Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 04:06 PM EDT

PDB ID	:	1F4Y
Title	:	CRYSTAL STRUCTURE OF AN ANTI-CARBOHYDRATE ANTIBODY DIRECTED AGAINST VIBRIO CHOLERAE O1 IN COMPLEX WITH ANTIGEN
Authors	:	Alzari, P.M.; Souchon, H.
Deposited on	:	2000-06-10
Resolution	:	2.80 Å(reported)

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

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

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

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

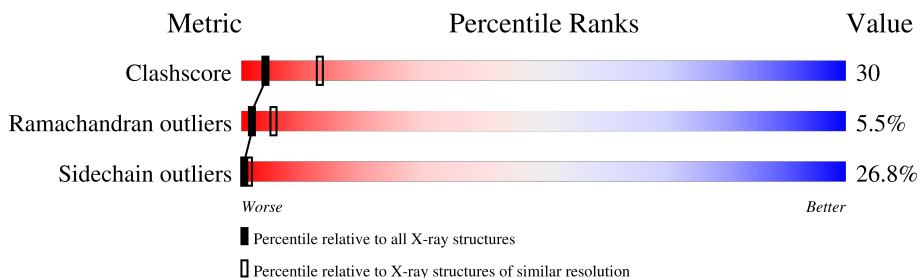|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		30
Ramachandran outliers		5.5%
Sidechain outliers		26.8%

Worse — *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	L	210	28% / 47% / 20% / 5%
2	H	216	24% / 36% / 31% / 9%
3	A	2	100%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 3231 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 ANTIBODY S-20-4, FAB FRAGMENT, LIGHT CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	L	210	Total	C	N	O	S	0	0	0
			1578	989	262	321	6			

- Molecule 2 is a protein called ANTIBODY S-20-4, FAB FRAGMENT, HEAVY CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	216	Total	C	N	O	S	0	0	0
			1616	1022	262	324	8			

- Molecule 3 is an oligosaccharide called 4,6-dideoxy-4-{[(2R)-2,4-dihydroxybutanoyl]amino}-2-O-methyl-alpha-D-mannopyranose-(1-2)-methyl 4,6-dideoxy-4-{[(2R)-2,4-dihydroxybutan oyl]amino}-alpha-D-mannopyranoside.
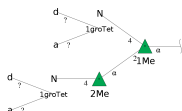
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	A	2	Total	C	N	O	0	0	0
			37	22	2	13			

3 Residue-property plots ⓘ

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. 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. 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.

Note EDS was not executed.

• Molecule 1: ANTIBODY S-20-4, FAB FRAGMENT, LIGHT CHAIN

Chain L:

• Molecule 2: ANTIBODY S-20-4, FAB FRAGMENT, HEAVY CHAIN

Chain H:

• Molecule 3: 4,6-dideoxy-4-{[(2R)-2,4-dihydroxybutanoyl]amino}-2-O-methyl-alpha-D-mannopyranose-(1-2)-methyl 4,6-dideoxy-4-{[(2R)-2,4-dihydroxybutanoyl]amino}-alpha-D-mannopyranoside
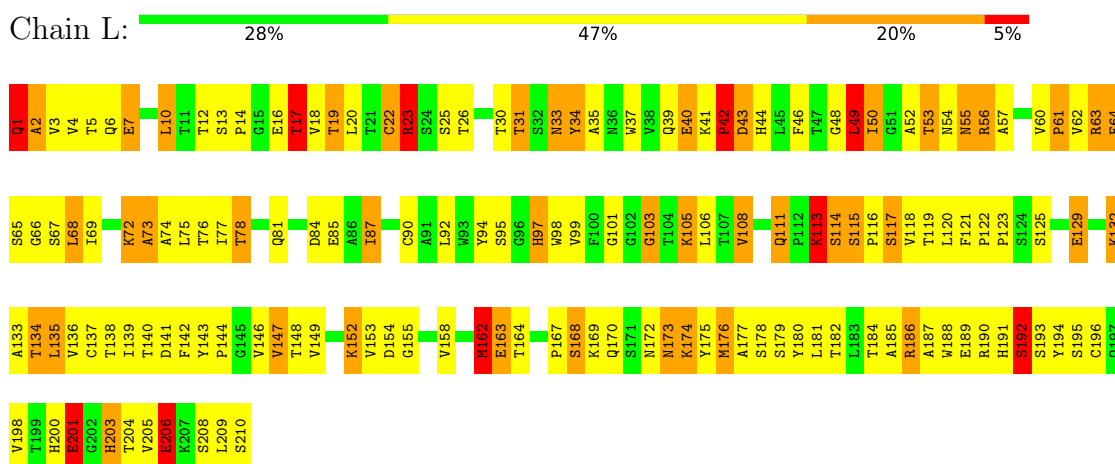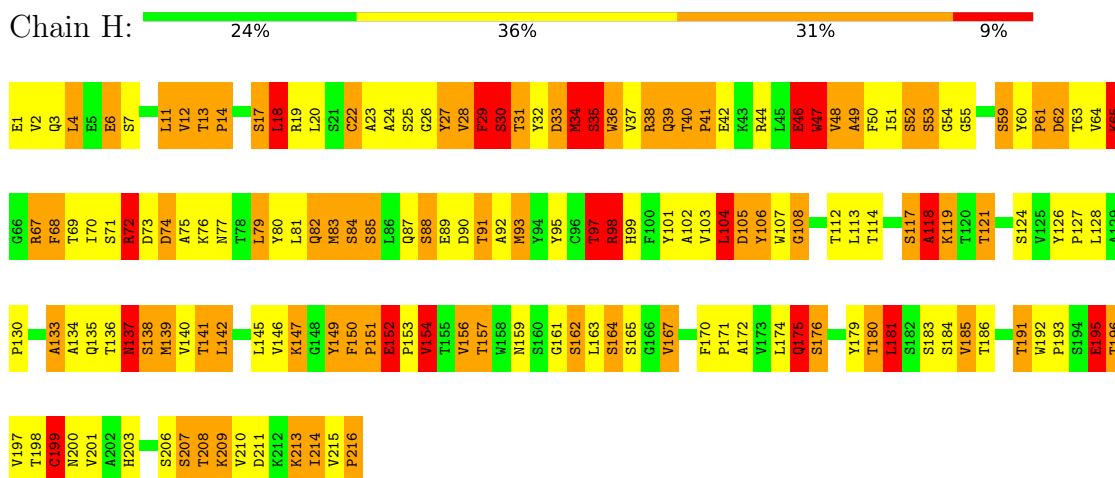
Chain A:

