



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 19, 2023 – 07:11 PM JST

PDB ID : 6M5E
Title : Human serum albumin with cyclic peptide dalbavancin
Authors : Ito, S.; Senoo, A.; Nagatoishi, S.; Ohue, M.; Yamamoto, M.; Tsumoto, K.;
Wakui, N.
Deposited on : 2020-03-10
Resolution : 2.80 Å(reported)

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

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A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

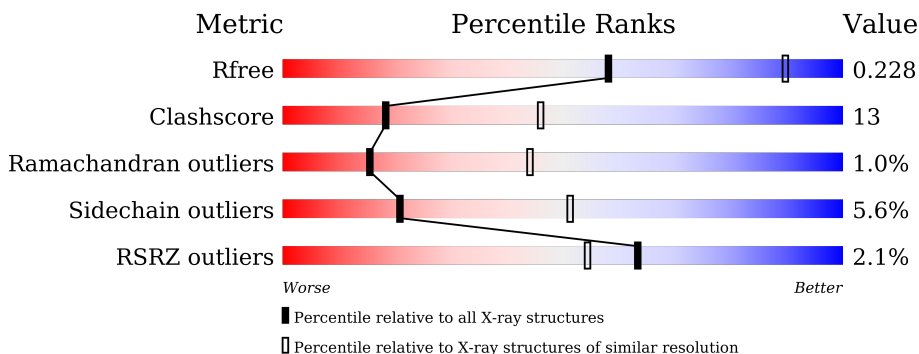
1 Overall quality at a glance

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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (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 $\leq 5\%$. 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	585	 77% 20% ..
1	B	585	 71% 25% ..
1	C	585	 76% 20% ..
2	F	8	 25% 25% 50%
2	G	8	 25% 25% 50%
2	H	8	 25% 50% 25%

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Mol	Chain	Length	Quality of chain
3	I	8	
3	J	8	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	5PG	F	1	X	-	-	-
2	D4P	F	4	X	-	-	-
2	OMZ	F	6	X	-	-	-
2	D3P	F	7	X	-	-	-
2	5PG	G	1	X	-	-	-
2	D4P	G	4	X	-	-	-
2	OMZ	G	6	X	-	-	-
2	D3P	G	7	X	-	-	-
2	5PG	H	1	X	-	-	-
2	D4P	H	4	X	-	-	-
2	OMZ	H	6	X	-	-	-
2	D3P	H	7	X	-	-	-
5	F8F	F	101	X	-	-	-
5	F8F	G	101	X	-	-	-
5	F8F	H	101	X	-	-	-

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 14585 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 Serum albumin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	581	Total 4618	C 2914	N 781	O 882	S 41	0	0	0
1	B	581	Total 4604	C 2905	N 778	O 880	S 41	0	0	0
1	C	581	Total 4618	C 2915	N 781	O 881	S 41	0	0	0

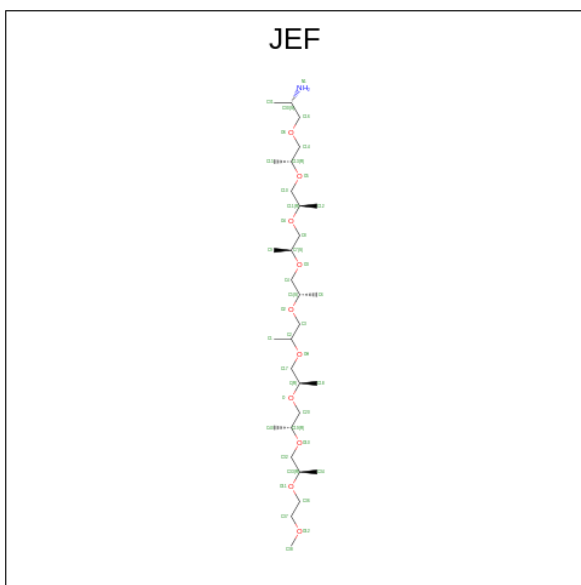
- Molecule 2 is a protein called dalbavancin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	Cl	N	O			
2	F	8	Total 92	C 64	Cl 2	N 9	O 17	0	0	0
2	G	8	Total 92	C 64	Cl 2	N 9	O 17	0	0	0
2	H	8	Total 92	C 64	Cl 2	N 9	O 17	0	0	0

- Molecule 3 is a protein called dalbavancin.

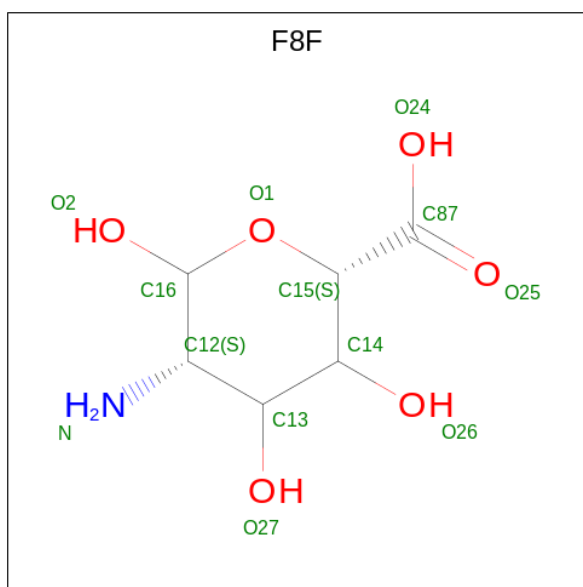
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	Cl	N	O			
3	I	8	Total 92	C 64	Cl 2	N 9	O 17	0	0	0
3	J	8	Total 92	C 64	Cl 2	N 9	O 17	0	0	0

- Molecule 4 is O-(O-(2-AMINOPROPYL)-O'-(2-METHOXYETHYL)POLYPROPYLENE GLYCOL 500) (three-letter code: JEF) (formula: C₃₀H₆₃NO₁₀).



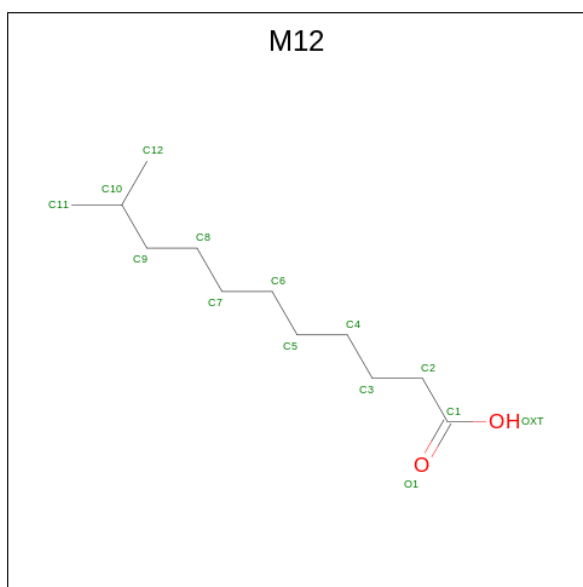
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			17	12	5		
4	A	1	Total	C	O	0	0
			17	12	5		
4	B	1	Total	C	O	0	0
			17	12	5		
4	B	1	Total	C	O	0	0
			17	12	5		
4	C	1	Total	C	O	0	0
			17	12	5		
4	C	1	Total	C	O	0	0
			17	12	5		

- Molecule 5 is (2S,5S)-5-azanyl-3,4,6-tris(oxidanyl)oxane-2-carboxylic acid (three-letter code: F8F) (formula: C₆H₁₁NO₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	F	1	Total	C	N	O	0	0
			12	6	1	5		
5	G	1	Total	C	N	O	0	0
			12	6	1	5		
5	H	1	Total	C	N	O	0	0
			12	6	1	5		

- Molecule 6 is 10-METHYLUNDECANOIC ACID (three-letter code: M12) (formula: $C_{12}H_{24}O_2$).



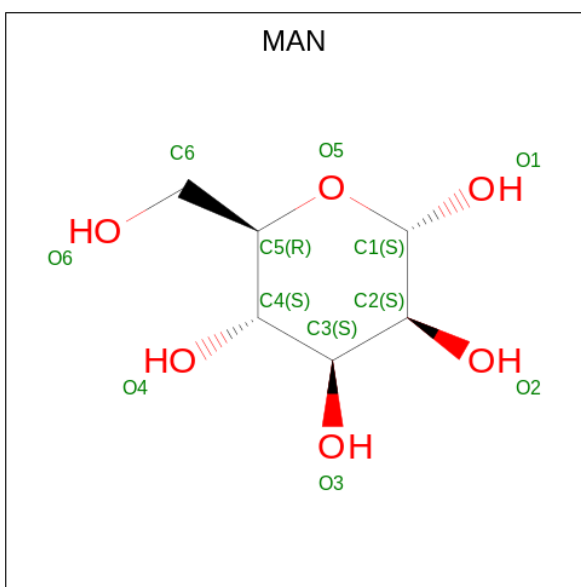
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	F	1	Total	C	O	0	0
			13	12	1		

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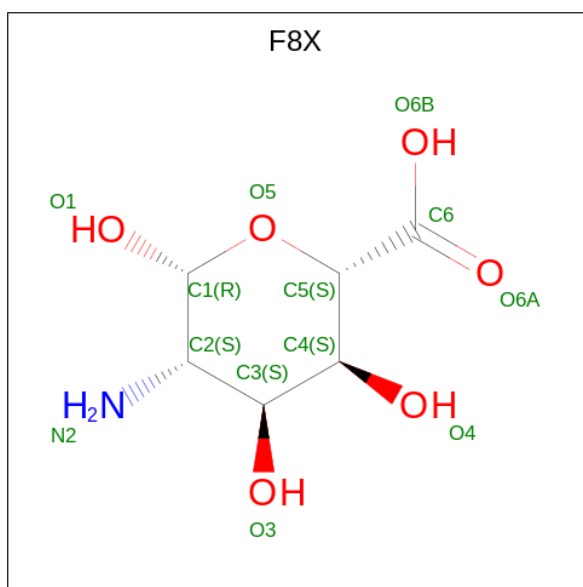
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	G	1	Total	C	O	0	0
			13	12	1		
6	H	1	Total	C	O	0	0
			13	12	1		
6	I	1	Total	C	O	0	0
			13	12	1		
6	J	1	Total	C	O	0	0
			13	12	1		

- Molecule 7 is alpha-D-mannopyranose (three-letter code: MAN) (formula: C₆H₁₂O₆).



