HIS:HD2	2:C:276:TYR:CD1	2.24	0.54
1:B:33:GLU:C	1:B:35:CYS:H	2.10	0.54
2:C:32:VAL:HG11	2:C:36:ALA:HB3	1.87	0.54
2:C:205:LEU:HD21	2:C:280:ALA:HB2	1.90	0.54
2:C:212:LEU:HD11	2:C:214:ARG:NH2	2.22	0.54
1:A:150:ASN:CB	2:C:144:ARG:HD2	2.38	0.54
2:C:239:HIS:O	2:C:240:ASN:C	2.46	0.54
1:B:37:VAL:HG23	1:B:38:THR:N	2.23	0.54
1:B:66:VAL:C	1:B:155:ASN:OD1	2.45	0.54
2:C:24:GLU:HA	2:C:25:PRO:C	2.27	0.54
2:C:192:ARG:HD2	2:C:194:LYS:NZ	2.22	0.54
1:A:50:ARG:O	1:A:54:MET:HB2	2.08	0.53
1:A:54:MET:CG	1:A:165:LEU:HD22	2.38	0.53
2:C:273:ALA:HA	2:C:293:PHE:HB3	1.90	0.53
2:C:218:GLU:HA	2:C:266:ASP:O	2.07	0.53
1:A:71:VAL:HG21	1:A:157:LYS:HE2	1.89	0.53
2:C:58:TRP:HE1	2:C:78:ASN:HD22	1.50	0.53
4:B:303:BMA:HO2	3:E:2:NAG:HO4	1.57	0.53
2:C:207:LEU:HD12	2:C:289:THR:HG22	1.91	0.53
2:C:50:TRP:HE3	2:C:83:ARG:O	1.89	0.53
1:A:89:GLU:OE2	1:A:142:VAL:HG21	2.09	0.53
2:C:244:LEU:HB3	2:C:246:ILE:HD11	1.91	0.53
2:C:213:VAL:HG13	2:C:294:ARG:HB2	1.89	0.53
1:B:142:VAL:O	1:B:146:LEU:HD23	2.10	0.52
2:C:113:GLN:HG3	2:C:190:SER:O	2.09	0.52
2:C:269:ASP:O	2:C:295:VAL:HG11	2.10	0.52
1:A:113:HIS:ND1	1:A:114:PRO:CD	2.72	0.52
1:A:141:LYS:HB2	1:A:141:LYS:NZ	2.25	0.52
1:A:150:ASN:HB2	2:C:144:ARG:HD2	1.92	0.52
1:A:95:VAL:HG11	1:A:130:GLN:HB2	1.92	0.52
1:B:38:THR:O	1:B:172:MET:HE1	2.08	0.52
2:C:198:VAL:C	2:C:199:ILE:HG23	2.29	0.52
2:C:218:GLU:CG	2:C:219:ALA:H	2.19	0.52
1:A:51:LEU:O	1:A:55:LYS:HB3	2.10	0.52
1:B:37:VAL:HG23	1:B:38:THR:H	1.74	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:191:CYS:O	1:A:192:GLU:HB2	2.08	0.52
1:A:50:ARG:NH1	1:A:166:ASP:OD1	2.36	0.51
2:C:46:GLY:O	2:C:47:SER:HB3	2.10	0.51
1:B:91:ARG:CD	1:B:176:TYR:CZ	2.86	0.51
1:A:60:ILE:HG13	1:B:110:LEU:CD1	2.41	0.51
1:B:103:GLU:HG3	1:B:104:SER:H	1.71	0.51
2:C:30:LEU:CD2	2:C:32:VAL:HG23	2.40	0.51
2:C:215:ILE:HG13	2:C:295:VAL:HG23	1.92	0.51
1:A:105:VAL:O	1:A:108:VAL:HG22	2.11	0.51
2:C:213:VAL:HG13	2:C:294:ARG:HB3	1.93	0.51
1:A:60:ILE:HG13	1:B:110:LEU:HD13	1.93	0.51
2:C:108:TRP:CZ3	2:C:127:CYS:HB3	2.45	0.51
1:A:135:ASP:OD1	1:A:135:ASP:N	2.42	0.50
2:C:46:GLY:O	2:C:47:SER:CB	2.59	0.50