ZD01
ZCZ2

4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	40.69Å 113.36Å 45.58Å 90.00° 93.93° 90.00°	Depositor
Resolution (Å)	10.00 – 2.80	Depositor
% Data completeness (in resolution range)	(Not available) (10.00-2.80)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	REFMAC	Depositor
R, R_{free}	0.226 , 0.352	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	3231	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZCZ, ZD0

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	L	0.91	0/1615	2.39	93/2208 (4.2%)
2	H	0.97	1/1659 (0.1%)	2.70	115/2272 (5.1%)
All	All	0.94	1/3274 (0.0%)	2.55	208/4480 (4.6%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	L	0	2
2	H	0	1
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	216	PRO	N-CD	5.06	1.54	1.47

All (208) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	98	ARG	CD-NE-CZ	34.23	171.52	123.60
2	H	98	ARG	NE-CZ-NH1	24.91	132.75	120.30
2	H	98	ARG	NE-CZ-NH2	-24.70	107.95	120.30
1	L	56	ARG	CD-NE-CZ	18.24	149.14	123.60
2	H	19	ARG	NE-CZ-NH2	-17.63	111.49	120.30
2	H	106	TYR	CB-CG-CD2	15.39	130.24	121.00
2	H	211	ASP	CB-CG-OD1	-15.04	104.77	118.30
1	L	63	ARG	NE-CZ-NH2	14.67	127.63	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	23	ARG	NE-CZ-NH2	14.62	127.61	120.30
1	L	63	ARG	CD-NE-CZ	13.68	142.76	123.60
2	H	72	ARG	NE-CZ-NH2	-12.63	113.99	120.30
2	H	74	ASP	CB-CG-OD1	-11.93	107.56	118.30
2	H	153	PRO	O-C-N	-11.58	104.17	122.70
1	L	23	ARG	CA-CB-CG	11.41	138.51	113.40
1	L	154	ASP	CB-CG-OD1	11.21	128.39	118.30
2	H	101	TYR	CB-CG-CD2	10.94	127.56	121.00
2	H	27	TYR	CB-CG-CD2	10.68	127.41	121.00
2	H	38	ARG	NE-CZ-NH2	-10.20	115.20	120.30
2	H	105	ASP	CB-CG-OD1	9.88	127.19	118.30
2	H	68	PHE	CB-CG-CD1	9.37	127.36	120.80
1	L	23	ARG	CG-CD-NE	9.36	131.45	111.80
1	L	125	SER	CA-CB-OG	9.32	136.37	111.20
2	H	106	TYR	CB-CG-CD1	-9.22	115.47	121.00
1	L	2	ALA	CA-C-N	8.91	136.81	117.20
1	L	143	TYR	CB-CG-CD2	-8.76	115.74	121.00
1	L	23	ARG	CB-CG-CD	8.59	133.94	111.60
2	H	29	PHE	O-C-N	-8.46	109.17	122.70
1	L	23	ARG	NE-CZ-NH1	-8.41	116.09	120.30
2	H	61	PRO	C-N-CA	8.38	142.64	121.70
2	H	97	THR	CA-CB-CG2	-8.36	100.70	112.40
1	L	101	GLY	CA-C-O	-8.33	105.61	120.60
1	L	152	LYS	CA-CB-CG	8.24	131.52	113.40
1	L	152	LYS	N-CA-CB	8.22	125.40	110.60
1	L	23	ARG	CD-NE-CZ	8.06	134.88	123.60
2	H	67	ARG	NE-CZ-NH1	8.06	124.33	120.30
2	H	72	ARG	NH1-CZ-NH2	7.95	128.15	119.40
2	H	101	TYR	CA-C-O	7.80	136.48	120.10
2	H	181	LEU	CB-CG-CD1	-7.79	97.77	111.00
2	H	195	GLU	OE1-CD-OE2	-7.75	113.99	123.30
2	H	27	TYR	CB-CG-CD1	-7.71	116.38	121.00
2	H	101	TYR	CB-CG-CD1	-7.63	116.42	121.00
1	L	63	ARG	NE-CZ-NH1	-7.28	116.66	120.30
2	H	46	GLU	N-CA-CB	7.19	123.54	110.60
2	H	105	ASP	CB-CG-OD2	-7.16	111.85	118.30
1	L	98	TRP	N-CA-CB	7.16	123.49	110.60
1	L	2	ALA	N-CA-C	7.12	130.22	111.00
2	H	48	VAL	CA-CB-CG2	7.04	121.46	110.90
2	H	11	LEU	CA-CB-CG	6.92	131.22	115.30
2	H	83	MET	CG-SD-CE	6.91	111.25	100.20
2	H	52	SER	N-CA-CB	6.88	120.81	110.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	50	ILE	CB-CG1-CD1	6.84	133.06	113.90
1	L	72	LYS	CA-CB-CG	6.81	128.39	113.40
1	L	111	GLN	CB-CG-CD	6.78	129.24	111.60
2	H	195	GLU	CB-CG-CD	6.78	132.51	114.20
2	H	27	TYR	CA-CB-CG	6.74	126.21	113.40