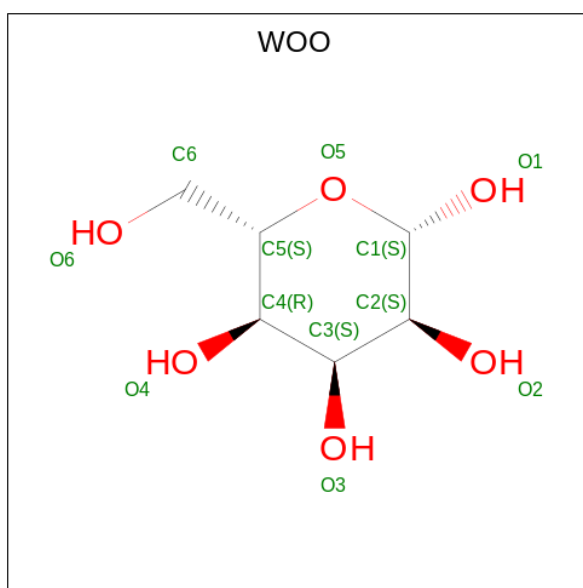
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	F	1	Total	C	O	0	0
			11	6	5		
7	G	1	Total	C	O	0	0
			11	6	5		
7	H	1	Total	C	O	0	0
			11	6	5		

- Molecule 8 is 2-amino-2-deoxy-beta-D-altropyranuronic acid (three-letter code: F8X) (formula: C₆H₁₁NO₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	N			O
8	I	1	12	6	1	5	0	0
8	J	1	12	6	1	5	0	0

- Molecule 9 is beta-L-allopyranose (three-letter code: WOO) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
9	I	1	11	6	5	0	0
9	J	1	11	6	5	0	0

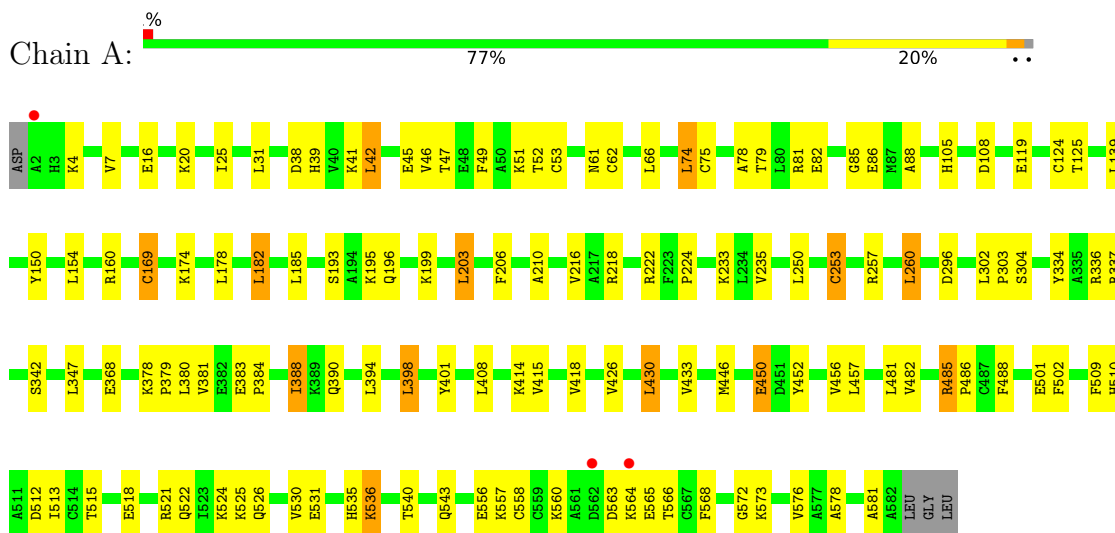
- Molecule 10 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	F	1	Total O 1 1	0	0
10	G	1	Total O 1 1	0	0
10	H	1	Total O 1 1	0	0

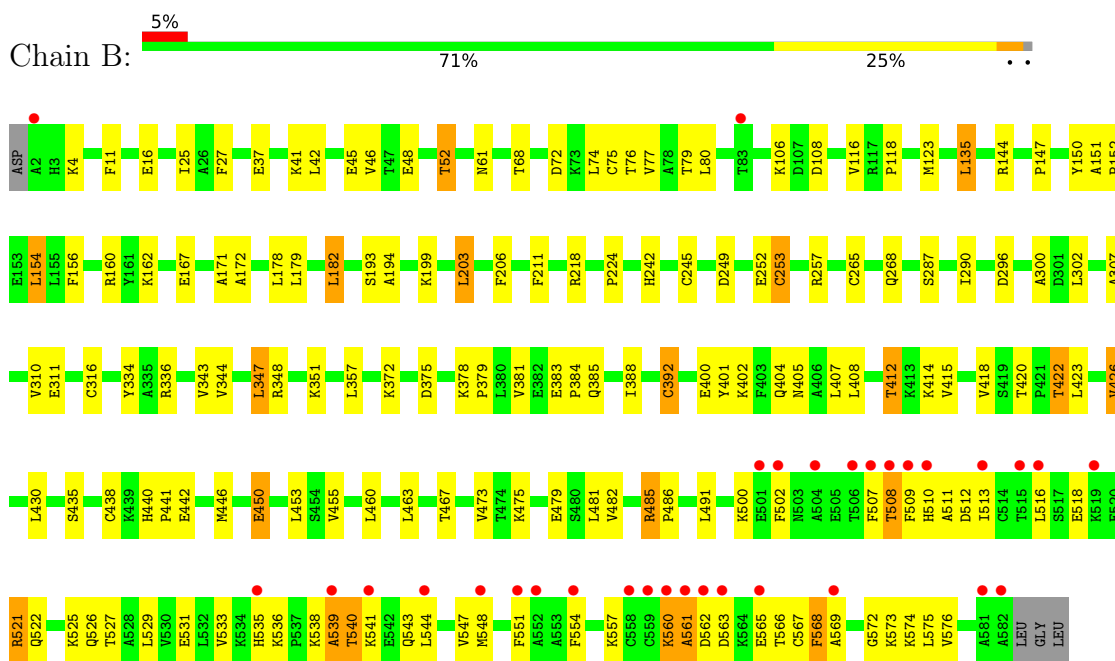
3 Residue-property plots [i](#)

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: Serum albumin

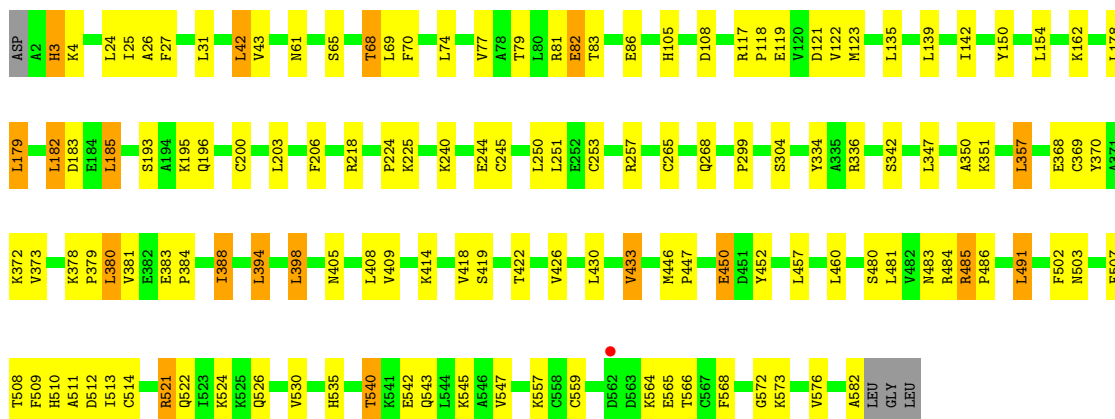


- Molecule 1: Serum albumin



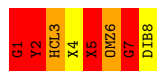
- Molecule 1: Serum albumin

Chain C:  76% 20% ..




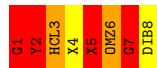
• Molecule 2: dalbavancin

Chain F:  25% 25% 50%



• Molecule 2: dalbavancin

Chain G:  25% 25% 50%




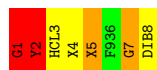
• Molecule 2: dalbavancin

Chain H:  25% 50% 25%



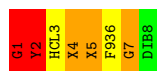
• Molecule 3: dalbavancin

Chain I:  12% 38% 25% 25%



• Molecule 3: dalbavancin

Chain J:  12% 25% 38% 25%



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	197.05Å 125.68Å 125.74Å 90.00° 90.32° 90.00°	Depositor
Resolution (Å)	45.78 – 2.80 49.26 – 2.80	Depositor EDS
% Data completeness (in resolution range)	100.0 (45.78-2.80) 100.0 (49.26-2.80)	Depositor EDS
R_{merge}	0.47	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.30 (at 2.81Å)	Xtrriage
Refinement program	PHENIX 1.17	Depositor
R, R_{free}	0.180 , 0.228 0.180 , 0.228	Depositor DCC
R_{free} test set	3777 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	55.3	Xtrriage
Anisotropy	0.086	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 43.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.014 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	14585	wwPDB-VP
Average B, all atoms (Å ²)	64.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.31% 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 i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: D4P, HCL, JEF, F8X, D3P, M12, F93, F8F, WOO, DIB, MAN, 5PG, OMZ

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	0.52	1/4707 (0.0%)	0.72	4/6350 (0.1%)
1	B	0.53	2/4694 (0.0%)	0.67	5/6337 (0.1%)
1	C	0.56	2/4708 (0.0%)	0.71	7/6351 (0.1%)
2	F	0.44	0/12	1.30	0/15
2	G	0.40	0/12	1.39	0/15
2	H	0.38	0/12	1.14	0/15
3	I	0.46	0/12	0.79	0/15
3	J	0.43	0/12	0.84	0/15
All	All	0.54	5/14169 (0.0%)	0.70	16/19113 (0.1%)

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
2	F	4	6
2	G	4	6
2	H	4	6
3	I	0	5
3	J	0	5
All	All	12	28

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	253	CYS	CB-SG	-9.45	1.66	1.82
1	B	316	CYS	CB-SG	-7.94	1.68	1.82
1	C	253	CYS	CB-SG	-6.42	1.71	1.82
1	C	200	CYS	CB-SG	-5.10	1.73	1.81
1	A	253	CYS	CB-SG	-5.05	1.73	1.81

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	53	CYS	CA-CB-SG	-10.23	95.58	114.00
1	A	62	CYS	CA-CB-SG	-10.09	95.84	114.00
1	A	169	CYS	CA-CB-SG	-7.99	99.62	114.00
1	B	316	CYS	CA-CB-SG	-6.65	102.03	114.00
1	C	42	LEU	CA-CB-CG	6.52	130.30	115.30
1	B	245	CYS	CA-CB-SG	6.26	125.28	114.00
1	A	124	CYS	CA-CB-SG	-6.15	102.92	114.00
1	C	559	CYS	CA-CB-SG	-6.10	103.03	114.00
1	C	484	ARG	NE-CZ-NH1	-6.03	117.28	120.30
1	B	74	LEU	CB-CG-CD2	-5.90	100.97	111.00
1	C	514	CYS	CA-CB-SG	-5.49	104.12	114.00
1	C	369	CYS	CA-CB-SG	5.48	123.87	114.00
1	B	116	VAL	C-N-CA	-5.43	108.12	121.70
1	B	135	LEU	CA-CB-CG	-5.33	103.03	115.30
1	C	245	CYS	CA-CB-SG	5.29	123.53	114.00
1	C	185	LEU	CA-CB-CG	5.21	127.29	115.30

