



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 07:26 PM UTC

PDB ID : 3SCM / pdb_00003scm
Title : Crystal structure of autoreactive-Valpha14-Vbeta6 NKT TCR in complex with CD1d-isoglobotrihexosylceramide
Authors : Clarke, A.J.; Rossjohn, J.
Deposited on : 2011-06-08
Resolution : 2.50 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

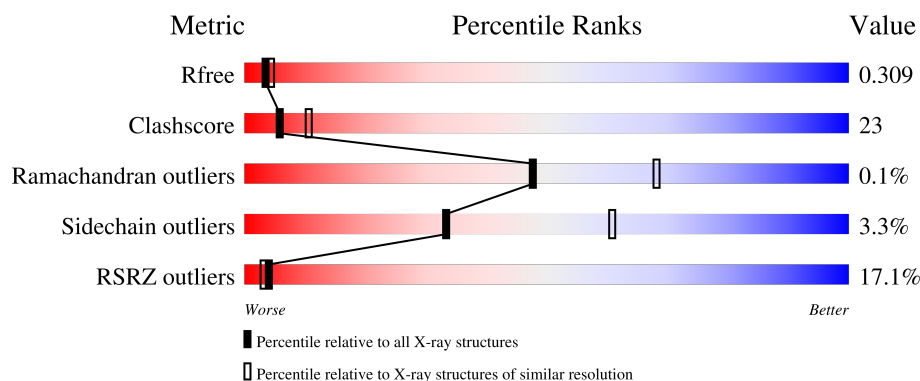
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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}	180053	5829 (2.50-2.50)
Clashscore	190562	6492 (2.50-2.50)
Ramachandran outliers	187476	6378 (2.50-2.50)
Sidechain outliers	187428	6380 (2.50-2.50)
RSRZ outliers	180081	5833 (2.50-2.50)

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 $\leq 5\%$. 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	302	4% 76% 19% • •
2	B	99	6% 73% 26% •
3	C	207	30% 65% 26% • 8%
4	D	245	24% 68% 27% • •
5	E	2	100%

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 6780 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 Antigen-presenting glycoprotein CD1d1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	289	Total	C	N	O	S	6	0	0
			2324	1480	404	426	14			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	201	HIS	ASP	SEE REMARK 999	UNP P11609
A	280	GLY	-	expression tag	UNP P11609
A	281	SER	-	expression tag	UNP P11609
A	282	LEU	-	expression tag	UNP P11609
A	283	HIS	-	expression tag	UNP P11609
A	284	HIS	-	expression tag	UNP P11609
A	285	ILE	-	expression tag	UNP P11609
A	286	LEU	-	expression tag	UNP P11609
A	287	ASP	-	expression tag	UNP P11609
A	288	ALA	-	expression tag	UNP P11609
A	289	GLN	-	expression tag	UNP P11609
A	290	LYS	-	expression tag	UNP P11609
A	291	MET	-	expression tag	UNP P11609
A	292	VAL	-	expression tag	UNP P11609
A	293	TRP	-	expression tag	UNP P11609
A	294	ASN	-	expression tag	UNP P11609
A	295	HIS	-	expression tag	UNP P11609
A	296	ARG	-	expression tag	UNP P11609
A	297	HIS	-	expression tag	UNP P11609
A	298	HIS	-	expression tag	UNP P11609
A	299	HIS	-	expression tag	UNP P11609
A	300	HIS	-	expression tag	UNP P11609
A	301	HIS	-	expression tag	UNP P11609
A	302	HIS	-	expression tag	UNP P11609

- Molecule 2 is a protein called Beta-2-microglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	99	Total	C	N	O	S	1	0	0
			814	520	138	149	7			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	85	ALA	ASP	SEE REMARK 999	UNP P01887

- Molecule 3 is a protein called NKT TCR Valpha14 chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	191	Total	C	N	O	S	3	0	0
			1478	915	254	302	7			

- Molecule 4 is a protein called NKT TCR autoreactive-Vbeta6 chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	239	Total	C	N	O	S	5	0	0
			1900	1202	326	365	7			

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



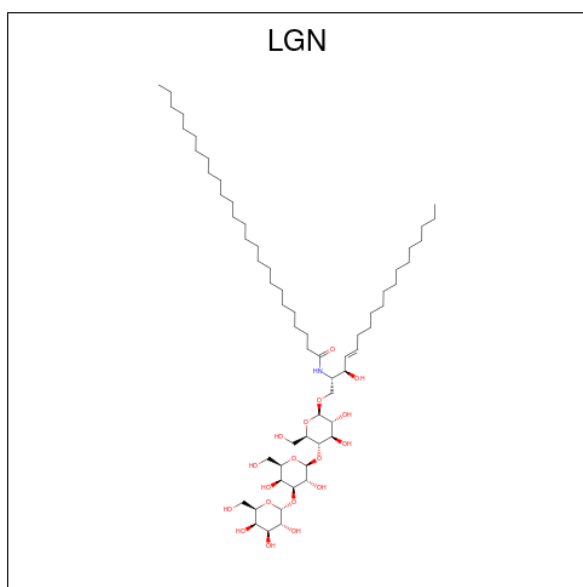
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	2	Total	C	N	O		0	0	0
			28	16	2	10				

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 7 is N-[(2S,3R,4E)-1-{[alpha-D-galactopyranosyl-(1->3)-beta-D-galactopyranosyl-(1->4)-beta-D-glucopyranosyl]oxy}-3-hydroxyoctadec-4-en-2-yl]hexacosanamide (CCD ID: LGN) (formula: C₆₂H₁₁₇NO₁₈).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total	C	N	O	0	0
			79	60	1	18		

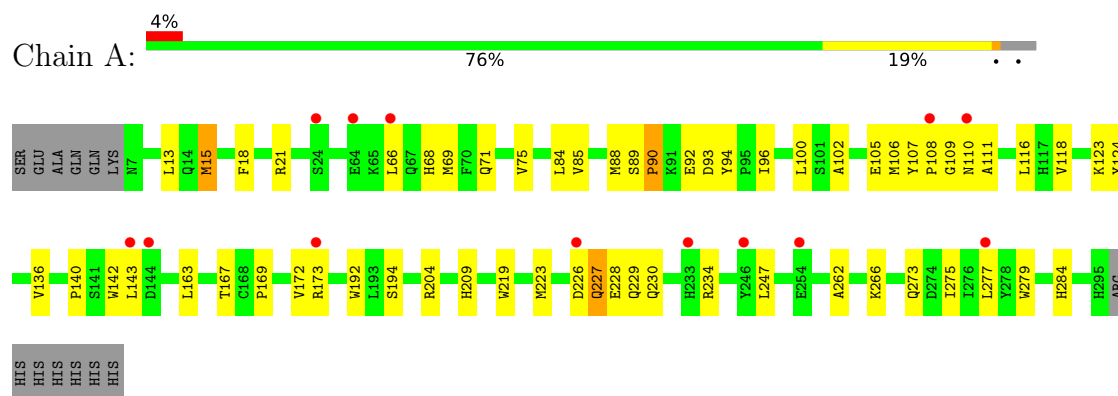
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	64	Total 64	O 64	0	0
8	B	15	Total 15	O 15	0	0
8	C	20	Total 20	O 20	0	0
8	D	30	Total 30	O 30	0	0

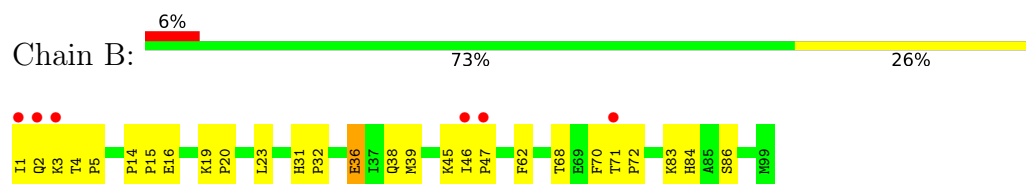
3 Residue-property plots [i](#)

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.