1	L	129	GLU	CA-C-N	6.69	131.91	117.20
2	H	101	TYR	CA-CB-CG	6.68	126.10	113.40
2	H	1	GLU	OE1-CD-OE2	-6.68	115.28	123.30
2	H	124	SER	CB-CA-C	6.67	122.78	110.10
1	L	55	ASN	CA-CB-CG	6.65	128.03	113.40
2	H	72	ARG	C-N-CA	6.63	138.28	121.70
2	H	149	TYR	CB-CG-CD1	-6.62	117.03	121.00
2	H	95	TYR	CB-CA-C	-6.60	97.19	110.40
2	H	175	GLN	CG-CD-OE1	-6.59	108.42	121.60
2	H	1	GLU	CB-CG-CD	6.59	131.99	114.20
2	H	181	LEU	CA-CB-CG	6.56	130.39	115.30
2	H	164	SER	CB-CA-C	6.50	122.44	110.10
2	H	26	GLY	CA-C-O	-6.44	109.00	120.60
1	L	162	MET	CA-CB-CG	6.39	124.17	113.30
2	H	126	TYR	CB-CG-CD2	6.37	124.82	121.00
1	L	175	TYR	CB-CG-CD1	6.36	124.82	121.00
2	H	65	LYS	CA-CB-CG	6.35	127.37	113.40
2	H	47	TRP	CH2-CZ2-CE2	-6.34	111.06	117.40
2	H	47	TRP	N-CA-CB	-6.34	99.18	110.60
1	L	206	GLU	OE1-CD-OE2	6.32	130.88	123.30
1	L	203	HIS	CA-CB-CG	6.31	124.32	113.60
2	H	106	TYR	CB-CA-C	6.30	123.00	110.40
1	L	2	ALA	CA-C-O	-6.29	106.90	120.10
2	H	97	THR	N-CA-CB	6.29	122.24	110.30
2	H	215	VAL	C-N-CD	6.27	141.57	128.40
1	L	177	ALA	N-CA-CB	6.27	118.88	110.10
1	L	103	GLY	C-N-CA	6.25	137.34	121.70
1	L	67	SER	N-CA-CB	6.25	119.88	110.50
2	H	2	VAL	N-CA-C	6.25	127.87	111.00
2	H	74	ASP	OD1-CG-OD2	6.24	135.16	123.30
2	H	65	LYS	CD-CE-NZ	6.24	126.06	111.70
2	H	211	ASP	CB-CG-OD2	6.24	123.92	118.30
1	L	10	LEU	CA-CB-CG	6.24	129.64	115.30
2	H	162	SER	N-CA-CB	-6.23	101.15	110.50
2	H	44	ARG	CB-CG-CD	6.18	127.66	111.60
1	L	61	PRO	O-C-N	-6.15	112.86	122.70
1	L	134	THR	O-C-N	6.15	132.54	122.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	142	PHE	CA-C-O	6.15	133.01	120.10
2	H	79	LEU	CB-CA-C	6.13	121.85	110.20
1	L	84	ASP	CB-CG-OD1	-6.12	112.80	118.30
2	H	172	ALA	O-C-N	6.11	132.48	122.70
2	H	101	TYR	CB-CA-C	6.11	122.61	110.40
2	H	101	TYR	O-C-N	-6.06	113.01	122.70
1	L	16	GLU	OE1-CD-OE2	-6.06	116.03	123.30
1	L	90	CYS	CA-CB-SG	6.05	124.89	114.00
1	L	78	THR	CA-C-N	6.04	128.29	116.20
1	L	114	SER	CB-CA-C	-6.02	98.66	110.10
2	H	185	VAL	CA-CB-CG1	6.02	119.93	110.90
2	H	30	SER	N-CA-CB	-6.01	101.49	110.50
1	L	76	THR	N-CA-CB	6.00	121.70	110.30
1	L	34	TYR	CB-CG-CD2	-5.97	117.42	121.00
1	L	143	TYR	CB-CG-CD1	5.94	124.56	121.00
1	L	115	SER	N-CA-CB	-5.92	101.63	110.50
1	L	77	ILE	N-CA-C	-5.91	95.05	111.00
2	H	71	SER	CA-C-O	5.89	132.47	120.10
2	H	38	ARG	C-N-CA	5.88	136.39	121.70
2	H	19	ARG	NE-CZ-NH1	5.85	123.22	120.30
1	L	168	SER	CB-CA-C	5.83	121.17	110.10
1	L	49	LEU	N-CA-CB	5.80	122.00	110.40
2	H	31	THR	N-CA-CB	-5.80	99.28	110.30
2	H	175	GLN	CG-CD-NE2	5.79	130.59	116.70
1	L	163	GLU	CB-CG-CD	-5.77	98.63	114.20
1	L	190	ARG	O-C-N	-5.76	113.49	122.70
2	H	13	THR	CA-CB-CG2	5.75	120.45	112.40
2	H	195	GLU	CG-CD-OE2	5.74	129.77	118.30
2	H	80	TYR	CB-CG-CD2	5.73	124.44	121.00
1	L	190	ARG	N-CA-C	5.72	126.46	111.00
2	H	119	LYS	CA-CB-CG	5.72	126.00	113.40
2	H	215	VAL	O-C-N	5.70	131.93	121.10
2	H	196	THR	O-C-N	-5.70	113.59	122.70
1	L	56	ARG	O-C-N	-5.69	113.59	122.70
2	H	47	TRP	CB-CA-C	5.69	121.78	110.40
1	L	94	TYR	CB-CG-CD1	-5.68	117.59	121.00
2	H	195	GLU	CB-CA-C	5.68	121.77	110.40
2	H	154	VAL	N-CA-CB	5.68	124.00	111.50
1	L	101	GLY	CA-C-N	5.68	127.56	116.20
1	L	64	PHE	CA-CB-CG	-5.67	100.28	113.90
1	L	111	GLN	CG-CD-OE1	5.66	132.92	121.60