1:B:41:LEU:HG	1:B:45:LEU:HD12	1.92	0.50
1:B:83:ALA:HB1	1:B:141:LYS:NZ	2.26	0.50
1:B:33:GLU:C	1:B:35:CYS:N	2.65	0.50
1:B:173:GLU:HA	1:B:188:TRP:HH2	1.76	0.50
2:C:79:THR:HG23	2:C:100:TYR:HA	1.92	0.50
1:B:75:ALA:O	1:B:79:ARG:NH1	2.44	0.50
2:C:110:VAL:HG21	2:C:189:ILE:HG12	1.93	0.50
1:A:54:MET:HB3	1:A:162:LYS:HA	1.94	0.50
2:C:202:PRO:HB2	2:C:287:HIS:CG	2.47	0.50
2:C:98:HIS:HD2	2:C:159:TRP:HD1	1.42	0.49
2:C:122:ASP:HA	2:C:164:ILE:O	2.12	0.49
1:B:105:VAL:HG12	1:B:119:LEU:CD1	2.42	0.49
2:C:107:PRO:O	2:C:130:THR:HG23	2.13	0.49
1:B:177:CYS:O	1:B:181:LYS:N	2.44	0.49
2:C:192:ARG:HD2	2:C:194:LYS:HZ2	1.78	0.49
2:C:199:ILE:HD11	2:C:284:GLN:NE2	2.28	0.49
2:C:239:HIS:NE2	2:C:276:TYR:CZ	2.80	0.49
1:A:172:MET:O	1:A:176:TYR:HB2	2.13	0.49
2:C:54:PRO:CB	2:C:55:SER:CB	2.90	0.49
2:C:292:PHE:CZ	5:C:404:NAG:H82	2.45	0.49
1:A:139:SER:HB3	1:A:141:LYS:NZ	2.28	0.48
1:B:139:SER:HB2	1:B:140:PRO:CD	2.41	0.48
2:C:31:VAL:HG12	2:C:32:VAL:N	2.27	0.48
2:C:54:PRO:HB2	2:C:55:SER:OG	2.13	0.48
1:A:110:LEU:O	1:A:112:GLY:N	2.47	0.48
1:A:187:ASN:OD1	1:A:187:ASN:N	2.47	0.48
1:A:94:TRP:CE3	1:A:95:VAL:HG23	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:180:LEU:HD23	2:C:180:LEU:HA	1.67	0.48
2:C:213:VAL:HG22	2:C:294:ARG:CG	2.35	0.48
1:A:186:LEU:HD23	1:A:186:LEU:C	2.33	0.48
2:C:213:VAL:O	2:C:214:ARG:HB3	2.13	0.48
2:C:124:LEU:O	2:C:126:PRO:HD3	2.13	0.48
1:A:66:VAL:C	1:A:155:ASN:HB3	2.34	0.48
2:C:199:ILE:HG12	2:C:201:GLY:H	1.79	0.48
4:B:303:BMA:C1	3:E:2:NAG:O4	2.62	0.47
1:B:83:ALA:HB1	1:B:141:LYS:HZ2	1.79	0.47
1:A:77:VAL:HG13	1:A:90:LEU:HD13	1.97	0.47
2:C:72:ASN:OD1	2:C:73:ASN:HB2	2.13	0.47
2:C:220:ALA:HB3	2:C:265:LEU:HB2	1.94	0.47
2:C:98:HIS:ND1	2:C:99:LEU:N	2.63	0.47
2:C:62:SER:HA	2:C:67:SER:HA	1.96	0.47
2:C:199:ILE:HG13	2:C:284:GLN:HG2	1.96	0.47
2:C:235:VAL:HA	2:C:279:VAL:O	2.15	0.47
2:C:292:PHE:HE2	5:C:404:NAG:H82	1.71	0.47
2:C:269:ASP:O	2:C:295:VAL:CG1	2.62	0.47
1:B:72:PHE:CD1	3:E:1:NAG:H82	2.50	0.46
2:C:32:VAL:HG13	2:C:36:ALA:HB3	1.96	0.46
2:C:213:VAL:HA	2:C:294:ARG:HB2	1.97	0.46
2:C:42:CYS:HG	2:C:48:VAL:HG21	1.79	0.46