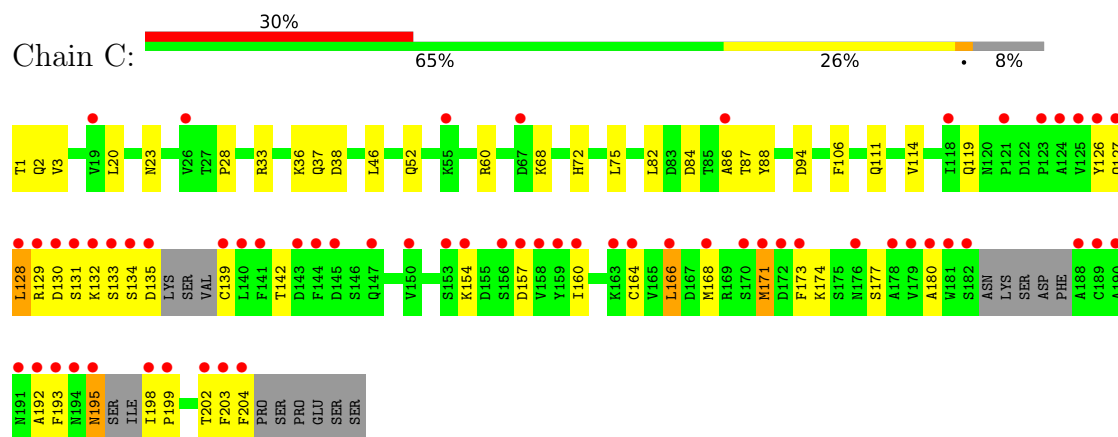
- Molecule 1: Antigen-presenting glycoprotein CD1d1



- Molecule 2: Beta-2-microglobulin

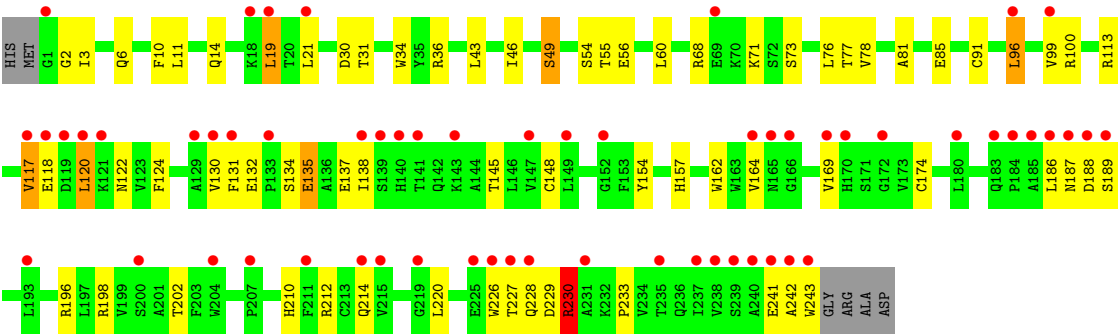


- Molecule 3: NKT TCR Valpha14 chain



- Molecule 4: NKT TCR autoreactive-Vbeta6 chain





• Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 100%



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	94.52Å 94.52Å 289.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	89.86 – 2.50 89.86 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.8 (89.86-2.50) 97.7 (89.86-2.50)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.89 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.273 , 0.318 0.265 , 0.309	Depositor DCC
R_{free} test set	2301 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	59.0	Xtriage
Anisotropy	0.098	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 33.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.27$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	6780	wwPDB-VP
Average B, all atoms (Å ²)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.42% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: NAG, LGN

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	0.64	3/2394 (0.1%)	0.77	1/3255 (0.0%)
2	B	0.41	0/840	0.74	0/1140
3	C	0.46	0/1501	0.85	2/2035 (0.1%)
4	D	0.60	1/1947 (0.1%)	0.88	5/2640 (0.2%)
All	All	0.56	4/6682 (0.1%)	0.82	8/9070 (0.1%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	105	GLU	CD-OE2	-11.97	1.02	1.25
4	D	3	ILE	C-N	-5.20	1.27	1.33
1	A	15	MET	C-O	-5.15	1.18	1.24
1	A	13	LEU	C-O	-5.05	1.18	1.24

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	3	ILE	O-C-N	9.36	132.41	122.67
3	C	195	ASN	N-CA-C	-8.06	88.44	111.00
3	C	202	THR	N-CA-C	7.59	121.24	110.23
4	D	2	GLY	CA-C-N	7.45	130.45	122.11
4	D	2	GLY	C-N-CA	7.45	130.45	122.11
4	D	85	GLU	N-CA-C	5.78	118.45	110.35
1	A	105	GLU	CG-CD-OE2	-5.53	105.68	118.40
4	D	230	ARG	N-CA-C	5.53	117.66	110.53

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	2324	0	2220	53	3
2	B	814	0	788	60	0
3	C	1478	0	1420	108	0
4	D	1900	0	1831	111	0
5	E	28	0	25	0	0
6	A	28	0	26	0	0
7	A	79	0	109	0	0
8	A	64	0	0	1	0
8	B	15	0	0	0	0
8	C	20	0	0	0	0
8	D	30	0	0	2	0
All	All	6780	0	6419	300	3

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 23.

All (300) 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)
3:C:203:PHE:O	3:C:204:PHE:CD2	1.86	1.29
4:D:210:HIS:NE2	4:D:241:GLU:CG	1.90	1.25
4:D:19:LEU:CB	4:D:78:VAL:HB	1.67	1.24
2:B:38:GLN:NE2	2:B:45:LYS:HE2	1.53	1.23
3:C:164:CYS:SG	4:D:174:CYS:SG	1.23	1.21
2:B:2:GLN:HB3	2:B:31:HIS:CB	1.73	1.18
4:D:186:LEU:HD12	4:D:186:LEU:O	1.42	1.17
3:C:128:LEU:H	3:C:128:LEU:CD1	1.59	1.16
3:C:203:PHE:CE2	3:C:204:PHE:O	2.03	1.12
4:D:210:HIS:NE2	4:D:241:GLU:HG2	1.49	1.11
3:C:128:LEU:HA	3:C:129:ARG:HB2	1.31	1.11
4:D:226:TRP:CH2	4:D:230:ARG:O	2.04	1.10
3:C:52:GLN:HA	3:C:68:LYS:HG3	1.15	1.10
2:B:2:GLN:HG2	2:B:31:HIS:CD2	1.86	1.10
3:C:128:LEU:H	3:C:128:LEU:HD13	1.10	1.10
2:B:38:GLN:HE22	2:B:45:LYS:CE	1.65	1.10