All (12) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	F	1	5PG	CA
2	F	4	D4P	CA
2	F	6	OMZ	CB
2	F	7	D3P	CA
2	G	1	5PG	CA
2	G	4	D4P	CA
2	G	6	OMZ	CB
2	G	7	D3P	CA
2	H	1	5PG	CA
2	H	4	D4P	CA
2	H	6	OMZ	CB
2	H	7	D3P	CA

All (28) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	F	1	5PG	Peptide
2	F	2	TYR	Peptide,Sidechain
2	F	5	D4P	Peptide,Mainchain
2	F	7	D3P	Peptide
2	G	1	5PG	Peptide

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Mol	Chain	Res	Type	Group
2	G	2	TYR	Peptide,Sidechain
2	G	5	D4P	Peptide,Mainchain
2	G	7	D3P	Peptide
2	H	1	5PG	Peptide
2	H	2	TYR	Peptide,Sidechain
2	H	5	D4P	Peptide,Mainchain
2	H	7	D3P	Peptide
3	I	1	5PG	Peptide
3	I	2	TYR	Peptide,Sidechain
3	I	5	D4P	Peptide,Mainchain
3	J	1	5PG	Peptide
3	J	2	TYR	Peptide,Sidechain
3	J	5	D4P	Peptide,Mainchain

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	4618	0	4529	96	0
1	B	4604	0	4499	127	0
1	C	4618	0	4534	113	0
2	F	92	0	46	7	0
2	G	92	0	44	7	0
2	H	92	0	43	6	0
3	I	92	0	43	10	0
3	J	92	0	42	12	0
4	A	34	0	50	13	0
4	B	34	0	50	12	0
4	C	34	0	50	15	0
5	F	12	0	0	0	0
5	G	12	0	0	0	0
5	H	12	0	0	0	0
6	F	13	0	23	2	0
6	G	13	0	23	2	0
6	H	13	0	23	2	0
6	I	13	0	23	1	0
6	J	13	0	23	0	0
7	F	11	0	10	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	G	11	0	10	1	0
7	H	11	0	10	1	0
8	I	12	0	0	1	0
8	J	12	0	0	0	0
9	I	11	0	10	2	0
9	J	11	0	10	2	0
10	F	1	0	0	0	0
10	G	1	0	0	0	0
10	H	1	0	0	0	0
All	All	14585	0	14095	382	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 13.