2:C:120:ASP:HA	2:C:166:ARG:HG2	1.96	0.46
2:C:215:ILE:HA	2:C:295:VAL:HG23	1.97	0.46
2:C:246:ILE:HG23	2:C:247:PRO:HD2	1.98	0.46
3:D:1:NAG:H61	3:D:2:NAG:N2	2.30	0.46
1:B:166:ASP:O	1:B:169:PHE:N	2.48	0.46
2:C:170:ILE:HG22	2:C:170:ILE:O	2.15	0.46
2:C:212:LEU:HD23	2:C:213:VAL:N	2.31	0.46
1:A:187:ASN:ND2	2:C:250:SER:HB2	2.31	0.46
2:C:276:TYR:HE2	2:C:293:PHE:CB	2.15	0.46
1:B:47:TYR:HA	1:B:50:ARG:NH1	2.31	0.46
1:A:37:VAL:CG2	1:A:128:ASN:HB3	2.45	0.46
2:C:243:LYS:O	2:C:243:LYS:HG2	2.15	0.46
1:A:42:ARG:HD2	1:A:188:TRP:CE2	2.50	0.46
1:A:96:LEU:HD13	1:A:146:LEU:CD2	2.44	0.46
1:A:64:ILE:O	1:A:158:LEU:HA	2.17	0.45
2:C:215:ILE:HD12	2:C:270:PHE:CE2	2.51	0.45
1:B:162:LYS:NZ	1:B:162:LYS:HB3	2.32	0.45
1:A:150:ASN:OD1	2:C:144:ARG:HD2	2.17	0.45
1:A:187:ASN:HD21	2:C:250:SER:HB2	1.80	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:268:VAL:CG1	2:C:293:PHE:HE1	2.29	0.45
1:A:42:ARG:HD2	1:A:188:TRP:CE3	2.52	0.45
1:A:149:LEU:HG	1:A:150:ASN:ND2	2.32	0.45
2:C:32:VAL:HG13	2:C:36:ALA:CB	2.47	0.45
2:C:86:GLU:O	2:C:86:GLU:HG2	2.17	0.45
1:A:89:GLU:OE1	1:A:139:SER:OG	2.32	0.45
2:C:211:GLU:OE1	2:C:211:GLU:HA	2.17	0.45
1:B:47:TYR:O	1:B:48:ARG:C	2.56	0.44
1:A:57:TYR:N	1:A:57:TYR:CD1	2.86	0.44
1:A:171:VAL:O	1:A:172:MET:C	2.55	0.44
1:B:34:GLU:HG2	1:B:34:GLU:O	2.17	0.44
1:B:72:PHE:HD1	3:E:1:NAG:H82	1.81	0.44
1:A:89:GLU:CD	1:A:139:SER:H	2.20	0.44
2:C:268:VAL:HA	2:C:272:HIS:ND1	2.32	0.44
2:C:203:PRO:HG2	2:C:280:ALA:CB	2.47	0.44
2:C:79:THR:HG21	2:C:130:THR:HA	2.00	0.44
2:C:153:ASN:HD22	5:C:402:NAG:C7	2.30	0.44
2:C:168:LYS:N	2:C:171:GLN:HG3	2.28	0.43
1:A:64:ILE:HD11	1:A:164:LEU:CD1	2.48	0.43
1:B:135:ASP:O	1:B:136:VAL:C	2.56	0.43
1:B:171:VAL:HG12	1:B:171:VAL:O	2.18	0.43
1:B:49:SER:O	1:B:50:ARG:C	2.57	0.43
1:B:142:VAL:O	1:B:146:LEU:CD2	2.66	0.43
2:C:192:ARG:CD	2:C:194:LYS:NZ	2.82	0.43
2:C:227:SER:HB3	2:C:258:GLN:HG3	2.00	0.43
2:C:99:LEU:HD23	2:C:100:TYR:CA	2.48	0.43
1:B:41:LEU:HD21	1:B:126:LEU:CD2	2.48	0.43
1:B:74:ILE:HD12	1:B:174:LEU:HD22	1.99	0.43
1:B:37:VAL:C	1:B:39:GLY:N	2.69	0.43
2:C:244:LEU:HB3	2:C:246:ILE:CD1	2.49	0.43