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2:GLN:CG	2:B:31:HIS:CD2	2.37	1.07
2:B:2:GLN:HB3	2:B:31:HIS:HB3	1.10	1.07
2:B:2:GLN:CB	2:B:31:HIS:CD2	2.38	1.07
3:C:128:LEU:O	3:C:128:LEU:HD22	1.55	1.06
2:B:38:GLN:HE22	2:B:45:LYS:HE2	0.89	1.05
4:D:19:LEU:HB2	4:D:78:VAL:CB	1.87	1.05
4:D:227:THR:O	4:D:227:THR:HG22	1.53	1.04
2:B:23:LEU:HB2	2:B:70:PHE:CD2	1.94	1.03
3:C:128:LEU:HD23	4:D:131:PHE:CD2	1.93	1.03
2:B:2:GLN:HB2	2:B:31:HIS:HD2	1.18	1.03
2:B:2:GLN:HB2	2:B:31:HIS:CD2	1.94	1.02
3:C:126:TYR:CD1	4:D:137:GLU:HB2	1.94	1.02
2:B:2:GLN:CB	2:B:31:HIS:HB3	1.89	1.02
3:C:126:TYR:CE1	4:D:137:GLU:HB2	1.95	1.01
4:D:14:GLN:OE1	4:D:120:LEU:HD23	1.61	1.01
3:C:129:ARG:N	3:C:130:ASP:HB2	1.79	0.97
3:C:128:LEU:HD22	3:C:128:LEU:C	1.90	0.97
1:A:275:ILE:HG22	1:A:277:LEU:CD1	1.94	0.97
2:B:23:LEU:HB2	2:B:70:PHE:CE2	2.01	0.96
4:D:226:TRP:HH2	4:D:230:ARG:O	1.42	0.96
2:B:1:ILE:CB	2:B:86:SER:HB3	1.96	0.95
2:B:2:GLN:CB	2:B:31:HIS:HD2	1.77	0.94
3:C:129:ARG:N	3:C:130:ASP:CB	2.30	0.94
1:A:227:GLN:HE21	1:A:229:GLN:HE22	1.08	0.93
2:B:2:GLN:HG2	2:B:31:HIS:CG	2.04	0.93
3:C:130:ASP:H	4:D:131:PHE:HD2	1.14	0.92
4:D:11:LEU:HD21	4:D:19:LEU:HD12	1.50	0.92
3:C:131:SER:OG	4:D:132:GLU:OE1	1.87	0.91
4:D:19:LEU:HB2	4:D:78:VAL:HB	0.91	0.91
4:D:21:LEU:CD1	4:D:34:TRP:CH2	2.53	0.90
1:A:279:TRP:O	1:A:284:HIS:ND1	2.05	0.89
1:A:89:SER:OG	1:A:90:PRO:HD3	1.70	0.89
3:C:128:LEU:CD1	3:C:128:LEU:N	2.30	0.89
1:A:275:ILE:CG2	1:A:277:LEU:CD1	2.52	0.88
3:C:128:LEU:HD13	3:C:128:LEU:O	1.73	0.88
3:C:126:TYR:CE1	4:D:137:GLU:CB	2.56	0.88
3:C:130:ASP:N	4:D:131:PHE:HD2	1.72	0.86
3:C:168:MET:O	3:C:171:MET:O	1.91	0.86
2:B:1:ILE:CB	2:B:86:SER:N	2.38	0.86
3:C:129:ARG:H	3:C:130:ASP:HB2	1.39	0.86
4:D:226:TRP:CZ3	4:D:230:ARG:O	2.30	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:92:GLU:OE1	8:A:358:HOH:O	1.94	0.84
2:B:46:ILE:HG23	2:B:47:PRO:HD2	1.57	0.84
2:B:2:GLN:N	2:B:31:HIS:O	2.10	0.84
2:B:2:GLN:CB	2:B:31:HIS:CB	2.54	0.82
3:C:129:ARG:CA	3:C:130:ASP:HB3	2.10	0.82
3:C:129:ARG:HA	3:C:130:ASP:HB3	1.61	0.82
2:B:38:GLN:HE21	2:B:45:LYS:HG2	1.42	0.82
3:C:203:PHE:O	3:C:204:PHE:CG	2.32	0.82
1:A:140:PRO:HD2	1:A:143:LEU:HD11	1.62	0.81
3:C:37:GLN:O	3:C:86:ALA:HB1	1.80	0.81
3:C:128:LEU:O	3:C:128:LEU:CD2	2.29	0.80
3:C:198:ILE:HG23	3:C:199:PRO:HD2	1.64	0.80
3:C:129:ARG:H	3:C:130:ASP:CB	1.90	0.80
2:B:3:LYS:O	2:B:86:SER:CB	2.30	0.80
4:D:186:LEU:O	4:D:186:LEU:CD1	2.27	0.79
3:C:52:GLN:CA	3:C:68:LYS:HG3	2.05	0.79
3:C:126:TYR:HE1	4:D:137:GLU:HA	1.47	0.79
4:D:145:THR:HG22	4:D:198:ARG:HB2	1.62	0.79
2:B:2:GLN:CB	2:B:31:HIS:CG	2.66	0.79
3:C:198:ILE:HG22	3:C:199:PRO:N	1.97	0.78
2:B:46:ILE:HD13	2:B:68:THR:HG21	1.64	0.78
4:D:21:LEU:HD13	4:D:34:TRP:CH2	2.19	0.77
3:C:130:ASP:HA	4:D:131:PHE:CD2	2.19	0.77
4:D:227:THR:O	4:D:227:THR:CG2	2.30	0.77
1:A:109:GLY:O	1:A:110:ASN:HB2	1.85	0.76
3:C:160:ILE:HD13	3:C:193:PHE:HB3	1.68	0.76
2:B:2:GLN:HB3	2:B:31:HIS:C	2.11	0.75
1:A:169:PRO:O	1:A:173:ARG:HG3	1.85	0.75
3:C:129:ARG:CA	3:C:130:ASP:CB	2.64	0.75
3:C:38:ASP:HA	3:C:86:ALA:HB2	1.67	0.75
2:B:1:ILE:CB	2:B:86:SER:CB	2.65	0.74
4:D:187:ASN:O	4:D:188:ASP:CG	2.30	0.74
1:A:227:GLN:NE2	1:A:229:GLN:HE22	1.83	0.74
3:C:126:TYR:CE1	4:D:137:GLU:CA	2.71	0.74
3:C:128:LEU:HD13	3:C:128:LEU:N	1.85	0.73
2:B:2:GLN:CG	2:B:31:HIS:HD2	1.97	0.73
3:C:203:PHE:CG	3:C:204:PHE:N	2.56	0.73
3:C:38:ASP:HA	3:C:86:ALA:CB	2.18	0.72
1:A:275:ILE:CG2	1:A:277:LEU:HD11	2.19	0.72
2:B:1:ILE:CB	2:B:86:SER:CA	2.68	0.72
3:C:37:GLN:C	3:C:86:ALA:HB1	2.15	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:130:VAL:HG11	4:D:242:ALA:HB2	1.73	0.71
3:C:131:SER:O	4:D:130:VAL:O	2.09	0.71
4:D:49:SER:HB2	4:D:54:SER:O	1.90	0.70
3:C:126:TYR:CE1	4:D:137:GLU:HA	2.27	0.70
3:C:126:TYR:HE1	4:D:137:GLU:CA	2.04	0.69
3:C:198:ILE:CG2	3:C:199:PRO:N	2.56	0.69
4:D:186:LEU:HD12	4:D:186:LEU:C	2.17	0.69
3:C:52:GLN:HA	3:C:68:LYS:CG	2.09	0.69
4:D:145:THR:HG22	4:D:198:ARG:CB	2.22	0.69
4:D:188:ASP:C	4:D:188:ASP:OD1	2.35	0.69
1:A:140:PRO:HD2	1:A:143:LEU:CD1	2.23	0.69
4:D:6:GLN:NE2	4:D:91:CYS:H	1.91	0.69
2:B:2:GLN:CG	2:B:31:HIS:CG	2.72	0.68
3:C:128:LEU:CA	3:C:129:ARG:HB2	2.16	0.68
3:C:33:ARG:NH1	4:D:100:ARG:O	2.23	0.68
4:D:21:LEU:CD1	4:D:34:TRP:CZ2	2.76	0.68
3:C:23:ASN:OD1	3:C:72:HIS:HD2	1.78	0.67
3:C:130:ASP:OD1	3:C:134:SER:O	2.12	0.67
3:C:128:LEU:CD1	3:C:128:LEU:O	2.42	0.67
2:B:38:GLN:NE2	2:B:45:LYS:HG2	2.09	0.67
2:B:38:GLN:NE2	2:B:45:LYS:CE	2.37	0.67
3:C:130:ASP:CA	4:D:131:PHE:HD2	2.08	0.67
2:B:2:GLN:HB3	2:B:31:HIS:CG	2.30	0.66
3:C:164:CYS:CB	4:D:174:CYS:SG	2.76	0.66
4:D:154:TYR:CE1	4:D:188:ASP:HA	2.30	0.66
1:A:275:ILE:HG22	1:A:277:LEU:HD12	1.74	0.66
3:C:128:LEU:HB3	8:D:272:HOH:O	1.94	0.66
3:C:130:ASP:HA	4:D:131:PHE:CE2	2.31	0.66
2:B:46:ILE:CG2	2:B:47:PRO:HD2	2.26	0.65
4:D:130:VAL:CG1	4:D:242:ALA:HB2	2.27	0.65
2:B:3:LYS:O	2:B:86:SER:HB3	1.96	0.65
4:D:11:LEU:CD2	4:D:19:LEU:HD12	2.26	0.65
3:C:128:LEU:H	3:C:128:LEU:HD12	1.56	0.65
4:D:21:LEU:HD11	4:D:34:TRP:CH2	2.33	0.64
2:B:2:GLN:CG	2:B:31:HIS:HB3	2.28	0.64
3:C:132:LYS:O	3:C:133:SER:HB3	1.98	0.64
1:A:140:PRO:CD	1:A:143:LEU:HD11	2.29	0.63
4:D:19:LEU:CB	4:D:78:VAL:CB	2.61	0.63
3:C:128:LEU:HA	3:C:129:ARG:CB	2.15	0.62
3:C:177:SER:OG	4:D:196:ARG:CD	2.47	0.62
2:B:2:GLN:HB3	2:B:31:HIS:CA	2.30	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:130:ASP:CA	4:D:131:PHE:CD2	2.83	0.62
4:D:19:LEU:N	4:D:78:VAL:O	2.31	0.62
3:C:203:PHE:CD2	3:C:204:PHE:N	2.68	0.62
1:A:142:TRP:CZ3	1:A:143:LEU:HD23	2.35	0.61
4:D:120:LEU:HD11	4:D:220:LEU:HD21	1.82	0.61
3:C:129:ARG:N	3:C:130:ASP:HB3	2.10	0.61
4:D:19:LEU:O	4:D:77:THR:HA	2.01	0.61
1:A:15:MET:HG2	2:B:62:PHE:HE2	1.66	0.60
4:D:186:LEU:HD11	4:D:189:SER:HA	1.82	0.60
1:A:18:PHE:HB2	1:A:96:ILE:HB	1.84	0.60
1:A:275:ILE:HG22	1:A:277:LEU:HD13	1.84	0.60
4:D:117:VAL:HG23	4:D:117:VAL:O	2.01	0.60
4:D:164:VAL:HG22	4:D:169:VAL:CG1	2.32	0.60
4:D:229:ASP:HB3	4:D:230:ARG:HE	1.66	0.60
3:C:198:ILE:HG23	3:C:199:PRO:CD	2.32	0.60
3:C:38:ASP:OD1	3:C:86:ALA:HB2	2.02	0.60
3:C:128:LEU:C	3:C:128:LEU:CD2	2.61	0.59
3:C:130:ASP:OD1	3:C:130:ASP:O	2.21	0.59
1:A:107:TYR:HB2	1:A:111:ALA:HB3	1.85	0.59
3:C:130:ASP:OD2	3:C:135:ASP:HA	2.03	0.59
3:C:198:ILE:CG2	3:C:199:PRO:CD	2.81	0.59