All (382) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:540:THR:HG22	1:C:543:GLN:H	1.15	1.09
1:B:539:ALA:HB1	1:B:544:LEU:HD21	1.26	1.07
1:C:150:TYR:HB2	1:C:196:GLN:HG3	1.42	1.00
1:B:518:GLU:HA	1:B:521:ARG:HD2	1.46	0.98
1:C:394:LEU:HD22	1:C:398:LEU:HD22	1.56	0.88
1:C:257:ARG:HE	4:C:801:JEF:C34	1.88	0.87
1:C:25:ILE:HD13	1:C:154:LEU:HD23	1.56	0.86
1:C:430:LEU:O	1:C:433:VAL:HG22	1.76	0.85
1:B:539:ALA:CB	1:B:544:LEU:HD21	2.09	0.83
1:C:81:ARG:O	1:C:82:GLU:HG2	1.80	0.82
1:B:539:ALA:HB1	1:B:544:LEU:CD2	2.10	0.81
1:B:502:PHE:HB2	1:B:535:HIS:CE1	2.14	0.80
2:F:6:OMZ:O	2:F:8:DIB:N	2.15	0.80
1:B:513:ILE:HG23	1:B:516:LEU:HD12	1.64	0.79
1:C:540:THR:HG22	1:C:543:GLN:HG3	1.66	0.77
1:A:510:HIS:HB2	1:A:512:ASP:OD1	1.85	0.75
1:C:25:ILE:CD1	1:C:154:LEU:HD23	2.17	0.75
1:B:568:PHE:O	1:B:572:GLY:N	2.19	0.74
1:A:150:TYR:HB2	1:A:196:GLN:HG3	1.69	0.74
1:A:257:ARG:HD2	4:A:801:JEF:H371	1.69	0.74
1:A:218:ARG:HG2	4:A:801:JEF:H182	1.70	0.74
1:B:310:VAL:HG22	1:B:311:GLU:HG3	1.70	0.73
1:A:502:PHE:CD2	1:A:502:PHE:CZ	2.75	0.73
2:F:1:5PG:OH	7:F:103:MAN:O2	2.06	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:802:JEF:H402	4:A:802:JEF:H341	1.71	0.72
1:C:86:GLU:HB2	1:C:105:HIS:CE1	2.24	0.72
1:B:61:ASN:ND2	6:G:102:M12:O1	2.23	0.71
1:A:38:ASP:OD2	1:A:81:ARG:NH2	2.23	0.71
1:C:540:THR:CG2	1:C:543:GLN:HG3	2.20	0.71
1:C:342:SER:H	1:C:446:MET:HE1	1.55	0.70
2:H:6:OMZ:O	2:H:8:DIB:N	2.24	0.70
1:A:512:ASP:O	1:A:515:THR:HG22	1.92	0.70
1:C:540:THR:HG23	1:C:542:GLU:H	1.55	0.69
1:C:65:SER:OG	1:C:68:THR:HG23	1.92	0.69
1:C:540:THR:CG2	1:C:543:GLN:H	2.01	0.69
1:B:508:THR:O	1:B:509:PHE:HB2	1.94	0.68
1:A:178:LEU:HG	1:A:182:LEU:HD22	1.76	0.67
1:A:342:SER:H	1:A:446:MET:HE1	1.59	0.67
3:J:1:5PG:HN3C	3:J:2:TYR:N	2.10	0.67
1:B:572:GLY:O	1:B:576:VAL:HG23	1.94	0.67
1:C:150:TYR:HB2	1:C:196:GLN:CG	2.21	0.67
1:C:61:ASN:ND2	6:H:102:M12:O1	2.27	0.66
1:A:218:ARG:HE	4:A:801:JEF:C18	2.08	0.66
1:C:195:LYS:HE3	4:C:801:JEF:H181	1.78	0.66
1:B:422:THR:O	1:B:426:VAL:HG22	1.96	0.66
1:A:565:GLU:OE1	1:A:565:GLU:HA	1.94	0.66
1:B:543:GLN:O	1:B:547:VAL:HG23	1.95	0.65
1:C:509:PHE:O	1:C:568:PHE:HB3	1.97	0.65
1:B:48:GLU:O	1:B:52:THR:HG23	1.96	0.65
1:C:543:GLN:O	1:C:547:VAL:HG23	1.97	0.65
1:A:430:LEU:HD13	1:A:456:VAL:HG11	1.77	0.64
1:A:150:TYR:HB2	1:A:196:GLN:CG	2.26	0.64
1:B:408:LEU:HD23	1:B:529:LEU:HD23	1.78	0.64
1:B:351:LYS:HE2	4:B:801:JEF:H361	1.80	0.64
1:C:414:LYS:NZ	1:C:491:LEU:O	2.30	0.64
1:B:414:LYS:NZ	1:B:491:LEU:O	2.31	0.64
1:B:500:LYS:NZ	1:B:531:GLU:OE2	2.22	0.64
1:A:85:GLY:H	1:A:88:ALA:HB3	1.63	0.64
1:B:518:GLU:O	1:B:521:ARG:HG2	1.98	0.63
1:A:408:LEU:HD22	1:A:530:VAL:CG2	2.28	0.63
1:C:351:LYS:HD2	4:C:802:JEF:H183	1.81	0.63
1:B:475:LYS:HE2	1:B:479:GLU:OE2	1.99	0.63
2:G:6:OMZ:O	2:G:8:DIB:N	2.31	0.63
3:I:2:TYR:CE2	3:I:4:D4P:H2	2.34	0.63
1:A:426:VAL:HG12	1:A:430:LEU:HD22	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:117:ARG:NH2	1:C:183:ASP:OD1	2.31	0.62
1:C:378:LYS:HB2	1:C:379:PRO:HD3	1.80	0.62
1:B:218:ARG:HD3	1:B:343:VAL:HG21	1.82	0.62
1:C:118:PRO:HG2	1:C:123:MET:HG3	1.80	0.62
1:B:257:ARG:HH11	4:B:802:JEF:H19	1.64	0.62
1:C:508:THR:HG22	1:C:573:LYS:NZ	2.15	0.62
1:B:574:LYS:HD3	1:B:575:LEU:HD23	1.80	0.62
3:I:1:5PG:HN3C	3:I:2:TYR:N	2.15	0.62
1:B:224:PRO:O	1:B:336:ARG:NH1	2.33	0.61
1:B:347:LEU:HB3	1:B:482:VAL:HG11	1.83	0.61
1:B:307:ALA:HB1	3:I:8:DIB:HE12	1.82	0.60
1:B:171:ALA:HA	3:J:7:D3P:HA	1.83	0.60
1:A:47:THR:HG22	1:A:51:LYS:HE2	1.83	0.60
1:C:150:TYR:OH	4:C:801:JEF:H341	2.00	0.60
1:B:249:ASP:HB3	1:B:252:GLU:CG	2.32	0.60
3:J:1:5PG:HN3C	3:J:2:TYR:H	1.67	0.60
1:A:408:LEU:HD22	1:A:530:VAL:HG22	1.83	0.59
1:C:257:ARG:HE	4:C:801:JEF:H343	1.63	0.59
1:C:351:LYS:HG3	4:C:802:JEF:H402	1.82	0.59
1:C:118:PRO:HB2	1:C:122:VAL:HG11	1.83	0.59
1:A:39:HIS:HA	1:A:42:LEU:CD2	2.33	0.59
1:C:522:GLN:O	1:C:526:GLN:HG3	2.03	0.58
4:C:801:JEF:H182	4:C:801:JEF:H401	1.84	0.58
1:C:540:THR:HG23	1:C:542:GLU:N	2.16	0.58
1:C:433:VAL:HG13	1:C:452:TYR:HD2	1.68	0.58
1:A:522:GLN:O	1:A:526:GLN:HG3	2.04	0.58
1:B:401:TYR:OH	1:B:525:LYS:HE3	2.04	0.58
2:G:1:5PG:O	2:G:2:TYR:O	2.21	0.58
1:B:388:ILE:O	1:B:392:CYS:HB2	2.03	0.58
3:J:2:TYR:CE2	3:J:4:D4P:H2	2.39	0.58
2:H:1:5PG:CC1	2:H:3:HCL:H5	2.33	0.58
3:I:1:5PG:HN3C	3:I:2:TYR:H	1.69	0.58
1:A:563:ASP:CG	1:A:564:LYS:H	2.07	0.58
2:G:5:D4P:C2	2:G:7:D3P:HN2	2.17	0.58
1:A:224:PRO:O	1:A:336:ARG:NH1	2.37	0.58
1:C:178:LEU:HG	1:C:182:LEU:HD22	1.84	0.57
1:C:388:ILE:HD13	1:C:388:ILE:N	2.19	0.57
1:B:554:PHE:CZ	1:B:568:PHE:HB3	2.39	0.57
1:C:265:CYS:O	1:C:268:GLN:HG3	2.04	0.57
1:B:544:LEU:HD22	1:B:544:LEU:N	2.19	0.57
1:A:222:ARG:HH12	4:A:801:JEF:H202	1.70	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:242:HIS:HE2	4:B:802:JEF:H322	1.68	0.57
2:F:5:D4P:C2	2:F:6:OMZ:H	2.18	0.57
1:C:502:PHE:HB2	1:C:535:HIS:CE1	2.40	0.57
1:A:485:ARG:HB3	1:A:486:PRO:HD3	1.86	0.57
2:H:5:D4P:C2	2:H:7:D3P:HN2	2.18	0.57
2:G:1:5PG:OH	7:G:103:MAN:O2	2.21	0.56
1:B:502:PHE:HB2	1:B:535:HIS:NE2	2.20	0.56
1:C:218:ARG:HG2	4:C:801:JEF:H171	1.85	0.56
1:A:430:LEU:HD13	1:A:456:VAL:CG1	2.35	0.56
1:B:72:ASP:O	1:B:76:THR:HG23	2.06	0.56
1:C:513:ILE:HD12	1:C:524:LYS:HD3	1.88	0.56
1:C:557:LYS:O	1:C:557:LYS:HG2	2.06	0.56
1:C:225:LYS:HG2	1:C:299:PRO:HG3	1.88	0.56
1:A:206:PHE:CE2	1:A:481:LEU:HB2	2.41	0.55
1:B:557:LYS:O	1:B:557:LYS:HG2	2.06	0.55
1:C:450:GLU:OE2	1:C:485:ARG:NH1	2.38	0.55
2:F:1:5PG:O	2:F:2:TYR:O	2.24	0.55
1:A:218:ARG:CG	4:A:801:JEF:H182	2.35	0.55
1:C:135:LEU:HD11	1:C:162:LYS:HG3	1.88	0.55
1:A:196:GLN:OE1	1:A:199:LYS:HD2	2.06	0.55
1:B:383:GLU:HB3	1:B:384:PRO:HD3	1.86	0.55
1:B:560:LYS:O	1:B:561:ALA:HB3	2.06	0.55
1:C:408:LEU:HD22	1:C:530:VAL:CG2	2.37	0.55
1:C:24:LEU:HB2	1:C:43:VAL:HG21	1.88	0.55
1:A:25:ILE:HD13	1:A:154:LEU:HD23	1.88	0.55
1:B:135:LEU:HD11	1:B:162:LYS:HG3	1.88	0.55
2:F:5:D4P:C2	2:F:7:D3P:HN2	2.20	0.55
1:A:381:VAL:O	1:A:384:PRO:HD2	2.07	0.55
2:F:1:5PG:CC1	2:F:3:HCL:H5	2.37	0.55
2:H:1:5PG:O	2:H:2:TYR:O	2.25	0.55
1:C:394:LEU:CD2	1:C:398:LEU:HD22	2.35	0.54
1:A:557:LYS:HG2	1:A:557:LYS:O	2.07	0.54
1:C:508:THR:HG22	1:C:573:LYS:CE	2.38	0.54
4:A:802:JEF:H341	4:A:802:JEF:C40	2.37	0.54
1:C:119:GLU:O	1:C:122:VAL:HG12	2.07	0.54
1:A:513:ILE:HG22	1:A:521:ARG:HG3	1.90	0.54
1:B:150:TYR:OH	4:B:802:JEF:H403	2.07	0.54
1:C:394:LEU:HD22	1:C:398:LEU:CD2	2.35	0.54
1:B:551:PHE:O	1:B:554:PHE:HB3	2.07	0.54
1:C:195:LYS:CE	4:C:801:JEF:H181	2.39	0.53
1:B:206:PHE:CE2	1:B:481:LEU:HB2	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:408:LEU:HD11	1:C:526:GLN:HB3	1.90	0.53
1:B:118:PRO:HG2	1:B:123:MET:HG3	1.90	0.53
1:B:37:GLU:HA	1:B:37:GLU:OE2	2.09	0.53
2:G:1:5PG:CC1	2:G:3:HCL:H5	2.39	0.53
1:B:257:ARG:HD2	4:B:802:JEF:H19	1.90	0.53
1:B:540:THR:O	1:B:544:LEU:HD23	2.08	0.53
1:C:118:PRO:HB2	1:C:122:VAL:CG1	2.38	0.52
1:C:370:TYR:O	1:C:373:VAL:HG12	2.10	0.52
1:C:381:VAL:O	1:C:384:PRO:HD2	2.09	0.52
1:C:257:ARG:HH21	4:C:801:JEF:H342	1.75	0.52
1:C:433:VAL:HG13	1:C:452:TYR:CD2	2.43	0.52
1:C:543:GLN:NE2	1:C:582:ALA:HB1	2.25	0.52
1:B:565:GLU:O	1:B:567:CYS:N	2.38	0.52
1:B:522:GLN:O	1:B:526:GLN:HG3	2.10	0.51
1:C:31:LEU:HD11	1:C:74:LEU:HD12	1.92	0.51
1:A:41:LYS:O	1:A:45:GLU:HG3	2.09	0.51
1:C:342:SER:H	1:C:446:MET:CE	2.21	0.51
1:A:160:ARG:HE	1:A:185:LEU:HD21	1.75	0.51
1:A:408:LEU:HD11	1:A:526:GLN:HB3	1.92	0.51
1:C:42:LEU:HD12	1:C:77:VAL:HG21	1.93	0.51
1:A:206:PHE:CD2	1:A:481:LEU:HB2	2.45	0.51
1:B:178:LEU:HG	1:B:182:LEU:HD22	1.92	0.51
1:C:81:ARG:O	1:C:82:GLU:CG	2.57	0.51
1:A:383:GLU:HB3	1:A:384:PRO:HD3	1.93	0.51
1:A:556:GLU:OE1	1:B:41:LYS:NZ	2.45	0.50
1:B:510:HIS:HB2	1:B:512:ASP:OD1	2.10	0.50
1:B:265:CYS:O	1:B:268:GLN:HG3	2.11	0.50
1:A:218:ARG:NE	4:A:801:JEF:C18	2.74	0.50
4:A:801:JEF:H341	4:A:801:JEF:C40	2.41	0.50
1:A:368:GLU:OE1	1:A:368:GLU:N	2.45	0.50
1:B:450:GLU:OE2	1:B:485:ARG:NH1	2.43	0.50
1:C:224:PRO:O	1:C:336:ARG:NH1	2.42	0.50
1:A:540:THR:OG1	1:A:543:GLN:HG3	2.12	0.50
1:C:408:LEU:HD22	1:C:530:VAL:HG22	1.93	0.50
1:A:347:LEU:HB3	1:A:482:VAL:HG21	1.93	0.50
1:A:39:HIS:HA	1:A:42:LEU:HD23	1.94	0.50
1:C:483:ASN:C	1:C:486:PRO:HD2	2.32	0.50
1:C:195:LYS:HE3	4:C:801:JEF:C18	2.42	0.50
1:B:249:ASP:HB3	1:B:252:GLU:HG2	1.93	0.49
1:A:31:LEU:HD21	1:A:74:LEU:HD23	1.94	0.49
1:A:49:PHE:O	1:A:52:THR:HB	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:156:PHE:CZ	1:B:160:ARG:HD2	2.48	0.49
1:C:383:GLU:OE2	1:C:485:ARG:NH2	2.45	0.49
1:B:347:LEU:HD23	1:B:482:VAL:CG1	2.43	0.49
1:A:572:GLY:O	1:A:576:VAL:HG23	2.12	0.48
1:B:400:GLU:O	1:B:404:GLN:HG3	2.13	0.48
3:J:1:5PG:CN	3:J:2:TYR:N	2.75	0.48
1:B:538:LYS:O	1:B:540:THR:N	2.46	0.48