3:D:1:NAG:H61	3:D:2:NAG:HN2	1.84	0.43
1:B:128:ASN:OD1	1:B:131:GLN:OE1	2.37	0.42
2:C:98:HIS:CG	2:C:159:TRP:CD1	3.05	0.42
1:A:94:TRP:CZ3	1:A:95:VAL:HG22	2.54	0.42
2:C:99:LEU:CD2	2:C:101:VAL:HG23	2.49	0.42
1:A:131:GLN:C	1:A:133:LEU:H	2.22	0.42
2:C:201:GLY:N	2:C:284:GLN:HG3	2.34	0.42
1:B:111:GLU:H	1:B:111:GLU:CD	2.22	0.42
1:A:191:CYS:O	1:A:192:GLU:CB	2.66	0.42
1:B:105:VAL:O	1:B:108:VAL:HG22	2.19	0.42
1:B:141:LYS:O	1:B:145:VAL:HG23	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:58:TRP:CH2	2:C:71:THR:HG22	2.54	0.42
2:C:31:VAL:O	2:C:32:VAL:HG23	2.19	0.42
2:C:108:TRP:CE3	2:C:127:CYS:HB3	2.55	0.42
1:B:144:SER:O	1:B:148:LEU:HG	2.18	0.42
1:A:73:ARG:HG3	1:A:74:ILE:H	1.85	0.41
2:C:128:LEU:CD2	2:C:160:HIS:O	2.65	0.41
1:A:53:TYR:HB2	1:A:54:MET:HE2	2.02	0.41
1:B:98:SER:HB3	1:B:126:LEU:CD1	2.50	0.41
1:A:82:ARG:C	1:A:84:GLN:H	2.23	0.41
1:A:92:TYR:HA	1:A:133:LEU:HD23	2.02	0.41
1:B:78:THR:O	1:B:81:GLN:N	2.53	0.41
1:A:141:LYS:O	1:A:145:VAL:HG23	2.20	0.41
1:A:184:SER:O	2:C:247:PRO:HA	2.20	0.41
1:B:128:ASN:O	1:B:131:GLN:HG2	2.20	0.41
2:C:138:VAL:CG1	2:C:162:PHE:HZ	2.33	0.41
2:C:268:VAL:HG12	2:C:269:ASP:H	1.85	0.41
2:C:97:ILE:CG1	2:C:98:HIS:N	2.83	0.41
2:C:212:LEU:HD22	2:C:293:PHE:CE2	2.50	0.41
2:C:251:ASP:OD1	2:C:251:ASP:O	2.39	0.41
1:B:165:LEU:HD12	1:B:165:LEU:HA	1.79	0.41
2:C:268:VAL:CG1	2:C:269:ASP:N	2.83	0.41
1:A:150:ASN:HB3	2:C:144:ARG:CB	2.51	0.40
1:B:71:VAL:CG2	1:B:157:LYS:HD3	2.51	0.40
1:B:142:VAL:HG12	1:B:146:LEU:HD21	2.03	0.40
2:C:236:PHE:CZ	2:C:279:VAL:HB	2.56	0.40
2:C:251:ASP:OD1	2:C:251:ASP:C	2.59	0.40
1:A:110:LEU:C	1:A:112:GLY:N	2.75	0.40
2:C:61:TYR:O	2:C:68:ILE:HG22	2.20	0.40
1:B:37:VAL:HA	1:B:40:PHE:HD2	1.85	0.40
1:A:126:LEU:HD23	1:A:126:LEU:HA	1.92	0.40
1:B:77:VAL:HG11	1:B:174:LEU:HD23	2.04	0.40
2:C:212:LEU:HD11	2:C:214:ARG:HH22	1.85	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	159/185 (86%)	148 (93%)	10 (6%)	1 (1%)	25	64
1	B	158/185 (85%)	138 (87%)	18 (11%)	2 (1%)	12	45
2	C	268/292 (92%)	249 (93%)	14 (5%)	5 (2%)	8	36
All	All	585/662 (88%)	535 (92%)	42 (7%)	8 (1%)	11	43