4:D:117:VAL:O	4:D:117:VAL:CG2	2.50	0.58
4:D:210:HIS:NE2	4:D:241:GLU:HG3	2.06	0.58
1:A:226:ASP:OD1	1:A:227:GLN:N	2.37	0.58
2:B:2:GLN:CB	2:B:31:HIS:C	2.76	0.58
3:C:86:ALA:O	3:C:88:TYR:CE1	2.57	0.58
3:C:20:LEU:HD12	3:C:75:LEU:HD23	1.87	0.57
2:B:71:THR:O	2:B:71:THR:HG23	2.03	0.57
3:C:1:THR:HG23	3:C:3:VAL:H	1.69	0.57
3:C:126:TYR:O	3:C:139:CYS:HB2	2.04	0.57
2:B:2:GLN:H	2:B:32:PRO:HD3	1.68	0.57
1:A:142:TRP:CH2	1:A:143:LEU:HD23	2.39	0.57
4:D:30:ASP:OD2	4:D:71:LYS:HE3	2.05	0.57
3:C:192:ALA:O	3:C:193:PHE:CG	2.58	0.56
3:C:139:CYS:N	3:C:180:ALA:O	2.38	0.56
1:A:140:PRO:HG2	1:A:143:LEU:HD11	1.87	0.55
1:A:140:PRO:HG2	1:A:143:LEU:CD1	2.37	0.55
4:D:145:THR:HG22	4:D:198:ARG:CG	2.37	0.55
1:A:107:TYR:HB3	1:A:108:PRO:HD2	1.88	0.55
4:D:120:LEU:CD1	4:D:220:LEU:HD21	2.37	0.54
3:C:129:ARG:H	3:C:130:ASP:HB3	1.69	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:106:PHE:CE2	4:D:43:LEU:HD22	2.43	0.54
2:B:2:GLN:H	2:B:32:PRO:CD	2.20	0.54
3:C:128:LEU:HD23	4:D:131:PHE:CE2	2.42	0.53
3:C:192:ALA:C	3:C:193:PHE:CD2	2.86	0.53
4:D:164:VAL:HG22	4:D:169:VAL:HG11	1.91	0.53
3:C:36:LYS:HB2	3:C:46:LEU:HD21	1.91	0.53
4:D:19:LEU:O	4:D:78:VAL:N	2.41	0.52
3:C:198:ILE:CG2	3:C:199:PRO:HD2	2.36	0.52
1:A:140:PRO:HG2	1:A:143:LEU:HG	1.91	0.52
1:A:140:PRO:CG	1:A:143:LEU:HD11	2.39	0.52
3:C:203:PHE:CZ	3:C:204:PHE:O	2.57	0.52
4:D:187:ASN:O	4:D:188:ASP:CB	2.57	0.52
1:A:223:MET:SD	1:A:228:GLU:HG2	2.50	0.52
1:A:102:ALA:HB2	1:A:116:LEU:HG	1.92	0.52
3:C:128:LEU:O	3:C:128:LEU:CG	2.58	0.52
4:D:154:TYR:CZ	4:D:188:ASP:HA	2.45	0.52
4:D:186:LEU:HD11	4:D:189:SER:CA	2.39	0.52
3:C:60:ARG:NH2	3:C:84:ASP:OD1	2.41	0.52
4:D:10:PHE:HB3	4:D:157:HIS:ND1	2.25	0.51
1:A:163:LEU:HA	1:A:167:THR:HB	1.93	0.51
4:D:212:ARG:NH1	4:D:214:GLN:OE1	2.44	0.51
2:B:71:THR:O	2:B:71:THR:CG2	2.59	0.51
2:B:19:LYS:O	2:B:72:PRO:HD2	2.11	0.51
3:C:127:GLN:O	4:D:134:SER:HB2	2.10	0.51
4:D:134:SER:OG	8:D:270:HOH:O	2.19	0.51
2:B:84:HIS:HD2	2:B:86:SER:OG	1.94	0.50
1:A:21:ARG:NH1	4:D:56:GLU:OE2	2.45	0.50
1:A:109:GLY:O	1:A:110:ASN:CB	2.57	0.50
2:B:39:MET:CB	2:B:46:ILE:HD12	2.41	0.50
4:D:21:LEU:HD12	4:D:34:TRP:CZ2	2.46	0.50
4:D:227:THR:O	4:D:228:GLN:NE2	2.45	0.50
1:A:140:PRO:HG2	1:A:143:LEU:CG	2.42	0.49
4:D:96:LEU:HD12	4:D:96:LEU:O	2.12	0.49
4:D:145:THR:CG2	4:D:198:ARG:HG3	2.41	0.49
1:A:142:TRP:CH2	1:A:143:LEU:CD2	2.96	0.49
4:D:19:LEU:CD2	4:D:81:ALA:HB2	2.42	0.49
1:A:84:LEU:O	1:A:88:MET:HG2	2.13	0.49
3:C:173:PHE:O	3:C:174:LYS:HG3	2.13	0.49
1:A:192:TRP:CE3	2:B:14:PRO:HG3	2.48	0.49
2:B:2:GLN:HB3	2:B:31:HIS:O	2.13	0.49
3:C:130:ASP:CG	3:C:134:SER:O	2.55	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2:GLN:CA	2:B:31:HIS:O	2.61	0.48
3:C:38:ASP:HA	3:C:86:ALA:HB1	1.95	0.48
2:B:23:LEU:CB	2:B:70:PHE:CD2	2.83	0.48
1:A:219:TRP:HB3	1:A:266:LYS:HB2	1.95	0.47
2:B:23:LEU:CB	2:B:70:PHE:CE2	2.86	0.47
3:C:192:ALA:C	3:C:193:PHE:CG	2.93	0.47
1:A:124:TYR:CZ	1:A:136:VAL:HG11	2.50	0.47
1:A:275:ILE:CG2	1:A:277:LEU:HD12	2.37	0.47
2:B:38:GLN:NE2	2:B:45:LYS:CG	2.78	0.47
4:D:154:TYR:CZ	4:D:188:ASP:HB2	2.49	0.47
3:C:177:SER:OG	4:D:196:ARG:HD2	2.16	0.46
4:D:230:ARG:HA	4:D:230:ARG:HD3	1.58	0.46
2:B:2:GLN:CB	2:B:31:HIS:O	2.64	0.46
3:C:128:LEU:HB2	3:C:129:ARG:C	2.40	0.46
4:D:145:THR:CG2	4:D:198:ARG:CG	2.94	0.46
3:C:52:GLN:CD	3:C:68:LYS:HB2	2.40	0.46
4:D:55:THR:O	4:D:55:THR:OG1	2.30	0.46
4:D:122:ASN:O	4:D:124:PHE:CD2	2.68	0.46
4:D:130:VAL:HG11	4:D:242:ALA:CB	2.45	0.46
1:A:275:ILE:HG21	1:A:277:LEU:HD11	1.95	0.45
3:C:126:TYR:CZ	4:D:137:GLU:HG3	2.51	0.45
4:D:36:ARG:HB2	4:D:46:ILE:HD11	1.99	0.45
1:A:106:MET:SD	1:A:172:VAL:HG21	2.56	0.45
1:A:262:ALA:HA	1:A:277:LEU:O	2.16	0.45
3:C:28:PRO:HG2	3:C:94:ASP:O	2.16	0.45
4:D:60:LEU:O	4:D:60:LEU:HG	2.16	0.45
4:D:19:LEU:HB3	4:D:78:VAL:HB	1.82	0.45
4:D:229:ASP:CB	4:D:230:ARG:HE	2.28	0.45
2:B:2:GLN:CG	2:B:31:HIS:CB	2.91	0.45
4:D:186:LEU:CD1	4:D:189:SER:HB3	2.46	0.45
3:C:1:THR:OG1	3:C:2:GLN:N	2.50	0.45
3:C:131:SER:HA	3:C:132:LYS:HA	1.60	0.45
3:C:126:TYR:HB3	4:D:134:SER:HB3	1.99	0.45
3:C:166:LEU:HB3	4:D:174:CYS:HB2	1.98	0.45
2:B:39:MET:HB2	2:B:46:ILE:HD12	1.99	0.44
3:C:198:ILE:HA	3:C:199:PRO:HD3	1.77	0.44
2:B:14:PRO:HA	2:B:15:PRO:HD3	1.89	0.44
4:D:11:LEU:HD21	4:D:19:LEU:CD1	2.35	0.44
4:D:164:VAL:O	4:D:164:VAL:HG23	2.18	0.44
2:B:16:GLU:O	2:B:72:PRO:HG2	2.18	0.44
3:C:128:LEU:N	3:C:128:LEU:HD12	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:220:LEU:HD22	4:D:233:PRO:HG2	2.00	0.44
1:A:92:GLU:HG3	1:A:142:TRP:CZ2	2.53	0.44
4:D:21:LEU:HD12	4:D:21:LEU:O	2.18	0.44
3:C:87:THR:OG1	3:C:111:GLN:HG3	2.17	0.43
4:D:19:LEU:HD23	4:D:81:ALA:HB2	1.99	0.43
1:A:140:PRO:CD	1:A:143:LEU:CD1	2.90	0.43
2:B:36:GLU:HB3	2:B:83:LYS:HB2	2.01	0.43
3:C:192:ALA:O	3:C:193:PHE:CD2	2.71	0.43
1:A:230:GLN:OE1	1:A:230:GLN:HA	2.19	0.43
1:A:69:MET:SD	1:A:69:MET:C	3.02	0.43
1:A:194:SER:OG	1:A:209:HIS:HE1	2.02	0.43
4:D:135:GLU:HA	4:D:138:ILE:HD13	2.01	0.43
1:A:234:ARG:HD3	1:A:247:LEU:HD21	2.01	0.43
1:A:68:HIS:HA	1:A:71:GLN:OE1	2.19	0.42
4:D:145:THR:HG23	4:D:198:ARG:HG3	1.99	0.42
4:D:148:CYS:HB2	4:D:162:TRP:CH2	2.54	0.42
3:C:131:SER:C	4:D:130:VAL:O	2.61	0.42
1:A:66:LEU:HD23	1:A:66:LEU:HA	1.87	0.42
4:D:34:TRP:CD1	4:D:76:LEU:HB2	2.54	0.42
1:A:85:VAL:HG11	1:A:94:TYR:CE1	2.55	0.42
3:C:23:ASN:OD1	3:C:72:HIS:CD2	2.66	0.41
3:C:82:LEU:HA	3:C:114:VAL:HG11	2.01	0.41
4:D:148:CYS:HB2	4:D:162:TRP:CZ2	2.55	0.41
4:D:68:ARG:HD2	4:D:73:SER:O	2.21	0.41
4:D:186:LEU:O	4:D:186:LEU:CG	2.68	0.41
1:A:219:TRP:CE3	1:A:266:LYS:HG3	2.56	0.41
3:C:119:GLN:HE21	3:C:119:GLN:HA	1.85	0.41
1:A:15:MET:HG2	2:B:62:PHE:CE2	2.52	0.41
1:A:100:LEU:HG	1:A:118:VAL:HG22	2.02	0.41
2:B:4:THR:HA	2:B:5:PRO:HD3	1.97	0.41
4:D:122:ASN:N	4:D:122:ASN:ND2	2.69	0.40
4:D:122:ASN:N	4:D:122:ASN:HD22	2.17	0.40
3:C:203:PHE:O	3:C:204:PHE:CE2	2.59	0.40
3:C:203:PHE:C	3:C:204:PHE:CD2	2.84	0.40
4:D:21:LEU:HD11	4:D:34:TRP:CZ2	2.56	0.40
4:D:186:LEU:CD1	4:D:186:LEU:C	2.87	0.40
2:B:19:LYS:HA	2:B:20:PRO:HD3	1.87	0.40
3:C:126:TYR:HE2	3:C:142:THR:CG2	2.34	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:ASP:OD2	1:A:273:GLN:NE2[6_424]	1.50	0.70
1:A:93:ASP:OD2	1:A:273:GLN:CD[6_424]	1.80	0.40
1:A:93:ASP:OD2	1:A:273:GLN:OE1[6_424]	2.00	0.20