1:A:78:ALA:O	1:A:82:GLU:HG2	2.14	0.48
1:A:25:ILE:CD1	1:A:154:LEU:HD23	2.44	0.48
1:A:260:LEU:HD23	1:A:260:LEU:O	2.14	0.48
1:B:415:VAL:O	1:B:418:VAL:HG12	2.14	0.48
1:A:450:GLU:OE2	1:A:485:ARG:NH1	2.41	0.48
1:A:558:CYS:HB3	1:A:568:PHE:CE1	2.48	0.48
1:B:224:PRO:HD2	1:B:296:ASP:HB3	1.96	0.48
1:A:513:ILE:HD12	1:A:524:LYS:HD2	1.96	0.47
1:B:426:VAL:HG11	1:B:460:LEU:HB2	1.96	0.47
1:B:407:LEU:HD13	1:B:430:LEU:HB3	1.96	0.47
1:B:440:HIS:HB3	1:B:441:PRO:HD2	1.96	0.47
3:I:2:TYR:CE2	3:I:4:D4P:C2	2.90	0.47
1:C:383:GLU:HB3	1:C:384:PRO:HD3	1.97	0.47
1:B:41:LYS:O	1:B:45:GLU:HG3	2.15	0.47
1:B:172:ALA:HB2	3:J:6:F93:OC	2.15	0.47
1:C:545:LYS:HE3	1:C:545:LYS:HB2	1.61	0.47
1:B:42:LEU:HD11	1:B:77:VAL:HG21	1.97	0.47
1:B:257:ARG:NH2	1:B:287:SER:HB2	2.29	0.47
1:B:540:THR:C	1:B:544:LEU:HD23	2.35	0.47
1:B:11:PHE:CZ	1:B:16:GLU:HB2	2.50	0.47
1:C:483:ASN:O	1:C:486:PRO:HD2	2.15	0.47
1:A:347:LEU:CB	1:A:482:VAL:HG21	2.45	0.47
1:C:572:GLY:O	1:C:576:VAL:HG23	2.14	0.47
1:A:450:GLU:CD	1:A:485:ARG:HH11	2.18	0.46
4:A:801:JEF:H341	4:A:801:JEF:H402	1.97	0.46
1:B:418:VAL:HG13	1:B:423:LEU:HG	1.97	0.46
1:C:511:ALA:HA	1:C:568:PHE:CE2	2.51	0.46
1:C:513:ILE:CD1	1:C:524:LYS:HD3	2.45	0.46
1:B:194:ALA:HB1	1:B:455:VAL:CG1	2.45	0.46
1:B:344:VAL:HG13	1:B:348:ARG:NH1	2.30	0.46
1:C:540:THR:HG22	1:C:543:GLN:N	2.01	0.46
1:C:383:GLU:CD	1:C:485:ARG:HH22	2.19	0.46
1:A:86:GLU:CD	1:A:105:HIS:HD2	2.18	0.46
1:A:195:LYS:HE3	4:A:801:JEF:H171	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:351:LYS:CD	4:C:802:JEF:H183	2.45	0.46
1:A:61:ASN:ND2	6:F:102:M12:O1	2.48	0.46
1:A:342:SER:H	1:A:446:MET:CE	2.29	0.46
1:A:222:ARG:HH12	4:A:801:JEF:C20	2.28	0.46
1:B:46:VAL:HG13	6:G:102:M12:H82C	1.97	0.46
1:B:422:THR:HG22	1:B:463:LEU:HD13	1.97	0.46
1:A:556:GLU:HG2	1:A:560:LYS:HE3	1.97	0.46
1:B:203:LEU:HD13	1:B:211:PHE:HB2	1.98	0.46
1:C:543:GLN:HE21	1:C:582:ALA:HB1	1.81	0.46
1:C:394:LEU:O	1:C:398:LEU:HB2	2.16	0.46
1:C:408:LEU:CD1	1:C:526:GLN:HB3	2.46	0.46
1:C:422:THR:O	1:C:426:VAL:HG23	2.16	0.46
1:A:394:LEU:HG	1:A:398:LEU:HD22	1.98	0.45
1:A:414:LYS:HE2	1:A:488:PHE:O	2.15	0.45
1:B:167:GLU:HG3	3:J:7:D3P:H4	1.98	0.45
1:B:502:PHE:CE1	1:B:507:PHE:HE2	2.34	0.45
1:C:350:ALA:HB1	4:C:802:JEF:H341	1.98	0.45
1:B:25:ILE:HD13	1:B:154:LEU:HD12	1.98	0.45
1:B:502:PHE:HD1	1:B:535:HIS:CD2	2.34	0.45
1:A:518:GLU:HG2	1:B:80:LEU:HD22	1.99	0.45
1:A:388:ILE:HD13	1:A:388:ILE:N	2.32	0.45
1:C:82:GLU:O	1:C:82:GLU:HG3	2.16	0.45
9:J:103:WOO:H3	9:J:103:WOO:O6	2.17	0.45
1:B:154:LEU:HD23	1:B:154:LEU:HA	1.80	0.45
1:B:412:THR:CG2	1:B:533:VAL:HG11	2.46	0.45
1:B:182:LEU:HD12	1:B:182:LEU:HA	1.58	0.44
1:B:372:LYS:HD3	1:B:372:LYS:HA	1.77	0.44
1:C:206:PHE:CE2	1:C:481:LEU:HB2	2.53	0.44
2:H:1:5PG:OH	7:H:103:MAN:O2	2.33	0.44
1:B:224:PRO:CB	1:B:336:ARG:HB2	2.48	0.44
1:C:179:LEU:HA	1:C:179:LEU:HD12	1.64	0.44
3:I:1:5PG:CN	3:I:2:TYR:N	2.80	0.44
1:B:80:LEU:HD23	1:B:80:LEU:HA	1.83	0.44
1:A:394:LEU:HA	1:A:394:LEU:HD12	1.77	0.44
1:A:401:TYR:OH	1:A:525:LYS:HE3	2.17	0.44
1:A:564:LYS:C	1:A:566:THR:H	2.19	0.44
1:C:27:PHE:CG	1:C:42:LEU:HD21	2.53	0.44
1:A:38:ASP:O	1:A:42:LEU:HD23	2.17	0.44
1:B:402:LYS:HA	1:B:405:ASN:HD22	1.81	0.44
1:C:79:THR:O	1:C:79:THR:CG2	2.65	0.44
1:C:446:MET:N	1:C:447:PRO:HD2	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:GLU:H	1:A:501:GLU:HG2	1.63	0.44
1:C:368:GLU:OE1	1:C:368:GLU:N	2.51	0.44
1:A:578:ALA:O	1:A:581:ALA:HB3	2.18	0.44
1:A:433:VAL:CG1	1:A:452:TYR:HD2	2.31	0.44
1:B:77:VAL:O	1:B:80:LEU:HB2	2.18	0.44
1:B:372:LYS:HD2	1:B:375:ASP:OD2	2.17	0.44
1:C:150:TYR:CB	1:C:196:GLN:HG3	2.31	0.44
1:A:46:VAL:HG22	6:F:102:M12:H52C	2.00	0.43
1:C:257:ARG:HE	4:C:801:JEF:H341	1.74	0.43
1:C:372:LYS:HA	1:C:372:LYS:HD3	1.79	0.43
9:I:103:WOO:H3	9:I:103:WOO:O6	2.18	0.43
1:C:74:LEU:HD12	1:C:74:LEU:HA	1.78	0.43
1:C:573:LYS:HA	1:C:573:LYS:HD3	1.55	0.43
1:A:210:ALA:HB1	4:A:802:JEF:H183	1.99	0.43
1:A:415:VAL:O	1:A:418:VAL:HG23	2.19	0.43
1:B:106:LYS:HD3	1:B:147:PRO:HB2	2.00	0.43
1:B:420:THR:HG21	1:B:527:THR:HG23	2.01	0.43
1:B:485:ARG:HB3	1:B:486:PRO:HD3	2.00	0.43
9:I:103:WOO:O6	9:I:103:WOO:C3	2.67	0.43
3:J:2:TYR:CE2	3:J:4:D4P:C2	2.92	0.43
1:B:481:LEU:N	4:B:801:JEF:H381	2.34	0.43
1:A:86:GLU:OE2	1:A:105:HIS:HD2	2.01	0.43
1:B:224:PRO:HB3	1:B:336:ARG:HB2	2.01	0.43
1:B:539:ALA:HB1	1:B:544:LEU:HD11	1.99	0.43
1:B:502:PHE:HZ	1:B:576:VAL:CG1	2.32	0.43
1:B:574:LYS:NZ	1:B:575:LEU:HD23	2.33	0.43
1:C:69:LEU:HB3	6:H:102:M12:H61C	1.99	0.43
1:B:347:LEU:HD23	1:B:482:VAL:HG12	2.00	0.43
1:B:536:LYS:C	1:B:538:LYS:H	2.20	0.43
3:J:5:D4P:C2	3:J:7:D3P:N	2.82	0.43
1:A:302:LEU:HA	1:A:302:LEU:HD23	1.76	0.43
1:A:303:PRO:O	1:A:337:ARG:NH2	2.48	0.43
1:A:378:LYS:HB2	1:A:379:PRO:HD3	2.01	0.43
1:A:75:CYS:O	1:A:79:THR:HG23	2.19	0.42
1:B:75:CYS:O	1:B:79:THR:HG23	2.19	0.42
9:J:103:WOO:O6	9:J:103:WOO:C3	2.68	0.42
1:A:169:CYS:O	1:A:174:LYS:HE2	2.18	0.42
1:A:224:PRO:HD2	1:A:296:ASP:HB3	2.01	0.42
1:B:502:PHE:HZ	1:B:576:VAL:HG12	1.84	0.42
1:C:86:GLU:HB2	1:C:105:HIS:ND1	2.33	0.42
1:C:251:LEU:HD23	1:C:251:LEU:HA	1.78	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:394:LEU:HD23	1:C:394:LEU:HA	1.89	0.42
4:B:801:JEF:H343	4:B:801:JEF:H362	1.90	0.42
3:I:1:5PG:O	3:I:2:TYR:O	2.37	0.42
1:A:250:LEU:N	1:A:250:LEU:HD23	2.35	0.42
1:B:199:LYS:HE2	4:B:802:JEF:H342	2.01	0.42
1:C:510:HIS:HB2	1:C:512:ASP:OD2	2.18	0.42
1:A:182:LEU:HD12	1:A:182:LEU:HA	1.78	0.42
1:B:179:LEU:HD23	1:B:179:LEU:HA	1.81	0.42
1:B:415:VAL:O	1:B:415:VAL:HG23	2.19	0.42
1:A:408:LEU:CD1	1:A:526:GLN:HB3	2.49	0.42
1:A:430:LEU:O	1:A:433:VAL:HG22	2.20	0.42
1:A:216:VAL:HG22	1:A:235:VAL:HG21	2.02	0.41
2:H:1:5PG:CC1	2:H:3:HCL:C5	2.94	0.41
3:J:1:5PG:O	3:J:2:TYR:O	2.37	0.41
1:A:509:PHE:O	1:A:568:PHE:HB3	2.20	0.41
1:A:563:ASP:C	1:A:565:GLU:H	2.24	0.41
1:B:569:ALA:O	1:B:573:LYS:HG2	2.21	0.41
1:C:405:ASN:O	1:C:409:VAL:HG13	2.19	0.41
1:C:564:LYS:O	1:C:566:THR:N	2.53	0.41
1:B:42:LEU:CD1	1:B:77:VAL:HG21	2.51	0.41
1:B:415:VAL:HG11	1:B:473:VAL:CG2	2.51	0.41
1:B:511:ALA:HB2	1:B:568:PHE:CE1	2.55	0.41
1:B:536:LYS:C	1:B:538:LYS:N	2.73	0.41
3:I:5:D4P:C2	3:I:7:D3P:N	2.83	0.41
1:B:381:VAL:O	1:B:384:PRO:HD2	2.20	0.41
1:B:516:LEU:HD23	1:B:516:LEU:HA	1.80	0.41
1:C:70:PHE:CE2	1:C:74:LEU:HD22	2.55	0.41
1:C:182:LEU:HD12	1:C:182:LEU:HA	1.90	0.41
2:F:1:5PG:CC2	2:F:1:5PG:HN3C	2.50	0.41
1:A:535:HIS:C	1:A:536:LYS:HG2	2.41	0.41
1:B:144:ARG:HH11	1:B:144:ARG:HD2	1.71	0.41
1:B:171:ALA:HA	3:J:7:D3P:CA	2.49	0.41
1:B:302:LEU:HA	1:B:302:LEU:HD23	1.70	0.41
1:C:510:HIS:O	1:C:513:ILE:HG12	2.21	0.41
1:B:151:ALA:HB3	1:B:152:PRO:HD3	2.03	0.41
1:C:26:ALA:CA	1:C:250:LEU:HD12	2.50	0.41
3:I:2:TYR:OH	8:I:102:F8X:N2	2.53	0.41
1:A:139:LEU:HD23	1:A:139:LEU:HA	1.89	0.41
1:B:257:ARG:HH11	4:B:802:JEF:C20	2.33	0.41
1:B:290:ILE:HG22	4:B:802:JEF:H172	2.02	0.41
1:B:539:ALA:O	1:B:540:THR:HB	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:540:THR:O	1:B:544:LEU:CD2	2.69	0.41
3:I:1:5PG:HN2C	3:I:1:5PG:CC2	2.50	0.41
1:A:203:LEU:HD12	1:A:203:LEU:HA	1.83	0.41
1:A:426:VAL:HG12	1:A:430:LEU:CD2	2.50	0.41
1:B:27:PHE:CD1	1:B:42:LEU:HD21	2.56	0.41
1:B:257:ARG:HH11	4:B:802:JEF:C19	2.32	0.41
1:B:560:LYS:O	1:B:561:ALA:CB	2.68	0.41
1:C:457:LEU:HA	1:C:457:LEU:HD23	1.78	0.41
2:G:1:5PG:CC2	2:G:1:5PG:HN3C	2.49	0.41
1:C:380:LEU:HA	1:C:380:LEU:HD12	1.74	0.41
4:C:802:JEF:H202	4:C:802:JEF:H182	1.86	0.41
1:A:105:HIS:CG	1:A:105:HIS:O	2.73	0.40
1:B:430:LEU:HD23	1:B:430:LEU:HA	1.96	0.40
1:C:513:ILE:HG22	1:C:521:ARG:HG3	2.03	0.40
3:J:5:D4P:C4	3:J:7:D3P:O3	2.70	0.40
1:A:502:PHE:HB2	1:A:535:HIS:CE1	2.56	0.40
1:B:385:GLN:HG3	1:B:446:MET:CE	2.51	0.40
1:C:142:ILE:HD13	1:C:142:ILE:HA	1.88	0.40
1:A:16:GLU:HG2	1:A:20:LYS:HE2	2.04	0.40
1:A:119:GLU:HA	1:A:119:GLU:OE1	2.21	0.40
1:B:378:LYS:HB2	1:B:379:PRO:HD3	2.02	0.40
1:C:26:ALA:HA	1:C:250:LEU:HD12	2.03	0.40
1:C:240:LYS:HE2	1:C:244:GLU:OE2	2.22	0.40
1:C:357:LEU:HA	1:C:357:LEU:HD12	1.59	0.40
1:C:418:VAL:HG12	1:C:419:SER:N	2.36	0.40
1:C:507:PHE:CD1	6:I:101:M12:H92C	2.56	0.40
1:B:52:THR:HG22	2:G:8:DIB:HA1	2.03	0.40
1:B:544:LEU:HD22	1:B:544:LEU:H	1.85	0.40
4:B:802:JEF:H182	4:B:802:JEF:H201	1.94	0.40
1:C:426:VAL:HG21	1:C:460:LEU:HD13	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	579/585 (99%)	559 (96%)	20 (4%)	0	100	100
1	B	579/585 (99%)	547 (94%)	23 (4%)	9 (2%)	9	31
1	C	579/585 (99%)	560 (97%)	15 (3%)	4 (1%)	22	53
2	F	1/8 (12%)	0	0	1 (100%)	0	0
2	G	1/8 (12%)	0	0	1 (100%)	0	0
2	H	1/8 (12%)	0	0	1 (100%)	0	0
3	I	1/8 (12%)	0	0	1 (100%)	0	0
3	J	1/8 (12%)	0	0	1 (100%)	0	0
All	All	1742/1795 (97%)	1666 (96%)	58 (3%)	18 (1%)	15	44