2	H	23	ALA	N-CA-CB	-5.64	102.20	110.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	41	PRO	C-N-CA	5.64	135.80	121.70
2	H	99	HIS	CB-CA-C	-5.63	99.14	110.40
2	H	35	SER	N-CA-C	5.62	126.16	111.00
1	L	84	ASP	CB-CG-OD2	5.61	123.34	118.30
2	H	14	PRO	CA-C-N	5.59	127.39	116.20
1	L	154	ASP	CB-CG-OD2	-5.59	113.27	118.30
2	H	32	TYR	CB-CG-CD2	-5.58	117.65	121.00
1	L	173	ASN	CB-CA-C	5.56	121.52	110.40
2	H	152	GLU	CA-CB-CG	5.54	125.60	113.40
2	H	108	GLY	CA-C-O	5.54	130.57	120.60
2	H	145	LEU	C-N-CA	5.53	135.53	121.70
2	H	12	VAL	CB-CA-C	-5.53	100.89	111.40
1	L	34	TYR	CB-CG-CD1	5.52	124.31	121.00
1	L	105	LYS	N-CA-CB	5.50	120.50	110.60
1	L	108	VAL	N-CA-C	-5.47	96.22	111.00
1	L	185	ALA	O-C-N	-5.47	113.95	122.70
1	L	176	MET	CG-SD-CE	-5.46	91.47	100.20
2	H	23	ALA	CA-C-O	5.45	131.54	120.10
1	L	87	ILE	CA-CB-CG1	5.44	121.34	111.00
2	H	49	ALA	N-CA-CB	-5.43	102.49	110.10
2	H	62	ASP	CB-CG-OD2	5.42	123.18	118.30
2	H	161	GLY	CA-C-O	5.41	130.33	120.60
1	L	73	ALA	CB-CA-C	5.40	118.20	110.10
2	H	36	TRP	N-CA-CB	5.40	120.32	110.60
1	L	143	TYR	CA-CB-CG	-5.40	103.14	113.40
2	H	4	LEU	CA-CB-CG	5.40	127.71	115.30
1	L	94	TYR	CB-CG-CD2	5.38	124.23	121.00
2	H	61	PRO	O-C-N	-5.37	114.12	122.70
2	H	29	PHE	CB-CA-C	5.36	121.13	110.40
1	L	19	THR	C-N-CA	5.36	135.10	121.70
2	H	199	CYS	CA-CB-SG	5.36	123.64	114.00
2	H	180	THR	N-CA-CB	5.35	120.47	110.30
2	H	19	ARG	NH1-CZ-NH2	5.35	125.28	119.40
1	L	12	THR	CA-C-O	-5.34	108.88	120.10
1	L	192	SER	N-CA-CB	-5.34	102.49	110.50
1	L	56	ARG	NE-CZ-NH1	5.33	122.97	120.30
2	H	147	LYS	N-CA-CB	-5.30	101.05	110.60
1	L	33	ASN	N-CA-CB	5.30	120.13	110.60
1	L	111	GLN	CA-CB-CG	5.28	125.01	113.40
1	L	2	ALA	N-CA-CB	-5.26	102.73	110.10
1	L	97	HIS	CB-CA-C	-5.26	99.88	110.40
1	L	22	CYS	CA-CB-SG	5.26	123.46	114.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	167	VAL	CA-CB-CG2	-5.26	103.02	110.90
2	H	150	PHE	N-CA-CB	5.25	120.06	110.60
2	H	156	VAL	N-CA-C	-5.25	96.84	111.00
1	L	7	GLU	N-CA-CB	5.22	120.00	110.60
2	H	161	GLY	O-C-N	-5.22	114.35	122.70
1	L	141	ASP	CB-CG-OD2	5.18	122.96	118.30
2	H	1	GLU	CA-C-N	5.17	128.58	117.20
1	L	17	THR	CA-CB-CG2	5.16	119.63	112.40
1	L	125	SER	N-CA-CB	5.15	118.22	110.50
1	L	191	HIS	CA-CB-CG	-5.14	104.86	113.60
2	H	47	TRP	CZ3-CH2-CZ2	5.14	127.77	121.60
2	H	147	LYS	CB-CG-CD	5.14	124.96	111.60
1	L	40	GLU	OE1-CD-OE2	-5.13	117.15	123.30
1	L	147	VAL	CG1-CB-CG2	-5.12	102.70	110.90
2	H	118	ALA	CB-CA-C	5.09	117.74	110.10
2	H	28	VAL	CA-C-O	5.06	130.73	120.10
1	L	163	GLU	OE1-CD-OE2	5.06	129.37	123.30
2	H	98	ARG	CG-CD-NE	5.06	122.42	111.80
1	L	10	LEU	N-CA-CB	5.05	120.51	110.40
1	L	31	THR	CA-CB-OG1	5.05	119.60	109.00
1	L	42	PRO	CA-N-CD	-5.04	104.44	111.50
1	L	1	GLN	CA-CB-CG	5.04	124.48	113.40
2	H	34	MET	N-CA-CB	-5.04	101.53	110.60
2	H	128	LEU	CB-CG-CD2	5.04	119.57	111.00
1	L	61	PRO	CA-C-O	5.04	132.29	120.20
2	H	37	VAL	CA-CB-CG1	5.03	118.45	110.90
1	L	142	PHE	CA-C-N	-5.03	106.13	117.20
1	L	113	LYS	CD-CE-NZ	5.03	123.27	111.70
2	H	126	TYR	CB-CG-CD1	-5.03	117.98	121.00
2	H	184	SER	O-C-N	5.02	130.74	122.70
1	L	132	LYS	N-CA-CB	5.02	119.64	110.60
2	H	104	LEU	CA-CB-CG	5.01	126.82	115.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	H	209	LYS	Mainchain
1	L	117	SER	Mainchain
1	L	174	LYS	Mainchain