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	55	SER
2	C	198	VAL
2	C	200	PRO
1	A	152	PRO
2	C	150	ARG
2	C	56	PRO
1	B	136	VAL
1	B	154	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	151/172 (88%)	149 (99%)	2 (1%)	69	89
1	B	150/172 (87%)	149 (99%)	1 (1%)	84	94
2	C	237/252 (94%)	233 (98%)	4 (2%)	60	85
All	All	538/596 (90%)	531 (99%)	7 (1%)	69	89

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	104	SER

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Mol	Chain	Res	Type
1	A	187	ASN
1	B	103	GLU
2	C	39	THR
2	C	84	CYS
2	C	153	ASN
2	C	199	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	52	GLN
2	C	78	ASN
2	C	98	HIS
2	C	239	HIS
2	C	284	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)

4 monosaccharides 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	$\#\|Z\| > 2$
3	NAG	D	1	1,3	14,14,15	0.64	0	17,19,21	0.86	0
3	NAG	D	2	3	14,14,15	0.54	0	17,19,21	0.68	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	NAG	E	1	1,3	14,14,15	0.59	0	17,19,21	1.05	1 (5%)
3	NAG	E	2	3	14,14,15	0.55	0	17,19,21	0.91	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	NAG	D	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	D	2	3	-	0/6/23/26	0/1/1/1
3	NAG	E	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	E	2	3	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	E	1	NAG	O5-C1-C2	-2.90	106.81	111.29

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	1	NAG	O5-C5-C6-O6
3	E	2	NAG	C8-C7-N2-C2
3	E	2	NAG	O7-C7-N2-C2
3	D	1	NAG	C4-C5-C6-O6

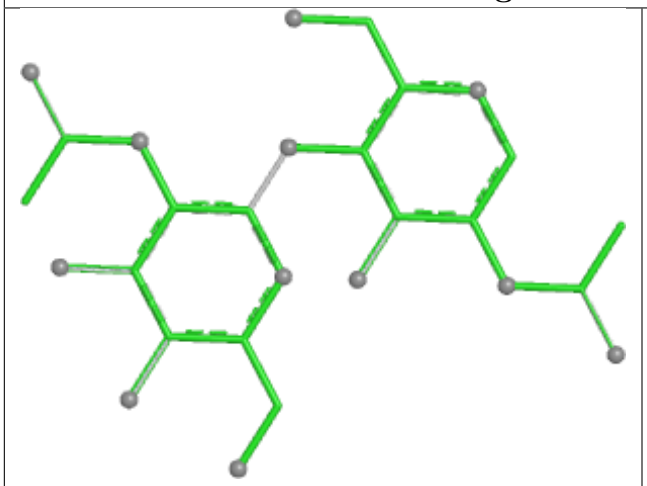
There are no ring outliers.

4 monomers are involved in 9 short contacts:

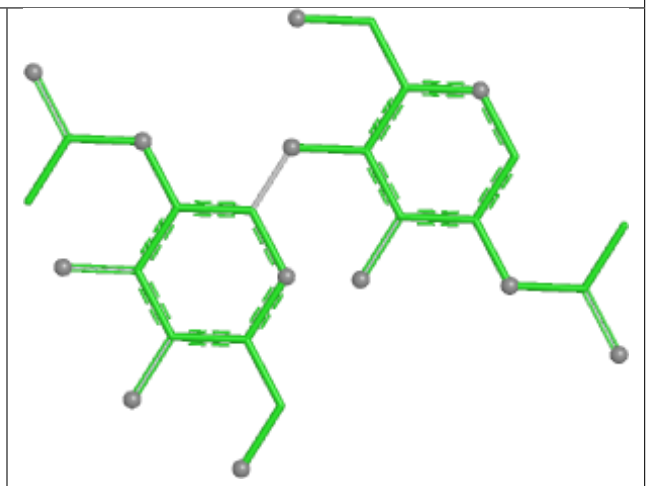
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	2	NAG	3	0
3	D	1	NAG	4	0
3	E	2	NAG	2	0
3	E	1	NAG	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