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	539	ALA
1	B	541	LYS
1	B	563	ASP
1	B	566	THR
1	C	3	HIS
2	F	2	TYR
2	G	2	TYR
2	H	2	TYR
3	I	2	TYR
1	B	561	ALA
1	B	560	LYS
1	C	565	GLU
1	B	540	THR
1	C	82	GLU
1	C	480	SER
3	J	2	TYR
1	B	300	ALA
1	B	562	ASP

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	507/511 (99%)	481 (95%)	26 (5%)	24	55
1	B	503/511 (98%)	476 (95%)	27 (5%)	22	53
1	C	507/511 (99%)	480 (95%)	27 (5%)	22	54
2	F	1/1 (100%)	0	1 (100%)	0	0
2	G	1/1 (100%)	0	1 (100%)	0	0
2	H	1/1 (100%)	0	1 (100%)	0	0
3	I	1/1 (100%)	0	1 (100%)	0	0
3	J	1/1 (100%)	0	1 (100%)	0	0
All	All	1522/1538 (99%)	1437 (94%)	85 (6%)	21	51

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LYS
1	A	7	VAL
1	A	42	LEU
1	A	66	LEU
1	A	74	LEU
1	A	108	ASP
1	A	125	THR
1	A	182	LEU
1	A	193	SER
1	A	203	LEU
1	A	233	LYS
1	A	253	CYS
1	A	260	LEU
1	A	304	SER
1	A	334	TYR
1	A	380	LEU
1	A	388	ILE
1	A	390	GLN
1	A	398	LEU
1	A	430	LEU
1	A	450	GLU
1	A	457	LEU
1	A	485	ARG
1	A	531	GLU

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Mol	Chain	Res	Type
1	A	536	LYS
1	A	573	LYS
1	B	4	LYS
1	B	52	THR
1	B	68	THR
1	B	108	ASP
1	B	154	LEU
1	B	182	LEU
1	B	193	SER
1	B	203	LEU
1	B	253	CYS
1	B	334	TYR
1	B	347	LEU
1	B	357	LEU
1	B	392	CYS
1	B	412	THR
1	B	422	THR
1	B	426	VAL
1	B	435	SER
1	B	438	CYS
1	B	442	GLU
1	B	450	GLU
1	B	453	LEU
1	B	467	THR
1	B	485	ARG
1	B	508	THR
1	B	521	ARG
1	B	548	MET
1	B	568	PHE
1	C	3	HIS
1	C	4	LYS
1	C	68	THR
1	C	83	THR
1	C	108	ASP
1	C	121	ASP
1	C	139	LEU
1	C	179	LEU
1	C	182	LEU
1	C	185	LEU
1	C	193	SER
1	C	203	LEU
1	C	304	SER

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Mol	Chain	Res	Type
1	C	334	TYR
1	C	347	LEU
1	C	357	LEU
1	C	380	LEU
1	C	388	ILE
1	C	394	LEU
1	C	398	LEU
1	C	433	VAL
1	C	450	GLU
1	C	485	ARG
1	C	491	LEU
1	C	503	ASN
1	C	521	ARG
1	C	540	THR
2	F	2	TYR
2	G	2	TYR
2	H	2	TYR
3	I	2	TYR
3	J	2	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	105	HIS
1	C	3	HIS
1	C	9	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

30 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	OMZ	H	6	2	12,14,15	0.42	0	17,19,21	2.38	3 (17%)
2	D4P	F	4	2,5	10,11,12	0.78	0	11,14,16	0.98	1 (9%)
3	D3P	J	7	3	11,12,13	0.77	0	13,16,18	2.31	3 (23%)
2	D3P	G	7	2	11,12,13	0.85	0	13,16,18	2.25	4 (30%)
3	D4P	I	5	3	10,11,12	0.72	0	11,14,16	0.79	0
2	HCL	G	3	2	12,13,14	1.21	1 (8%)	13,18,20	1.99	2 (15%)
2	OMZ	G	6	2	12,14,15	0.48	0	17,19,21	2.36	3 (17%)
3	D4P	J	4	3	10,11,12	1.08	1 (10%)	11,14,16	0.67	0
2	D4P	H	5	2	10,11,12	0.84	0	11,14,16	0.82	0
3	F93	I	6	3	12,14,15	0.58	0	17,19,21	0.68	0
2	5PG	H	1	2	12,12,13	0.58	0	11,15,17	0.96	0
3	5PG	I	1	3	12,12,13	0.77	1 (8%)	11,15,17	0.43	0
3	D3P	I	7	3	11,12,13	0.77	0	13,16,18	2.35	3 (23%)
3	D4P	J	5	3	10,11,12	0.66	0	11,14,16	0.86	0
2	5PG	G	1	2	12,12,13	0.57	0	11,15,17	1.02	1 (9%)
2	D3P	F	7	2	11,12,13	0.78	0	13,16,18	1.91	4 (30%)
3	D4P	I	4	3	10,11,12	0.69	0	11,14,16	0.68	0
2	D3P	H	7	2	11,12,13	0.84	0	13,16,18	2.02	4 (30%)
2	D4P	G	4	2,5	10,11,12	1.14	1 (10%)	11,14,16	0.82	1 (9%)
2	HCL	H	3	2	12,13,14	0.98	1 (8%)	13,18,20	2.20	2 (15%)
2	HCL	F	3	2	12,13,14	1.27	1 (8%)	13,18,20	2.19	3 (23%)
3	F93	J	6	3	12,14,15	0.51	0	17,19,21	0.76	0
2	5PG	F	1	2	12,12,13	0.92	1 (8%)	11,15,17	0.98	0
2	D4P	H	4	2,5	10,11,12	0.73	0	11,14,16	0.87	1 (9%)
3	HCL	I	3	3	12,13,14	0.77	0	13,18,20	1.85	1 (7%)
2	D4P	G	5	2	10,11,12	1.08	1 (10%)	11,14,16	0.86	0
2	OMZ	F	6	2	12,14,15	0.53	0	17,19,21	2.40	3 (17%)
3	5PG	J	1	3	12,12,13	0.84	1 (8%)	11,15,17	0.42	0
2	D4P	F	5	2	10,11,12	1.43	1 (10%)	11,14,16	0.84	0
3	HCL	J	3	3	12,13,14	0.88	1 (8%)	13,18,20	2.05	1 (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
2	OMZ	H	6	2	1/1/2/3	4/9/10/12	0/1/1/1
2	D4P	F	4	2,5	1/1/1/2	4/4/6/8	0/1/1/1
3	D3P	J	7	3	-	0/4/6/8	0/1/1/1
2	D3P	G	7	2	1/1/1/2	2/4/6/8	0/1/1/1
3	D4P	I	5	3	-	0/4/6/8	0/1/1/1
2	OMZ	G	6	2	1/1/2/3	4/9/10/12	0/1/1/1
2	HCL	G	3	2	-	0/3/6/8	0/1/1/1
3	D4P	J	4	3	-	2/4/6/8	0/1/1/1
2	D4P	H	5	2	-	0/4/6/8	0/1/1/1
3	F93	I	6	3	-	5/9/10/12	0/1/1/1
2	5PG	H	1	2	1/1/1/3	1/5/8/10	0/1/1/1
3	5PG	I	1	3	-	0/5/8/10	0/1/1/1
3	D3P	I	7	3	-	0/4/6/8	0/1/1/1
3	D4P	J	5	3	-	0/4/6/8	0/1/1/1
2	5PG	G	1	2	1/1/1/3	1/5/8/10	0/1/1/1
2	D3P	F	7	2	1/1/1/2	2/4/6/8	0/1/1/1
3	D4P	I	4	3	-	2/4/6/8	0/1/1/1
2	D3P	H	7	2	1/1/1/2	2/4/6/8	0/1/1/1
2	D4P	G	4	2,5	1/1/1/2	4/4/6/8	0/1/1/1
2	HCL	H	3	2	-	0/3/6/8	0/1/1/1
2	HCL	F	3	2	-	0/3/6/8	0/1/1/1
3	F93	J	6	3	-	5/9/10/12	0/1/1/1
2	5PG	F	1	2	1/1/1/3	1/5/8/10	0/1/1/1
2	D4P	H	4	2,5	1/1/1/2	4/4/6/8	0/1/1/1
3	HCL	I	3	3	-	3/3/6/8	0/1/1/1
2	D4P	G	5	2	-	0/4/6/8	0/1/1/1
2	OMZ	F	6	2	1/1/2/3	4/9/10/12	0/1/1/1
3	5PG	J	1	3	-	0/5/8/10	0/1/1/1
2	D4P	F	5	2	-	0/4/6/8	0/1/1/1
3	HCL	J	3	3	-	3/3/6/8	0/1/1/1