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	L	1578	0	1523	85	0
2	H	1616	0	1553	104	0
3	A	37	0	0	7	0
All	All	3231	0	3076	192	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 30.

All (192) 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:A:1:ZD0:C5	3:A:1:ZD0:C1M	2.02	1.35
3:A:1:ZD0:C1M	3:A:1:ZD0:C3	2.21	1.17
1:L:41:LYS:HD2	1:L:42:PRO:HD2	1.42	1.02
3:A:1:ZD0:C1M	3:A:1:ZD0:C4	2.40	0.99
2:H:102:ALA:HA	3:A:2:ZCZ:C2M	1.96	0.95
2:H:130:PRO:HD3	2:H:142:LEU:HD12	1.54	0.88
1:L:48:GLY:HA3	2:H:105:ASP:HA	1.59	0.85
1:L:30:THR:HG22	1:L:31:THR:H	1.42	0.83
1:L:123:PRO:HD3	1:L:135:LEU:HD23	1.63	0.80
1:L:123:PRO:HG3	1:L:133:ALA:HB1	1.63	0.80
2:H:97:THR:HG22	2:H:106:TYR:O	1.83	0.78
2:H:51:ILE:HD13	2:H:70:ILE:HG23	1.66	0.78
1:L:5:THR:HG23	1:L:23:ARG:HH22	1.50	0.77
1:L:69:ILE:O	1:L:72:LYS:HB3	1.83	0.77
1:L:63:ARG:HH11	1:L:81:GLN:HG3	1.52	0.75
2:H:157:THR:HG23	2:H:200:ASN:HB2	1.66	0.75
2:H:136:THR:O	2:H:137:ASN:HB3	1.88	0.73
1:L:149:VAL:HG21	1:L:164:THR:HG21	1.71	0.72
1:L:200:HIS:O	1:L:201:GLU:HB2	1.89	0.72
2:H:47:TRP:HH2	2:H:50:PHE:HB2	1.53	0.71
2:H:47:TRP:CH2	2:H:50:PHE:HB2	2.25	0.71
2:H:27:TYR:CE1	2:H:29:PHE:HA	2.27	0.69
2:H:149:TYR:OH	2:H:181:LEU:HD13	1.94	0.68
2:H:175:GLN:HE21	2:H:175:GLN:HA	1.58	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:187:ALA:O	1:L:188:TRP:C	2.32	0.67
1:L:63:ARG:HH11	1:L:81:GLN:CG	2.07	0.66
1:L:97:HIS:ND1	1:L:97:HIS:N	2.42	0.66
2:H:137:ASN:O	2:H:139:MET:N	2.28	0.66
2:H:48:VAL:HG13	2:H:64:VAL:HG11	1.77	0.66
1:L:123:PRO:CG	1:L:133:ALA:HB1	2.26	0.66
1:L:169:LYS:NZ	1:L:173:ASN:OD1	2.28	0.66
1:L:34:TYR:O	1:L:35:ALA:C	2.35	0.65
2:H:88:SER:O	2:H:91:THR:HG23	1.96	0.65
2:H:61:PRO:HD2	2:H:64:VAL:CG2	2.26	0.65
2:H:149:TYR:HE1	2:H:152:GLU:HG2	1.61	0.65
1:L:56:ARG:NH1	1:L:62:VAL:O	2.29	0.65
2:H:198:THR:HA	2:H:213:LYS:HA	1.80	0.64
2:H:39:GLN:HE21	2:H:39:GLN:HA	1.63	0.64
1:L:120:LEU:HD13	1:L:196:CYS:HB2	1.79	0.63
1:L:172:ASN:OD1	1:L:174:LYS:HB2	1.99	0.63
2:H:28:VAL:O	2:H:30:SER:N	2.31	0.63
2:H:67:ARG:NH1	2:H:87:GLN:HG2	2.14	0.62
1:L:139:ILE:HG12	1:L:198:VAL:HG21	1.79	0.62
2:H:39:GLN:HE21	2:H:39:GLN:CA	2.10	0.61
2:H:133:ALA:O	2:H:135:GLN:N	2.32	0.61
1:L:113:LYS:HE2	1:L:201:GLU:HG3	1.83	0.61
2:H:31:THR:O	2:H:53:SER:OG	2.19	0.61
2:H:141:THR:HB	2:H:186:THR:OG1	2.01	0.61
2:H:17:SER:O	2:H:18:LEU:HB2	1.98	0.61
1:L:35:ALA:HB3	1:L:53:THR:HA	1.82	0.60
2:H:20:LEU:HG	2:H:83:MET:HE2	1.82	0.60
2:H:98:ARG:HH11	2:H:106:TYR:HD2	1.50	0.60
2:H:34:MET:SD	2:H:79:LEU:HD22	2.42	0.60
1:L:17:THR:OG1	1:L:78:THR:HA	2.01	0.60
1:L:39:GLN:HB2	1:L:49:LEU:HD21	1.84	0.59
1:L:123:PRO:HD3	1:L:135:LEU:CD2	2.31	0.59
1:L:114:SER:OG	1:L:115:SER:N	2.36	0.59
2:H:102:ALA:N	3:A:2:ZCZ:O7	2.35	0.58
2:H:103:VAL:O	2:H:105:ASP:N	2.37	0.58
2:H:35:SER:HG	2:H:47:TRP:HZ3	1.52	0.57
1:L:118:VAL:HG13	1:L:137:CYS:SG	2.45	0.57
2:H:52:SER:O	2:H:72:ARG:NH1	2.38	0.56
1:L:5:THR:HG23	1:L:23:ARG:NH2	2.18	0.56
1:L:1:GLN:NE2	1:L:2:ALA:HB2	2.20	0.56
2:H:48:VAL:HG11	2:H:68:PHE:CE2	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:136:VAL:HG12	1:L:138:THR:HG23	1.88	0.55
2:H:97:THR:HG21	2:H:107:TRP:CE2	2.41	0.55
1:L:50:ILE:HD11	1:L:64:PHE:HB3	1.87	0.55
1:L:63:ARG:NH1	1:L:81:GLN:HG3	2.20	0.55
1:L:42:PRO:O	1:L:43:ASP:HB3	2.07	0.54
1:L:113:LYS:NZ	1:L:113:LYS:CB	2.70	0.54
1:L:30:THR:HG22	1:L:31:THR:N	2.15	0.54
1:L:56:ARG:HD3	1:L:61:PRO:O	2.08	0.54
2:H:40:THR:HB	2:H:41:PRO:CD	2.37	0.54
2:H:76:LYS:O	2:H:77:ASN:HB2	2.08	0.54
2:H:103:VAL:O	2:H:104:LEU:C	2.46	0.54
2:H:206:SER:O	2:H:207:SER:C	2.46	0.53
1:L:52:ALA:O	1:L:54:ASN:N	2.41	0.53
2:H:102:ALA:CA	3:A:2:ZCZ:C2M	2.79	0.53
1:L:18:VAL:HG12	1:L:19:THR:O	2.08	0.53
2:H:48:VAL:HG11	2:H:68:PHE:CD2	2.42	0.53
1:L:57:ALA:HB3	1:L:60:VAL:HG23	1.90	0.53
1:L:158:VAL:HG11	1:L:181:LEU:HD13	1.91	0.53
2:H:24:ALA:HB2	2:H:29:PHE:CD1	2.43	0.53
2:H:40:THR:CB	2:H:41:PRO:CD	2.87	0.53
2:H:83:MET:HE3	2:H:113:LEU:HD22	1.90	0.53
1:L:132:LYS:HD3	1:L:184:THR:HA	1.91	0.53
2:H:84:SER:OG	2:H:85:SER:N	2.42	0.53
2:H:73:ASP:OD1	2:H:75:ALA:HB3	2.08	0.53
2:H:193:PRO:HG3	2:H:216:PRO:HG3	1.90	0.53
1:L:105:LYS:HG2	1:L:106:LEU:N	2.24	0.52
1:L:123:PRO:HB3	1:L:134:THR:H	1.73	0.52
2:H:6:GLU:OE1	2:H:108:GLY:HA3	2.09	0.52
2:H:91:THR:HB	2:H:114:THR:HA	1.91	0.52
1:L:40:GLU:HB2	1:L:46:PHE:CE1	2.45	0.52
2:H:191:THR:O	2:H:195:GLU:HB2	2.10	0.52