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	287/302 (95%)	280 (98%)	6 (2%)	1 (0%)	36	55
2	B	97/99 (98%)	94 (97%)	3 (3%)	0	100	100
3	C	183/207 (88%)	174 (95%)	9 (5%)	0	100	100
4	D	237/245 (97%)	226 (95%)	11 (5%)	0	100	100
All	All	804/853 (94%)	774 (96%)	29 (4%)	1 (0%)	48	68

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	90	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	252/264 (96%)	248 (98%)	4 (2%)	55	79
2	B	92/93 (99%)	91 (99%)	1 (1%)	65	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	170/186 (91%)	164 (96%)	6 (4%)	32	58
4	D	207/211 (98%)	194 (94%)	13 (6%)	16	34
All	All	721/754 (96%)	697 (97%)	24 (3%)	33	61

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	75	VAL
1	A	123	LYS
1	A	204	ARG
1	A	227	GLN
2	B	36	GLU
3	C	128	LEU
3	C	154	LYS
3	C	157	ASP
3	C	166	LEU
3	C	171	MET
3	C	195	ASN
4	D	19	LEU
4	D	31	THR
4	D	49	SER
4	D	96	LEU
4	D	99	VAL
4	D	113	ARG
4	D	117	VAL
4	D	118	GLU
4	D	120	LEU
4	D	135	GLU
4	D	202	THR
4	D	230	ARG
4	D	243	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	117	HIS
1	A	134	GLN
1	A	154	GLN
1	A	209	HIS
1	A	229	GLN

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Mol	Chain	Res	Type
2	B	24	ASN
2	B	29	GLN
2	B	31	HIS
2	B	38	GLN
2	B	84	HIS
3	C	72	HIS
3	C	119	GLN
3	C	120	ASN
4	D	6	GLN
4	D	122	ASN
4	D	142	GLN
4	D	228	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](#)

2 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	$\# Z > 2$
5	NAG	E	1	5,1	14,14,15	0.62	0	17,19,21	1.31	2 (11%)
5	NAG	E	2	5	14,14,15	0.73	0	17,19,21	1.44	2 (11%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	E	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	E	2	5	-	1/6/23/26	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(°)	Ideal(°)
5	E	2	NAG	C1-O5-C5	-3.92	106.94	112.19
5	E	1	NAG	O4-C4-C3	-3.66	101.76	110.38
5	E	1	NAG	C4-C3-C2	2.86	115.20	111.02
5	E	2	NAG	C4-C3-C2	2.45	114.61	111.02

There are no chirality outliers.