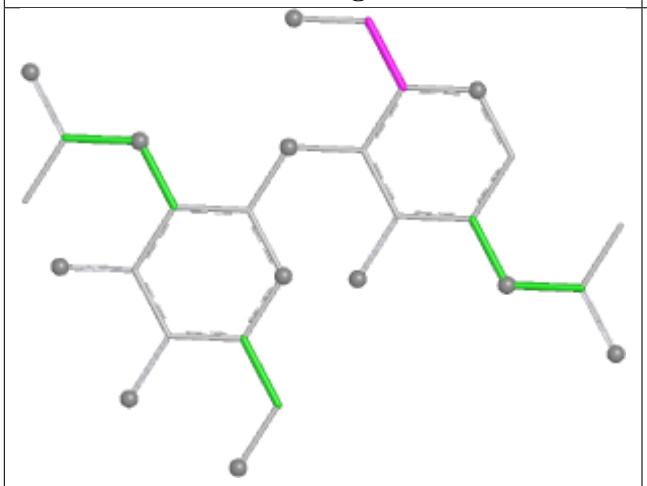
Oligosaccharide Chain D



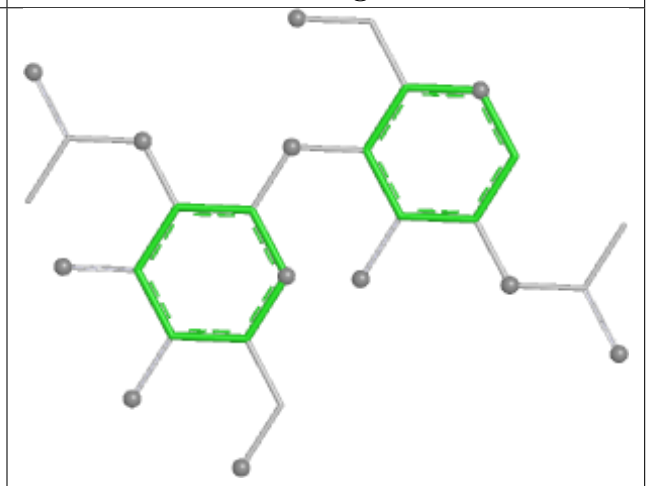
Bond lengths



Bond angles

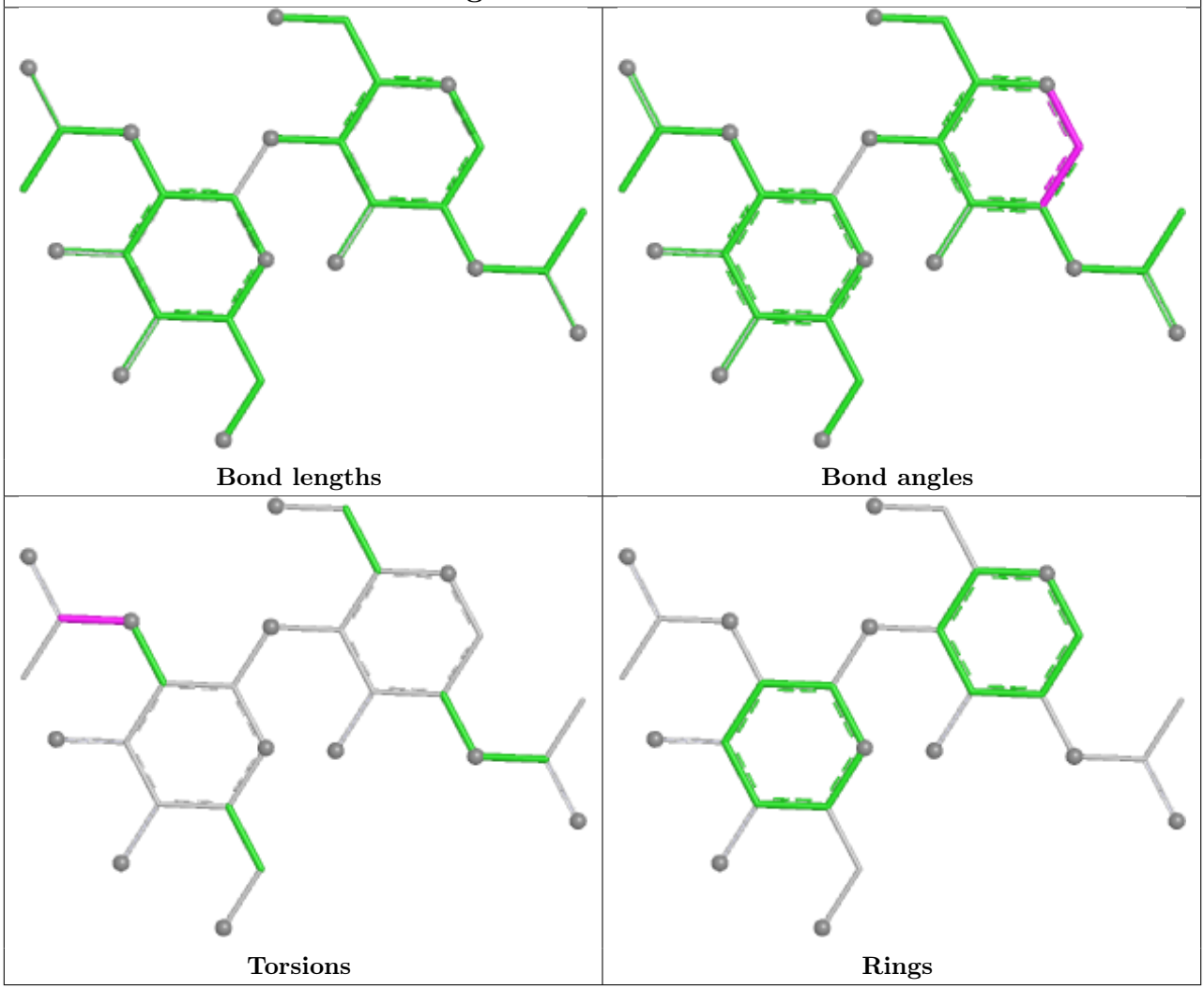


Torsions



Rings

Oligosaccharide Chain E



5.6 Ligand geometry (i)

6 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	BMA	A	303	-	11,11,12	0.29	0	15,15,17	0.53	0
5	NAG	C	404	2	14,14,15	0.46	0	17,19,21	0.92	1 (5%)
4	BMA	B	303	-	11,11,12	0.29	0	15,15,17	0.45	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	NAG	C	402	2	14,14,15	0.52	0	17,19,21	1.16	1 (5%)
5	NAG	C	401	2	14,14,15	0.56	0	17,19,21	1.36	2 (11%)
5	NAG	C	403	2	14,14,15	0.50	0	17,19,21	0.61	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
4	BMA	A	303	-	-	2/2/19/22	0/1/1/1
5	NAG	C	404	2	-	3/6/23/26	0/1/1/1
4	BMA	B	303	-	-	0/2/19/22	0/1/1/1
5	NAG	C	402	2	-	0/6/23/26	0/1/1/1
5	NAG	C	401	2	-	2/6/23/26	0/1/1/1
5	NAG	C	403	2	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	C	401	NAG	C1-O5-C5	3.72	117.17	112.19
5	C	402	NAG	C1-O5-C5	-3.60	107.36	112.19
5	C	401	NAG	C4-C3-C2	-2.79	106.93	111.02
5	C	404	NAG	C1-O5-C5	2.47	115.49	112.19