2:H:156:VAL:HG11	2:H:183:SER:HB3	1.91	0.51
1:L:153:VAL:HG13	1:L:194:TYR:CE2	2.45	0.51
2:H:47:TRP:HH2	2:H:50:PHE:CB	2.22	0.51
2:H:50:PHE:HB3	2:H:59:SER:HB2	1.93	0.51
1:L:134:THR:OG1	1:L:182:THR:HG22	2.10	0.51
2:H:83:MET:CE	2:H:113:LEU:HD22	2.41	0.51
2:H:203:HIS:HB3	2:H:208:THR:HB	1.93	0.51
1:L:3:VAL:HG12	1:L:23:ARG:HH12	1.76	0.50
1:L:1:GLN:O	1:L:2:ALA:HB3	2.12	0.50
1:L:10:LEU:HD23	1:L:20:LEU:HD22	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:63:ARG:NH1	1:L:81:GLN:CG	2.75	0.50
2:H:197:VAL:O	2:H:214:ILE:HG12	2.12	0.50
1:L:205:VAL:HG22	1:L:206:GLU:N	2.27	0.49
1:L:201:GLU:OE2	1:L:201:GLU:HA	2.12	0.49
2:H:130:PRO:CD	2:H:142:LEU:HD12	2.35	0.49
2:H:61:PRO:O	2:H:64:VAL:HG22	2.13	0.49
1:L:132:LYS:CD	1:L:184:THR:HA	2.43	0.49
2:H:82:GLN:HE21	2:H:82:GLN:HA	1.77	0.49
2:H:214:ILE:N	2:H:214:ILE:HD13	2.28	0.48
1:L:22:CYS:HB3	1:L:73:ALA:HB3	1.94	0.48
2:H:49:ALA:HB1	2:H:70:ILE:HB	1.94	0.48
2:H:60:TYR:HB3	2:H:61:PRO:HD2	1.96	0.48
2:H:159:ASN:O	2:H:162:SER:HB3	2.13	0.48
1:L:113:LYS:HD2	1:L:144:PRO:HD3	1.95	0.48
2:H:175:GLN:HA	2:H:175:GLN:NE2	2.28	0.48
2:H:40:THR:OG1	2:H:42:GLU:HB2	2.14	0.48
2:H:208:THR:CG2	2:H:209:LYS:N	2.77	0.48
1:L:113:LYS:HZ2	1:L:113:LYS:HB2	1.79	0.47
2:H:137:ASN:O	2:H:138:SER:C	2.52	0.47
2:H:170:PHE:O	2:H:171:PRO:C	2.53	0.47
2:H:117:SER:O	2:H:118:ALA:O	2.32	0.47
2:H:40:THR:HB	2:H:41:PRO:HD2	1.96	0.47
2:H:146:VAL:HG11	2:H:154:VAL:HG21	1.97	0.47
2:H:149:TYR:CE1	2:H:179:TYR:HB2	2.50	0.47
1:L:42:PRO:O	1:L:43:ASP:CB	2.62	0.47
1:L:205:VAL:HG22	1:L:206:GLU:H	1.80	0.47
2:H:201:VAL:O	2:H:209:LYS:HA	2.15	0.46
1:L:41:LYS:CD	1:L:42:PRO:HD2	2.29	0.46
2:H:97:THR:CG2	2:H:107:TRP:CD2	2.98	0.46
2:H:167:VAL:HG22	2:H:185:VAL:HG23	1.96	0.46
2:H:150:PHE:CE2	2:H:151:PRO:HB3	2.51	0.46
1:L:19:THR:O	1:L:20:LEU:HD23	2.16	0.46
2:H:3:GLN:HE21	2:H:3:GLN:HA	1.80	0.46
2:H:154:VAL:HG23	2:H:156:VAL:HG23	1.97	0.46
2:H:156:VAL:HG11	2:H:183:SER:CB	2.46	0.46
1:L:14:PRO:HG3	1:L:108:VAL:HG12	1.98	0.45
2:H:6:GLU:HB3	2:H:22:CYS:HB2	1.99	0.45
2:H:185:VAL:HG22	2:H:186:THR:N	2.30	0.45
1:L:69:ILE:O	1:L:69:ILE:HG22	2.15	0.45
1:L:192:SER:O	1:L:210:SER:HA	2.15	0.45
2:H:196:THR:HG23	2:H:213:LYS:HE3	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:192:TRP:HA	2:H:193:PRO:HA	1.70	0.45
1:L:136:VAL:HG22	1:L:180:TYR:CD1	2.52	0.45
1:L:6:GLN:O	1:L:7:GLU:C	2.54	0.45
1:L:7:GLU:HG2	1:L:10:LEU:HD21	1.99	0.45
1:L:115:SER:HA	1:L:200:HIS:CE1	2.51	0.45
2:H:196:THR:HG23	2:H:213:LYS:CE	2.47	0.44
2:H:60:TYR:O	2:H:65:LYS:NZ	2.49	0.44
1:L:116:PRO:HB3	1:L:139:ILE:HG23	2.00	0.44
2:H:28:VAL:HG12	2:H:30:SER:OG	2.17	0.44
2:H:38:ARG:N	2:H:46:GLU:O	2.47	0.44
2:H:139:MET:HA	2:H:139:MET:HE3	2.00	0.43
3:A:2:ZCZ:C2M	3:A:2:ZCZ:C4	2.97	0.43
1:L:41:LYS:HD2	1:L:42:PRO:CD	2.30	0.43
2:H:33:ASP:OD1	2:H:52:SER:HA	2.18	0.43
2:H:175:GLN:O	2:H:176:SER:C	2.57	0.43
2:H:61:PRO:HD2	2:H:64:VAL:HG22	2.00	0.43
1:L:186:ARG:O	1:L:187:ALA:C	2.56	0.43
1:L:121:PHE:HA	1:L:122:PRO:HD3	1.88	0.43
2:H:119:LYS:O	2:H:121:THR:HG22	2.19	0.43
1:L:113:LYS:NZ	1:L:113:LYS:HB3	2.34	0.43
1:L:57:ALA:HB3	1:L:60:VAL:CG2	2.49	0.42
2:H:198:THR:HG22	2:H:199:CYS:N	2.34	0.42
2:H:47:TRP:CZ3	2:H:50:PHE:HB2	2.53	0.42
1:L:5:THR:OG1	1:L:23:ARG:NH2	2.52	0.42
2:H:54:GLY:O	2:H:55:GLY:C	2.57	0.42
2:H:127:PRO:HB3	2:H:214:ILE:HG23	2.02	0.42
1:L:116:PRO:HD3	1:L:200:HIS:ND1	2.35	0.42
2:H:97:THR:HG21	2:H:107:TRP:CD2	2.55	0.42
2:H:140:VAL:O	2:H:186:THR:HG23	2.20	0.42
1:L:20:LEU:O	1:L:74:ALA:HA	2.20	0.41
1:L:85:GLU:HA	1:L:106:LEU:O	2.20	0.41
2:H:36:TRP:NE1	2:H:81:LEU:HB2	2.35	0.41
2:H:33:ASP:O	2:H:34:MET:HG3	2.20	0.41
1:L:23:ARG:NH1	1:L:25:SER:HB3	2.35	0.41
2:H:67:ARG:HH22	2:H:90:ASP:CG	2.23	0.41
1:L:4:VAL:HG23	1:L:99:VAL:CG1	2.51	0.41
2:H:3:GLN:O	2:H:4:LEU:HD23	2.20	0.41
1:L:37:TRP:CD2	1:L:75:LEU:HB2	2.56	0.40
1:L:162:MET:HA	1:L:180:TYR:O	2.22	0.40
2:H:93:MET:HE3	2:H:93:MET:HB2	1.98	0.40
1:L:68:LEU:HD12	1:L:68:LEU:HA	1.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:136:VAL:HG22	1:L:180:TYR:CE1	2.56	0.40
2:H:39:GLN:O	2:H:92:ALA:HB1	2.21	0.40
1:L:33:ASN:HB3	1:L:92:LEU:HB3	2.02	0.40
1:L:53:THR:O	1:L:66:GLY:HA3	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	L	208/210 (99%)	178 (86%)	20 (10%)	10 (5%)	2	7
2	H	214/216 (99%)	179 (84%)	22 (10%)	13 (6%)	1	4
All	All	422/426 (99%)	357 (85%)	42 (10%)	23 (6%)	2	5