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	5	D4P	CA-C	4.04	1.59	1.51
2	F	3	HCL	CA-C	3.89	1.59	1.51
2	G	3	HCL	CA-C	3.58	1.58	1.51
2	G	4	D4P	CA-C	3.22	1.57	1.51
3	J	4	D4P	CA-C	-3.18	1.44	1.51
2	F	1	5PG	CA-C	2.82	1.56	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	3	HCL	CA-C	2.66	1.56	1.51
3	J	1	5PG	CA-C	2.57	1.56	1.51
2	G	5	D4P	CA-C	2.45	1.56	1.51
3	I	1	5PG	CA-C	2.25	1.55	1.51
3	J	3	HCL	CA-C	-2.24	1.46	1.51

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	6	OMZ	OC-CB-CA	7.85	123.85	107.28
2	F	6	OMZ	OC-CB-CA	7.70	123.53	107.28
2	G	6	OMZ	OC-CB-CA	7.34	122.76	107.28
3	J	3	HCL	C1-CA-N	7.20	129.24	112.10
2	H	3	HCL	C1-CA-N	7.15	129.13	112.10
2	F	3	HCL	C1-CA-N	6.91	128.56	112.10
3	I	3	HCL	C1-CA-N	6.49	127.56	112.10
2	G	3	HCL	C1-CA-N	6.34	127.19	112.10
3	J	7	D3P	C2-C1-CA	5.53	128.88	119.77
3	I	7	D3P	C2-C1-CA	5.47	128.78	119.77
2	G	7	D3P	C2-C1-CA	4.86	127.78	119.77
3	I	7	D3P	C6-C1-CA	-4.72	112.00	119.77
3	J	7	D3P	C6-C1-CA	-4.56	112.26	119.77
2	H	7	D3P	C2-C1-CA	4.40	127.03	119.77
2	G	6	OMZ	OC-CB-CG	4.25	120.47	111.19
2	G	7	D3P	C6-C1-CA	-4.16	112.92	119.77
2	F	6	OMZ	OC-CB-CG	4.09	120.11	111.19
2	F	7	D3P	C2-C1-CA	4.04	126.42	119.77
2	H	6	OMZ	OC-CB-CG	3.77	119.42	111.19
2	F	6	OMZ	CG-CB-CA	3.64	116.36	111.49
2	H	7	D3P	C6-C1-CA	-3.64	113.78	119.77
2	G	6	OMZ	CG-CB-CA	3.64	116.36	111.49
2	H	6	OMZ	CG-CB-CA	3.38	116.02	111.49
2	F	7	D3P	C6-C1-CA	-3.33	114.29	119.77
2	G	7	D3P	C3-C2-C1	-2.87	117.64	120.11
2	F	7	D3P	C1-CA-N	2.86	119.26	112.40
2	G	7	D3P	C1-CA-N	2.82	119.15	112.40
2	H	7	D3P	C3-C2-C1	-2.62	117.86	120.11
2	F	4	D4P	C1-CA-N	2.60	118.61	112.40
2	F	3	HCL	O4-C6-C4	-2.59	113.10	119.84
2	H	4	D4P	C1-CA-N	2.41	118.16	112.40
2	H	3	HCL	O4-C6-C4	-2.39	113.63	119.84
2	G	4	D4P	C1-CA-N	2.32	117.96	112.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	J	7	D3P	O3-C3-C2	-2.32	113.82	119.84
2	H	7	D3P	C1-CA-N	2.30	117.90	112.40
2	G	3	HCL	O4-C6-C4	-2.28	113.91	119.84
2	G	1	5PG	CB-CA-N	2.24	118.86	112.57
2	F	7	D3P	C3-C2-C1	-2.24	118.19	120.11
3	I	7	D3P	O3-C3-C2	-2.04	114.53	119.84
2	F	3	HCL	O4-C6-C5	2.02	125.09	119.84

All (12) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	F	1	5PG	CA
2	G	1	5PG	CA
2	H	1	5PG	CA
2	F	4	D4P	CA
2	G	4	D4P	CA
2	H	4	D4P	CA
2	F	6	OMZ	CB
2	G	6	OMZ	CB
2	H	6	OMZ	CB
2	F	7	D3P	CA
2	G	7	D3P	CA
2	H	7	D3P	CA

All (53) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	1	5PG	CB-CA-N-CN
2	G	1	5PG	CB-CA-N-CN
2	H	1	5PG	CB-CA-N-CN
2	F	6	OMZ	N-CA-CB-CG
2	F	6	OMZ	C-CA-CB-CG
2	G	6	OMZ	N-CA-CB-CG
2	G	6	OMZ	C-CA-CB-CG
2	H	6	OMZ	N-CA-CB-CG
2	H	6	OMZ	C-CA-CB-CG
3	I	3	HCL	C2-C1-CA-N
3	J	3	HCL	C2-C1-CA-N
3	I	6	F93	C-CA-CB-CG
3	I	6	F93	N-CA-CB-CG
3	I	6	F93	C-CA-CB-OC
3	I	6	F93	N-CA-CB-OC

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Mol	Chain	Res	Type	Atoms
3	I	6	F93	O-C-CA-CB
3	J	6	F93	C-CA-CB-CG
3	J	6	F93	N-CA-CB-CG
3	J	6	F93	C-CA-CB-OC
3	J	6	F93	N-CA-CB-OC
2	F	4	D4P	C2-C1-CA-N
2	H	4	D4P	C2-C1-CA-N
2	F	7	D3P	C2-C1-CA-C
2	F	7	D3P	C6-C1-CA-C
2	G	7	D3P	C2-C1-CA-C
2	G	7	D3P	C6-C1-CA-C
2	H	7	D3P	C2-C1-CA-C
2	H	7	D3P	C6-C1-CA-C
3	I	4	D4P	C2-C1-CA-C
2	H	6	OMZ	N-CA-CB-OC
3	I	3	HCL	C5-C1-CA-N
2	G	4	D4P	C2-C1-CA-N
3	J	4	D4P	C2-C1-CA-C
3	J	3	HCL	C5-C1-CA-N
2	F	6	OMZ	OC-CB-CG-CD2
2	G	4	D4P	C6-C1-CA-N
2	H	6	OMZ	OC-CB-CG-CD2
3	I	3	HCL	C5-C1-CA-C
3	J	3	HCL	C5-C1-CA-C
2	F	6	OMZ	N-CA-CB-OC
2	G	6	OMZ	N-CA-CB-OC
3	J	6	F93	O-C-CA-CB
2	F	4	D4P	C2-C1-CA-C
2	F	4	D4P	C6-C1-CA-C
2	G	4	D4P	C2-C1-CA-C
2	G	4	D4P	C6-C1-CA-C
2	H	4	D4P	C2-C1-CA-C
2	H	4	D4P	C6-C1-CA-C
3	I	4	D4P	C6-C1-CA-C
3	J	4	D4P	C6-C1-CA-C
2	F	4	D4P	C6-C1-CA-N
2	H	4	D4P	C6-C1-CA-N
2	G	6	OMZ	OC-CB-CG-CD2

There are no ring outliers.

24 monomers are involved in 39 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	6	OMZ	1	0
3	J	7	D3P	5	0
2	G	7	D3P	1	0
3	I	5	D4P	1	0
2	G	3	HCL	1	0
2	G	6	OMZ	1	0
3	J	4	D4P	2	0
2	H	5	D4P	1	0
2	H	1	5PG	4	0
3	I	1	5PG	5	0
3	I	7	D3P	1	0
3	J	5	D4P	2	0
2	G	1	5PG	4	0
2	F	7	D3P	1	0
3	I	4	D4P	2	0
2	H	7	D3P	1	0
2	H	3	HCL	2	0
2	F	3	HCL	1	0
3	J	6	F93	1	0
2	F	1	5PG	4	0
2	G	5	D4P	1	0
2	F	6	OMZ	2	0
3	J	1	5PG	4	0
2	F	5	D4P	2	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

21 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	M12	G	102	5	12,12,13	0.28	0	12,12,14	0.27	0
5	F8F	H	101	2,6	12,12,13	1.41	3 (25%)	11,17,19	4.38	6 (54%)
5	F8F	G	101	2,6	12,12,13	1.39	3 (25%)	11,17,19	4.37	6 (54%)
7	MAN	H	103	-	11,11,12	0.50	0	15,15,17	3.87	9 (60%)
9	WOO	J	103	-	11,11,12	0.69	0	15,15,17	0.99	1 (6%)
4	JEF	A	801	-	13,16,40	0.55	0	15,18,48	1.11	2 (13%)
6	M12	J	101	8	12,12,13	0.23	0	12,12,14	0.34	0
7	MAN	G	103	-	11,11,12	0.58	0	15,15,17	3.79	9 (60%)
8	F8X	J	102	6	12,12,13	1.33	2 (16%)	11,17,19	1.18	1 (9%)
5	F8F	F	101	2,6	12,12,13	1.44	3 (25%)	11,17,19	4.35	6 (54%)
4	JEF	B	802	-	13,16,40	0.35	0	15,18,48	0.85	0
8	F8X	I	102	6	12,12,13	0.58	0	11,17,19	0.68	0
4	JEF	A	802	-	13,16,40	0.31	0	15,18,48	0.92	0
4	JEF	C	801	-	13,16,40	0.39	0	15,18,48	0.88	0
9	WOO	I	103	-	11,11,12	0.66	0	15,15,17	1.12	3 (20%)
4	JEF	B	801	-	13,16,40	0.29	0	15,18,48	1.05	1 (6%)
6	M12	I	101	8	12,12,13	0.28	0	12,12,14	0.35	0
7	MAN	F	103	-	11,11,12	0.55	0	15,15,17	3.96	9 (60%)
6	M12	F	102	5	12,12,13	0.31	0	12,12,14	0.25	0
4	JEF	C	802	-	13,16,40	0.35	0	15,18,48	1.00	0
6	M12	H	102	5	12,12,13	0.32	0	12,12,14	0.33	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
6	M12	G	102	5	-	4/9/10/11	-
5	F8F	H	101	2,6	3/3/5/6	2/4/21/24	0/1/1/1
5	F8F	G	101	2,6	4/4/5/6	2/4/21/24	0/1/1/1
7	MAN	H	103	-	-	1/2/19/22	0/1/1/1
9	WOO	J	103	-	-	0/2/19/22	0/1/1/1
4	JEF	A	801	-	-	7/17/17/46	-
6	M12	J	101	8	-	3/9/10/11	-
7	MAN	G	103	-	-	2/2/19/22	0/1/1/1
8	F8X	J	102	6	-	0/4/21/24	0/1/1/1
5	F8F	F	101	2,6	3/3/5/6	2/4/21/24	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	JEF	B	802	-	-	5/17/17/46	-
8	F8X	I	102	6	-	3/4/21/24	0/1/1/1
4	JEF	A	802	-	-	8/17/17/46	-
4	JEF	C	801	-	-	7/17/17/46	-
9	WOO	I	103	-	-	2/2/19/22	0/1/1/1
4	JEF	B	801	-	-	5/17/17/46	-
6	M12	I	101	8	-	6/9/10/11	-
7	MAN	F	103	-	-	1/2/19/22	0/1/1/1
6	M12	F	102	5	-	4/9/10/11	-
4	JEF	C	802	-	-	7/17/17/46	-
6	M12	H	102	5	-	4/9/10/11	-