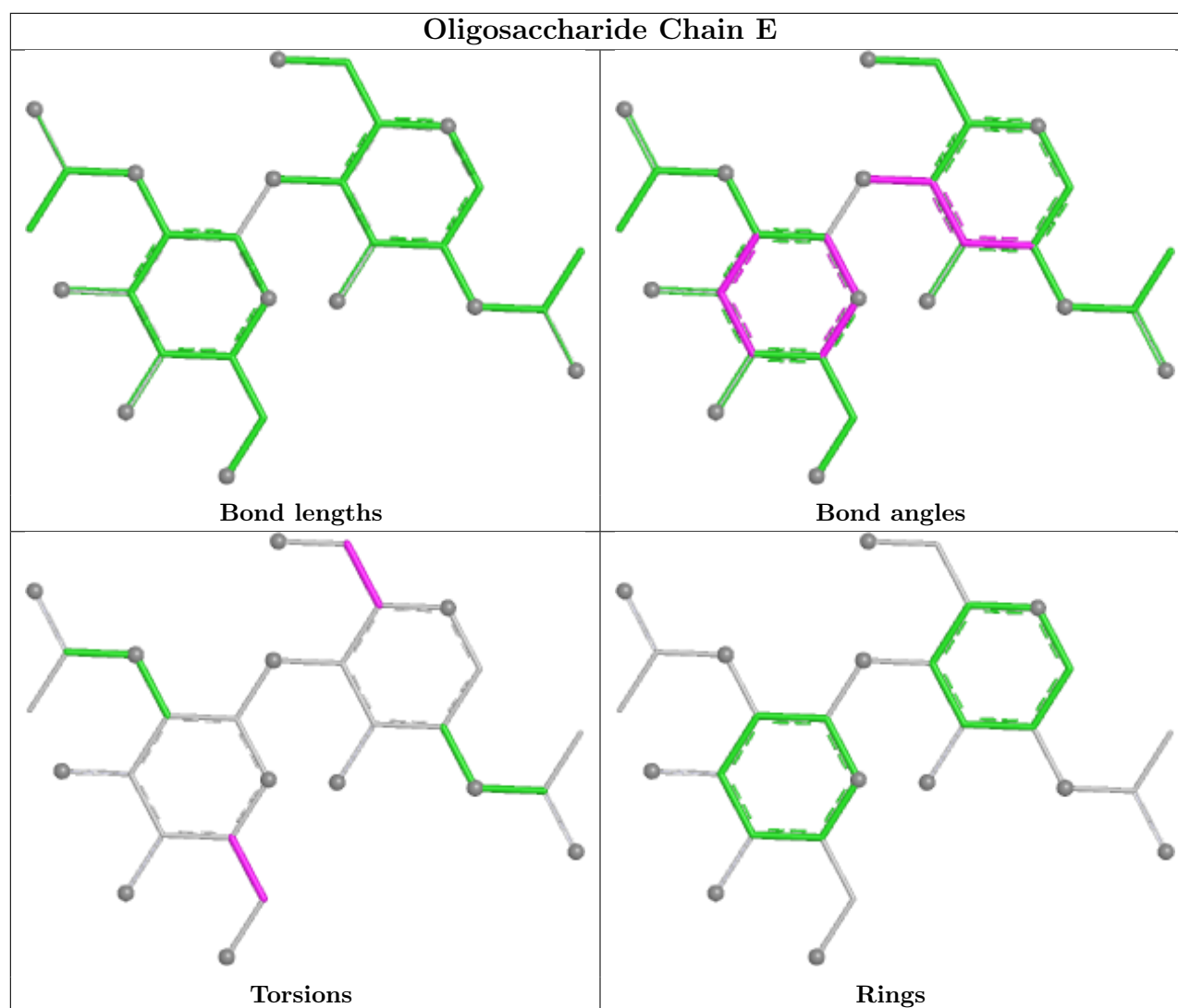
All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	E	1	NAG	O5-C5-C6-O6
5	E	1	NAG	C4-C5-C6-O6
5	E	2	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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



5.6 Ligand geometry [i](#)

3 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	$\# Z > 2$
6	NAG	A	303	1	14,14,15	0.42	0	17,19,21	2.12	2 (11%)
6	NAG	A	304	1	14,14,15	0.45	0	17,19,21	1.15	1 (5%)
7	LGN	A	307	-	80,81,83	1.62	12 (15%)	99,101,103	0.97	7 (7%)

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
6	NAG	A	303	1	-	2/6/23/26	0/1/1/1
6	NAG	A	304	1	-	2/6/23/26	0/1/1/1
7	LGN	A	307	-	-	29/65/125/127	0/3/3/3

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	307	LGN	CAP-CAO	-6.33	1.39	1.50
7	A	307	LGN	O5-C1	-4.32	1.30	1.41
7	A	307	LGN	OCC-CCL	-4.27	1.33	1.44
7	A	307	LGN	O5-C5	-4.18	1.34	1.44
7	A	307	LGN	C3-C4	3.90	1.62	1.52
7	A	307	LGN	OBX-CBX	3.85	1.51	1.41
7	A	307	LGN	OBX-CCF	3.78	1.53	1.44
7	A	307	LGN	OAQ-CAP	-2.92	1.38	1.43
7	A	307	LGN	O4-C4	-2.17	1.38	1.43
7	A	307	LGN	CCO-CCL	-2.12	1.48	1.53
7	A	307	LGN	C4-C5	2.03	1.58	1.52
7	A	307	LGN	CAO-CAN	2.01	1.39	1.31

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	303	NAG	C1-O5-C5	7.10	121.71	112.19
7	A	307	LGN	CCH-O4-C4	-3.57	109.51	117.98
7	A	307	LGN	CBX-OCR-CCQ	-3.56	109.54	117.98
6	A	304	NAG	C1-O5-C5	3.37	116.71	112.19
7	A	307	LGN	OAQ-CAP-CAR	3.04	115.88	107.85
6	A	303	NAG	C4-C3-C2	-2.68	107.09	111.02
7	A	307	LGN	OAQ-CAP-CAO	2.49	117.31	110.88
7	A	307	LGN	C1-O5-C5	-2.16	109.50	113.72
7	A	307	LGN	CBX-OBX-CCF	-2.16	109.50	113.72
7	A	307	LGN	CCH-OCK-CCL	-2.16	109.51	113.72

There are no chirality outliers.

All (33) torsion outliers are listed below:

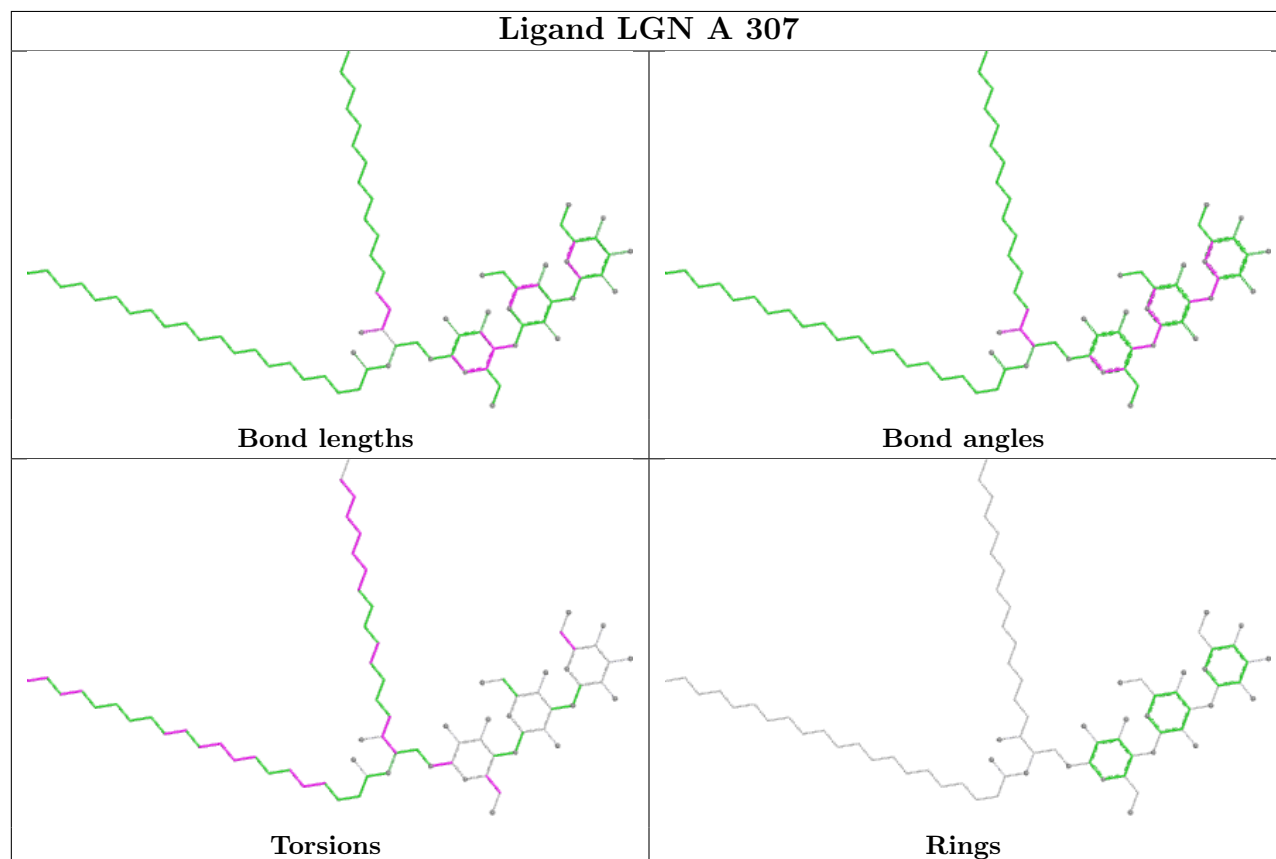
Mol	Chain	Res	Type	Atoms
7	A	307	LGN	CAN-CAO-CAP-CAR
7	A	307	LGN	CAO-CAP-CAR-NAS
7	A	307	LGN	CAO-CAP-CAR-CBU
7	A	307	LGN	OBY-CCF-CDA-ODA
7	A	307	LGN	CCD-CCF-CDA-ODA
6	A	303	NAG	O5-C5-C6-O6
7	A	307	LGN	O5-C1-O1-CBU
7	A	307	LGN	C2-C1-O1-CBU
6	A	303	NAG	C4-C5-C6-O6
6	A	304	NAG	C8-C7-N2-C2
6	A	304	NAG	O7-C7-N2-C2
7	A	307	LGN	O5-C5-C6-O6
7	A	307	LGN	C4-C5-C6-O6
7	A	307	LGN	CAE-CAF-CAG-CAH
7	A	307	LGN	CBB-CBC-CBD-CBE
7	A	307	LGN	CAB-CAC-CAD-CAE
7	A	307	LGN	CAF-CAG-CAH-CAI
7	A	307	LGN	CAC-CAD-CAE-CAF
7	A	307	LGN	CAJ-CAK-CAL-CAM
7	A	307	LGN	CBE-CBF-CBG-CBH
7	A	307	LGN	CBA-CBB-CBC-CBD
7	A	307	LGN	CBO-CBP-CBQ-CBR
7	A	307	LGN	CAN-CAO-CAP-OAQ
7	A	307	LGN	CAD-CAE-CAF-CAG
7	A	307	LGN	CAX-CAY-CAZ-CBA
7	A	307	LGN	CBC-CBD-CBE-CBF
7	A	307	LGN	CBK-CBL-CBM-CBN
7	A	307	LGN	CBM-CBN-CBO-CBP
7	A	307	LGN	CAA-CAB-CAC-CAD
7	A	307	LGN	OAQ-CAP-CAR-NAS
7	A	307	LGN	CBN-CBO-CBP-CBQ
7	A	307	LGN	OAQ-CAP-CAR-CBU
7	A	307	LGN	CAW-CAX-CAY-CAZ

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring

in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers ⓘ

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, 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	289/302 (95%)	0.55	13 (4%) 38 33	35, 46, 58, 62	5 (1%)
2	B	99/99 (100%)	0.65	6 (6%) 27 23	37, 48, 60, 62	1 (1%)
3	C	191/207 (92%)	1.60	62 (32%) 1 1	35, 54, 105, 120	5 (2%)
4	D	239/245 (97%)	1.36	59 (24%) 2 1	35, 68, 85, 89	5 (2%)
All	All	818/853 (95%)	1.05	140 (17%) 4 3	35, 50, 93, 120	16 (1%)

All (140) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	154	LYS	13.5
2	B	1	ILE	8.6
2	B	2	GLN	7.4
3	C	126	TYR	6.8
3	C	193	PHE	6.1
3	C	188	ALA	5.8
1	A	144	ASP	5.8
1	A	277	LEU	5.6
3	C	140	LEU	5.1
3	C	128	LEU	5.1
3	C	131	SER	4.9
3	C	198	ILE	4.9
3	C	129	ARG	4.9
3	C	158	VAL	4.8
4	D	119	ASP	4.7
3	C	203	PHE	4.7
3	C	86	ALA	4.6
4	D	166	GLY	4.5
3	C	204	PHE	4.5
3	C	147	GLN	4.4
3	C	132	LYS	4.4

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Mol	Chain	Res	Type	RSRZ
4	D	133	PRO	4.3
3	C	163	LYS	4.3
4	D	19	LEU	4.1
3	C	199	PRO	4.0
4	D	170	HIS	4.0
3	C	194	ASN	4.0
3	C	159	TYR	4.0
3	C	178	ALA	3.9
3	C	181	TRP	3.9
3	C	190	ALA	3.8
4	D	18	LYS	3.8
3	C	171	MET	3.8
3	C	141	PHE	3.8
4	D	240	ALA	3.7
3	C	125	VAL	3.6
4	D	231	ALA	3.6
4	D	227	THR	3.6
3	C	192	ALA	3.6
4	D	131	PHE	3.6
3	C	124	ALA	3.5
4	D	243	TRP	3.4
2	B	46	ILE	3.3
1	A	226	ASP	3.3
3	C	150	VAL	3.3
4	D	228	GLN	3.3
4	D	165	ASN	3.3
1	A	254	GLU	3.3
4	D	1	GLY	3.3
4	D	200	SER	3.2
4	D	143	LYS	3.2
3	C	180	ALA	3.2
3	C	144	PHE	3.2
3	C	182	SER	3.2
3	C	121	PRO	3.2
4	D	117	VAL	3.2
3	C	172	ASP	3.1
3	C	26	VAL	3.1
1	A	24	SER	3.1
1	A	173	ARG	3.1
3	C	202	THR	3.0
4	D	69	GLU	3.0
4	D	169	VAL	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	143	LEU	3.0
4	D	180	LEU	3.0
3	C	160	ILE	2.9
4	D	241	GLU	2.9
4	D	172	GLY	2.9
4	D	147	VAL	2.9
4	D	242	ALA	2.9
3	C	166	LEU	2.9
3	C	135	ASP	2.9
3	C	168	MET	2.8
2	B	47	PRO	2.8
3	C	127	GLN	2.8
4	D	189	SER	2.8
4	D	164	VAL	2.8
4	D	141	THR	2.8
4	D	188	ASP	2.8
4	D	237	ILE	2.8
3	C	164	CYS	2.8
3	C	123	PRO	2.7
4	D	121	LYS	2.7
4	D	21	LEU	2.7
3	C	139	CYS	2.7
3	C	195	ASN	2.7
3	C	19	VAL	2.7
4	D	215	VAL	2.7
3	C	189	CYS	2.7
1	A	110	ASN	2.7
4	D	118	GLU	2.7
4	D	152	GLY	2.6
4	D	207	PRO	2.6
3	C	179	VAL	2.6
3	C	133	SER	2.6
4	D	186	LEU	2.6
3	C	145	ASP	2.5
3	C	173	PHE	2.5
4	D	214	GLN	2.5
4	D	238	VAL	2.5
3	C	191	ASN	2.5
4	D	187	ASN	2.5
4	D	235	THR	2.5
4	D	239	SER	2.5
2	B	71	THR	2.4

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Mol	Chain	Res	Type	RSRZ
4	D	138	ILE	2.4
4	D	96	LEU	2.4
4	D	99	VAL	2.4
4	D	185	ALA	2.3
1	A	64	GLU	2.3
3	C	156	SER	2.3
4	D	183	GLN	2.3
4	D	219	GLY	2.3
4	D	120	LEU	2.3
3	C	157	ASP	2.3
4	D	130	VAL	2.3
1	A	233	HIS	2.3
1	A	66	LEU	2.3
4	D	193	LEU	2.3
3	C	130	ASP	2.3
1	A	108	PRO	2.3
4	D	129	ALA	2.2
2	B	3	LYS	2.2
4	D	149	LEU	2.2
3	C	134	SER	2.2
3	C	170	SER	2.2
3	C	143	ASP	2.2
1	A	246	TYR	2.2
4	D	139	SER	2.2
4	D	204	TRP	2.2
3	C	118	ILE	2.1
4	D	225	GLU	2.1
3	C	153	SER	2.1
3	C	55	LYS	2.1
4	D	140	HIS	2.1
4	D	211	PHE	2.0
4	D	226	TRP	2.0
4	D	184	PRO	2.0
3	C	176	ASN	2.0
3	C	67	ASP	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