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	43	ASP
1	L	53	THR
1	L	103	GLY
2	H	29	PHE
2	H	62	ASP
2	H	118	ALA
2	H	134	ALA
2	H	138	SER
2	H	165	SER
1	L	42	PRO
1	L	186	ARG
1	L	201	GLU
2	H	104	LEU
2	H	133	ALA

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Mol	Chain	Res	Type
2	H	137	ASN
2	H	191	THR
1	L	95	SER
1	L	155	GLY
1	L	44	HIS
1	L	170	GLN
2	H	18	LEU
2	H	176	SER
2	H	88	SER

5.3.2 Protein sidechains ⓘ

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	L	176/177 (99%)	138 (78%)	38 (22%)	1	3
2	H	182/186 (98%)	124 (68%)	58 (32%)	0	0
All	All	358/363 (99%)	262 (73%)	96 (27%)	0	1

All (96) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	1	GLN
1	L	13	SER
1	L	17	THR
1	L	23	ARG
1	L	26	THR
1	L	49	LEU
1	L	55	ASN
1	L	65	SER
1	L	68	LEU
1	L	87	ILE
1	L	111	GLN
1	L	113	LYS
1	L	117	SER
1	L	119	THR

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Mol	Chain	Res	Type
1	L	129	GLU
1	L	135	LEU
1	L	140	THR
1	L	146	VAL
1	L	147	VAL
1	L	148	THR
1	L	152	LYS
1	L	162	MET
1	L	163	GLU
1	L	167	PRO
1	L	168	SER
1	L	176	MET
1	L	178	SER
1	L	179	SER
1	L	189	GLU
1	L	192	SER
1	L	193	SER
1	L	195	SER
1	L	201	GLU
1	L	203	HIS
1	L	204	THR
1	L	206	GLU
1	L	208	SER
1	L	209	LEU
2	H	6	GLU
2	H	7	SER
2	H	11	LEU
2	H	12	VAL
2	H	13	THR
2	H	14	PRO
2	H	17	SER
2	H	18	LEU
2	H	22	CYS
2	H	25	SER
2	H	30	SER
2	H	33	ASP
2	H	34	MET
2	H	35	SER
2	H	39	GLN
2	H	40	THR
2	H	46	GLU
2	H	47	TRP

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Mol	Chain	Res	Type
2	H	53	SER
2	H	59	SER
2	H	63	THR
2	H	65	LYS
2	H	69	THR
2	H	72	ARG
2	H	74	ASP
2	H	82	GLN
2	H	84	SER
2	H	85	SER
2	H	89	GLU
2	H	91	THR
2	H	93	MET
2	H	97	THR
2	H	98	ARG
2	H	112	THR
2	H	117	SER
2	H	121	THR
2	H	137	ASN
2	H	139	MET
2	H	141	THR
2	H	142	LEU
2	H	147	LYS
2	H	151	PRO
2	H	152	GLU
2	H	154	VAL
2	H	157	THR
2	H	163	LEU
2	H	164	SER
2	H	174	LEU
2	H	175	GLN
2	H	180	THR
2	H	181	LEU
2	H	195	GLU
2	H	199	CYS
2	H	207	SER
2	H	208	THR
2	H	210	VAL
2	H	213	LYS
2	H	214	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	111	GLN
2	H	3	GLN
2	H	39	GLN
2	H	82	GLN
2	H	175	GLN
2	H	203	HIS