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	C	404	NAG	C3-C2-N2-C7
5	C	404	NAG	O5-C5-C6-O6
5	C	403	NAG	O5-C5-C6-O6
5	C	401	NAG	O5-C5-C6-O6
5	C	404	NAG	C4-C5-C6-O6
4	A	303	BMA	O5-C5-C6-O6
5	C	403	NAG	C4-C5-C6-O6
4	A	303	BMA	C4-C5-C6-O6
5	C	401	NAG	C4-C5-C6-O6

There are no ring outliers.

4 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	303	BMA	1	0
5	C	404	NAG	6	0
4	B	303	BMA	3	0
5	C	402	NAG	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 (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	161/185 (87%)	-0.05	0 100 100	55, 75, 125, 141	0
1	B	160/185 (86%)	-0.00	1 (0%) 89 72	59, 92, 148, 164	0
2	C	272/292 (93%)	0.41	14 (5%) 28 10	59, 101, 153, 175	0
All	All	593/662 (89%)	0.17	15 (2%) 57 29	55, 93, 147, 175	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	C	58	TRP	3.7
2	C	222	ILE	3.1
2	C	293	PHE	3.0
2	C	213	VAL	3.0
2	C	151	HIS	2.6
1	B	92	TYR	2.5
2	C	278	CYS	2.5
2	C	51	ASP	2.5
2	C	42	CYS	2.4
2	C	295	VAL	2.3
2	C	50	TRP	2.3
2	C	44	GLY	2.2
2	C	270	PHE	2.2
2	C	292	PHE	2.1
2	C	294	ARG	2.1

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)