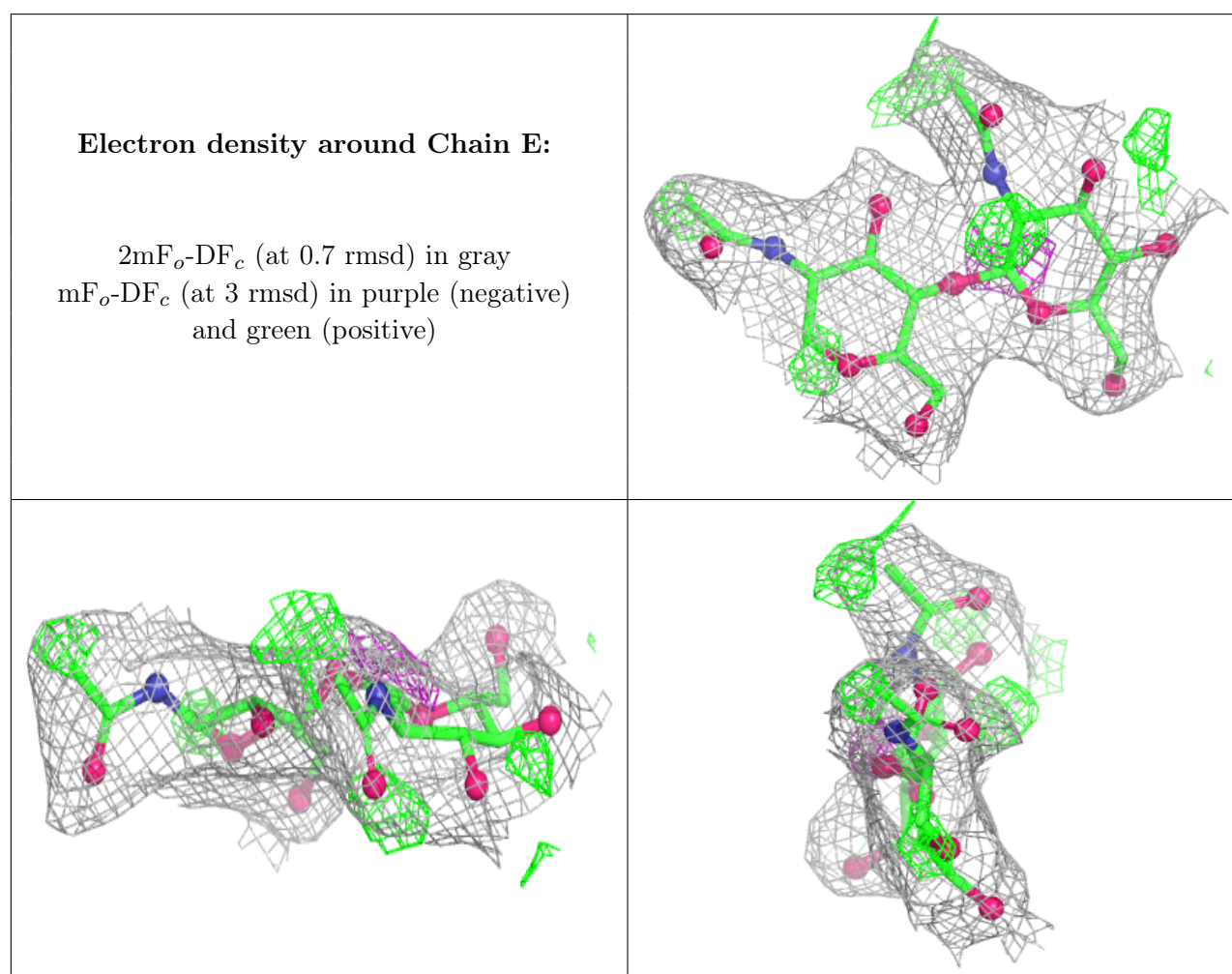
There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [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
5	NAG	E	2	14/15	0.62	0.18	61,63,64,64	0
5	NAG	E	1	14/15	0.85	0.12	48,50,54,57	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.



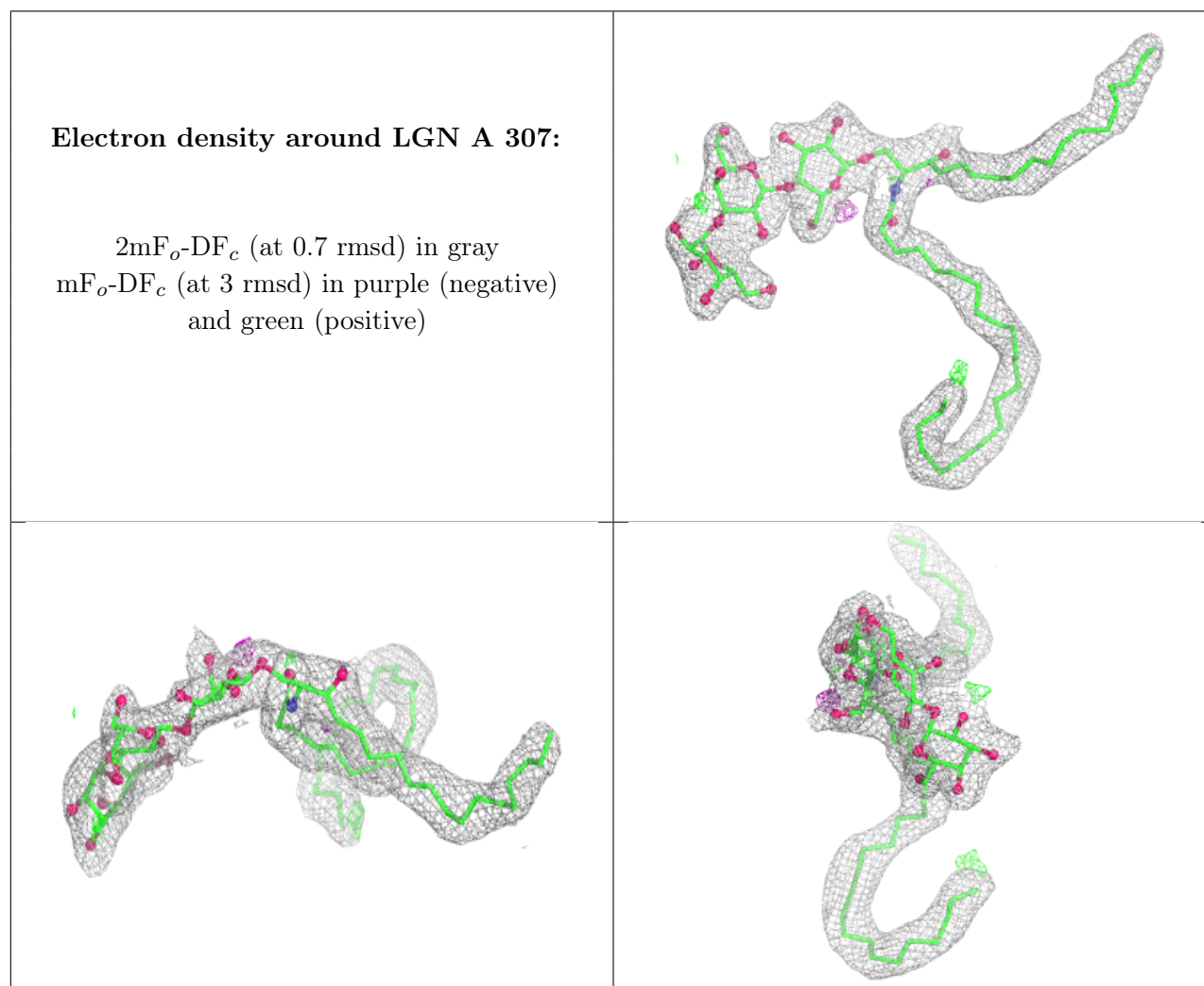
6.4 Ligands [i](#)

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
6	NAG	A	303	14/15	0.84	0.12	57,60,61,62	0
6	NAG	A	304	14/15	0.90	0.11	55,57,58,58	0
7	LGN	A	307	79/81	0.91	0.11	39,44,52,53	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



6.5 Other polymers ⓘ

There are no such residues in this entry.