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 ⓘ

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	$\#|Z| > 2$
3	ZD0	A	1	3	18,19,19	0.92	1 (5%)	21,26,26	3.23	11 (52%)
3	ZCZ	A	2	3	17,18,19	1.23	1 (5%)	18,24,26	4.03	10 (55%)

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	ZD0	A	1	3	-	6/13/33/33	0/1/1/1
3	ZCZ	A	2	3	-	9/13/30/33	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	2	ZCZ	C4-N4	3.69	1.51	1.45
3	A	1	ZD0	C4-N4	2.58	1.50	1.45

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	2	ZCZ	C4-N4-C7	-9.57	108.78	123.21
3	A	2	ZCZ	O7-C7-N4	-9.22	105.85	122.93
3	A	1	ZD0	C4-N4-C7	-8.34	110.63	123.21
3	A	1	ZD0	C1-O5-C5	-5.16	104.80	113.67
3	A	2	ZCZ	O5-C1-C2	5.07	119.68	109.41
3	A	1	ZD0	O5-C5-C6	4.63	116.71	106.70
3	A	1	ZD0	O1-C1-C2	-4.42	102.97	108.15
3	A	1	ZD0	O3-C3-C4	-4.31	100.97	109.66
3	A	2	ZCZ	O5-C5-C4	3.78	117.00	110.05
3	A	2	ZCZ	O7-C7-C8	-3.73	114.14	120.61
3	A	1	ZD0	O7-C7-N4	-3.70	116.08	122.93
3	A	1	ZD0	C10-C9-C8	-3.62	106.45	113.93
3	A	2	ZCZ	O8-C8-C7	3.49	119.28	111.01
3	A	1	ZD0	O3-C3-C2	3.44	118.31	110.35
3	A	1	ZD0	C1M-O1-C1	-3.25	108.26	113.27
3	A	2	ZCZ	C1-C2-C3	-3.11	104.75	109.40
3	A	2	ZCZ	C1-O5-C5	2.87	119.27	112.78
3	A	2	ZCZ	O2-C2-C3	2.77	116.79	108.87
3	A	2	ZCZ	O3-C3-C4	2.56	114.82	109.66
3	A	1	ZD0	O5-C1-C2	2.12	114.84	110.35
3	A	1	ZD0	O5-C1-O1	-2.03	106.28	110.97

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1	ZD0	N4-C7-C8-C9
3	A	1	ZD0	N4-C7-C8-O8
3	A	1	ZD0	O7-C7-C8-C9
3	A	1	ZD0	O8-C8-C9-C10
3	A	2	ZCZ	C3-C2-O2-C2M
3	A	2	ZCZ	N4-C7-C8-O8
3	A	2	ZCZ	C7-C8-C9-C10
3	A	2	ZCZ	O10-C10-C9-C8
3	A	1	ZD0	C2-C1-O1-C1M

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Mol	Chain	Res	Type	Atoms
3	A	1	ZD0	O7-C7-C8-O8
3	A	2	ZCZ	O7-C7-C8-O8
3	A	2	ZCZ	O8-C8-C9-C10
3	A	2	ZCZ	C1-C2-O2-C2M
3	A	2	ZCZ	O7-C7-C8-C9
3	A	2	ZCZ	N4-C7-C8-C9

There are no ring outliers.

2 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1	ZD0	3	0
3	A	2	ZCZ	4	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 A

Bond lengths

Bond angles

Torsions

Rings
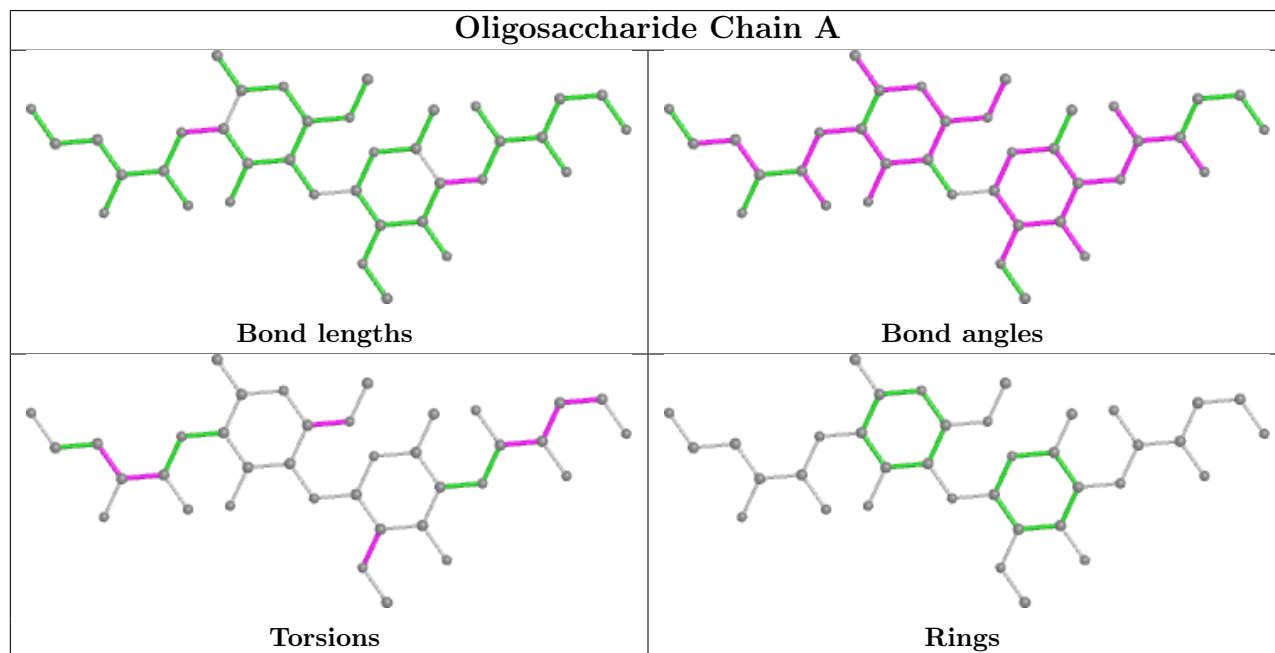
5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.