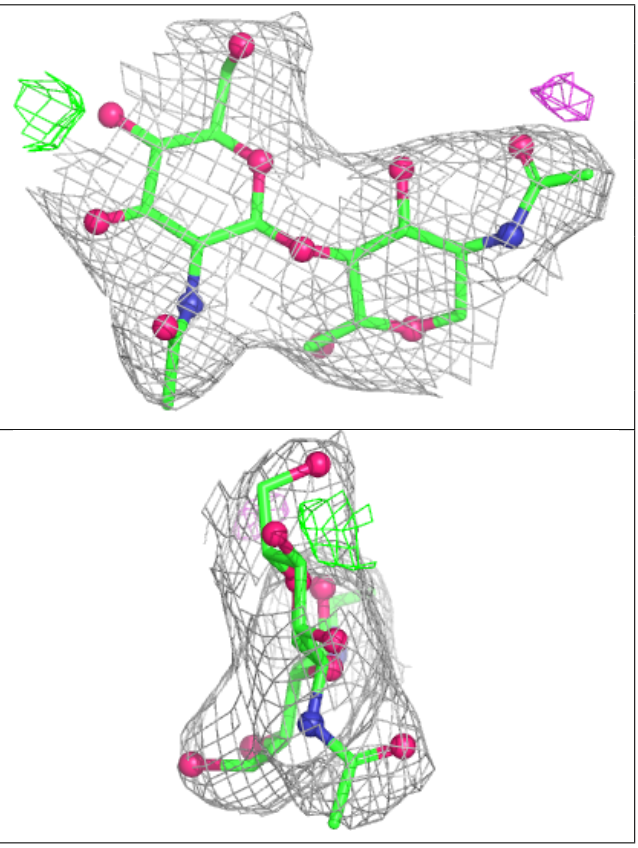
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	NAG	D	2	14/15	0.95	0.16	83,87,89,92	0
3	NAG	E	1	14/15	0.96	0.18	73,81,91,91	0
3	NAG	E	2	14/15	0.96	0.16	82,89,95,102	0
3	NAG	D	1	14/15	0.97	0.18	75,81,85,94	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

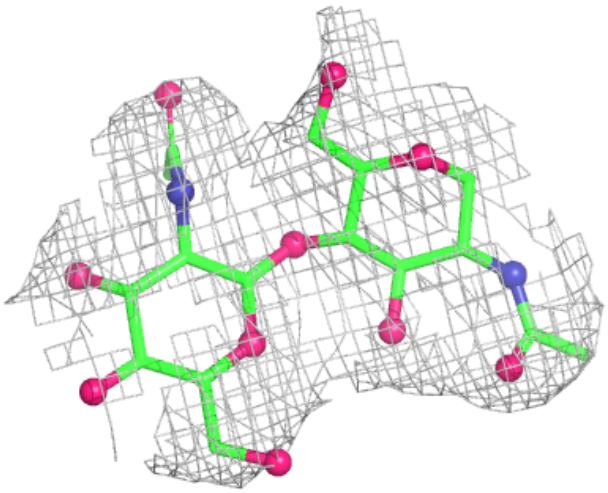
Electron density around Chain D:

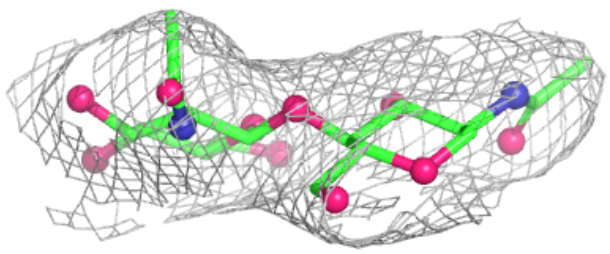
2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative) and green (positive)

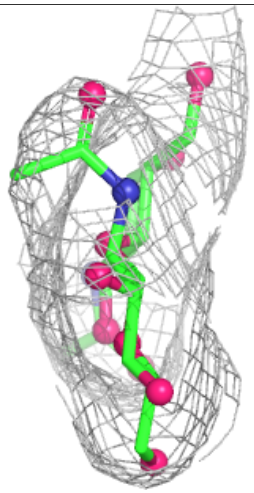


Electron density around Chain E:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)







6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	BMA	A	303	11/12	0.70	0.19	113,120,124,124	0
4	BMA	B	303	11/12	0.70	0.22	118,125,129,132	0
5	NAG	C	404	14/15	0.78	0.26	129,140,143,145	0
5	NAG	C	402	14/15	0.79	0.33	133,139,145,146	0
5	NAG	C	401	14/15	0.80	0.14	114,118,127,129	0
5	NAG	C	403	14/15	0.85	0.20	125,141,147,151	0

6.5 Other polymers (i)

There are no such residues in this entry.