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	H	101	F8F	O25-C87	3.45	1.32	1.22
5	G	101	F8F	O25-C87	3.28	1.32	1.22
5	F	101	F8F	O25-C87	3.22	1.32	1.22
8	J	102	F8X	O6B-C6	-3.15	1.20	1.30
8	J	102	F8X	O6A-C6	2.71	1.30	1.22
5	F	101	F8F	C16-C12	2.64	1.55	1.52
5	F	101	F8F	O24-C87	-2.43	1.22	1.30
5	G	101	F8F	O24-C87	-2.43	1.22	1.30
5	G	101	F8F	C16-C12	2.39	1.55	1.52
5	H	101	F8F	O24-C87	-2.34	1.22	1.30
5	H	101	F8F	C16-C12	2.31	1.55	1.52

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	G	101	F8F	O26-C14-C15	8.83	129.54	109.74
5	H	101	F8F	O26-C14-C15	8.63	129.09	109.74
5	F	101	F8F	O26-C14-C15	8.03	127.76	109.74
5	F	101	F8F	O27-C13-C12	7.80	124.10	109.81
5	H	101	F8F	O27-C13-C12	7.70	123.92	109.81
5	G	101	F8F	O27-C13-C12	7.70	123.92	109.81
7	F	103	MAN	C1-C2-C3	7.55	118.94	109.67
7	G	103	MAN	C1-C2-C3	7.49	118.88	109.67
7	H	103	MAN	C1-C2-C3	7.23	118.55	109.67
7	H	103	MAN	O5-C1-C2	7.09	121.71	110.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	F	103	MAN	O5-C1-C2	7.00	121.58	110.77
7	G	103	MAN	O5-C1-C2	6.99	121.56	110.77
5	F	101	F8F	O27-C13-C14	5.60	123.31	110.35
5	H	101	F8F	O27-C13-C14	5.60	123.29	110.35
5	G	101	F8F	O27-C13-C14	5.48	123.02	110.35
7	F	103	MAN	O4-C4-C3	5.24	122.46	110.35
7	F	103	MAN	O4-C4-C5	5.16	122.12	109.30
7	G	103	MAN	O2-C2-C1	5.04	119.46	109.15
7	H	103	MAN	O4-C4-C3	4.97	121.84	110.35
7	F	103	MAN	O2-C2-C1	4.87	119.12	109.15
7	H	103	MAN	O2-C2-C1	4.87	119.12	109.15
7	F	103	MAN	O2-C2-C3	4.83	119.82	110.14
7	H	103	MAN	O4-C4-C5	4.77	121.14	109.30
5	F	101	F8F	O1-C15-C87	4.56	121.31	106.31
7	G	103	MAN	O4-C4-C5	4.55	120.59	109.30
7	H	103	MAN	O2-C2-C3	4.54	119.23	110.14
7	G	103	MAN	O2-C2-C3	4.45	119.06	110.14
5	F	101	F8F	O26-C14-C13	4.33	120.37	110.35
5	H	101	F8F	O1-C15-C87	4.21	120.15	106.31
7	G	103	MAN	O4-C4-C3	4.20	120.06	110.35
5	G	101	F8F	O1-C15-C87	4.14	119.92	106.31
5	H	101	F8F	O26-C14-C13	3.98	119.55	110.35
7	H	103	MAN	C6-C5-C4	3.97	122.30	113.00
5	G	101	F8F	O26-C14-C13	3.80	119.14	110.35
7	G	103	MAN	C6-C5-C4	3.79	121.88	113.00
7	F	103	MAN	C6-C5-C4	3.59	121.42	113.00
7	F	103	MAN	O5-C5-C6	2.90	111.76	107.20
9	I	103	WOO	C1-C2-C3	-2.74	106.30	109.67
7	H	103	MAN	O5-C5-C6	2.69	111.42	107.20
7	G	103	MAN	O5-C5-C6	2.54	111.18	107.20
9	J	103	WOO	C1-C2-C3	-2.38	106.75	109.67
4	A	801	JEF	O10-C32-C33	2.35	116.56	110.90
4	B	801	JEF	O-C20-C19	2.32	116.49	110.90
5	H	101	F8F	O24-C87-C15	2.16	121.55	113.65
5	G	101	F8F	O24-C87-C15	2.10	121.34	113.65
4	A	801	JEF	O-C-C17	2.08	114.17	108.64
7	F	103	MAN	C2-C3-C4	-2.06	107.34	110.89
7	G	103	MAN	C2-C3-C4	-2.05	107.35	110.89
7	H	103	MAN	C2-C3-C4	-2.05	107.36	110.89
9	I	103	WOO	O2-C2-C1	2.03	113.31	109.15
9	I	103	WOO	O5-C1-C2	-2.03	107.64	110.77
8	J	102	F8X	O6B-C6-C5	2.03	121.08	113.65

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	101	F8F	O24-C87-C15	2.01	121.00	113.65

All (10) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	F	101	F8F	C14
5	F	101	F8F	C13
5	F	101	F8F	C16
5	G	101	F8F	C14
5	G	101	F8F	C15
5	G	101	F8F	C13
5	G	101	F8F	C16
5	H	101	F8F	C14
5	H	101	F8F	C15
5	H	101	F8F	C13

All (75) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	801	JEF	C34-C33-O11-C36
4	A	801	JEF	O10-C32-C33-O11
4	A	801	JEF	O10-C32-C33-C34
4	A	801	JEF	O10-C19-C20-O
4	A	801	JEF	C40-C19-C20-O
4	A	802	JEF	O10-C32-C33-O11
4	A	802	JEF	O-C-C17-OH
4	B	801	JEF	O10-C32-C33-O11
4	B	801	JEF	O10-C32-C33-C34
4	B	801	JEF	C18-C-O-C20
4	B	802	JEF	C40-C19-O10-C32
4	C	801	JEF	C40-C19-O10-C32
4	C	801	JEF	O-C-C17-OH
4	C	801	JEF	C18-C-C17-OH
4	C	802	JEF	C40-C19-O10-C32
4	C	802	JEF	O10-C19-C20-O
4	C	802	JEF	C40-C19-C20-O
4	C	802	JEF	O-C-C17-OH
4	C	802	JEF	C18-C-C17-OH
5	F	101	F8F	C14-C15-C87-O24
5	F	101	F8F	C14-C15-C87-O25
8	I	102	F8X	C4-C5-C6-O6A
8	I	102	F8X	C4-C5-C6-O6B

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Mol	Chain	Res	Type	Atoms
4	B	802	JEF	O11-C36-C37-O12
7	G	103	MAN	O5-C5-C6-O6
4	A	801	JEF	O11-C36-C37-O12
7	H	103	MAN	O5-C5-C6-O6
7	F	103	MAN	O5-C5-C6-O6
4	B	801	JEF	O11-C36-C37-O12
6	H	102	M12	C5-C6-C7-C8
6	G	102	M12	C5-C6-C7-C8
6	H	102	M12	C3-C4-C5-C6
6	F	102	M12	C3-C4-C5-C6
6	F	102	M12	C5-C6-C7-C8
6	I	101	M12	C5-C6-C7-C8
6	J	101	M12	C5-C6-C7-C8
6	G	102	M12	C3-C4-C5-C6
6	H	102	M12	C2-C3-C4-C5
6	F	102	M12	C2-C3-C4-C5
9	I	103	WOO	O5-C5-C6-O6
6	G	102	M12	C2-C3-C4-C5
4	A	802	JEF	C40-C19-O10-C32
9	I	103	WOO	C4-C5-C6-O6
4	A	802	JEF	C19-C20-O-C
4	A	802	JEF	O10-C32-C33-C34
6	H	102	M12	C4-C5-C6-C7
4	C	801	JEF	O11-C36-C37-O12
6	F	102	M12	C4-C5-C6-C7
4	B	801	JEF	C37-C36-O11-C33
4	C	801	JEF	C36-C37-O12-C38
4	A	802	JEF	C37-C36-O11-C33
8	I	102	F8X	O5-C5-C6-O6A
6	G	102	M12	C4-C5-C6-C7
4	A	802	JEF	C18-C-C17-OH
5	G	101	F8F	C14-C15-C87-O24
5	G	101	F8F	C14-C15-C87-O25
5	H	101	F8F	C14-C15-C87-O25
6	J	101	M12	C2-C3-C4-C5
6	I	101	M12	C6-C7-C8-C9
6	I	101	M12	C4-C5-C6-C7
6	I	101	M12	C2-C3-C4-C5
4	B	802	JEF	C36-C37-O12-C38
4	C	801	JEF	C19-C20-O-C
7	G	103	MAN	C4-C5-C6-O6
4	A	802	JEF	O11-C36-C37-O12

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Mol	Chain	Res	Type	Atoms
4	B	802	JEF	C37-C36-O11-C33
4	C	801	JEF	O10-C19-C20-O
4	C	802	JEF	O11-C36-C37-O12
4	B	802	JEF	C18-C-O-C20
4	C	802	JEF	C34-C33-O11-C36
6	I	101	M12	C11-C10-C9-C8
6	J	101	M12	C4-C5-C6-C7
4	A	801	JEF	C36-C37-O12-C38
5	H	101	F8F	C14-C15-C87-O24
6	I	101	M12	C12-C10-C9-C8

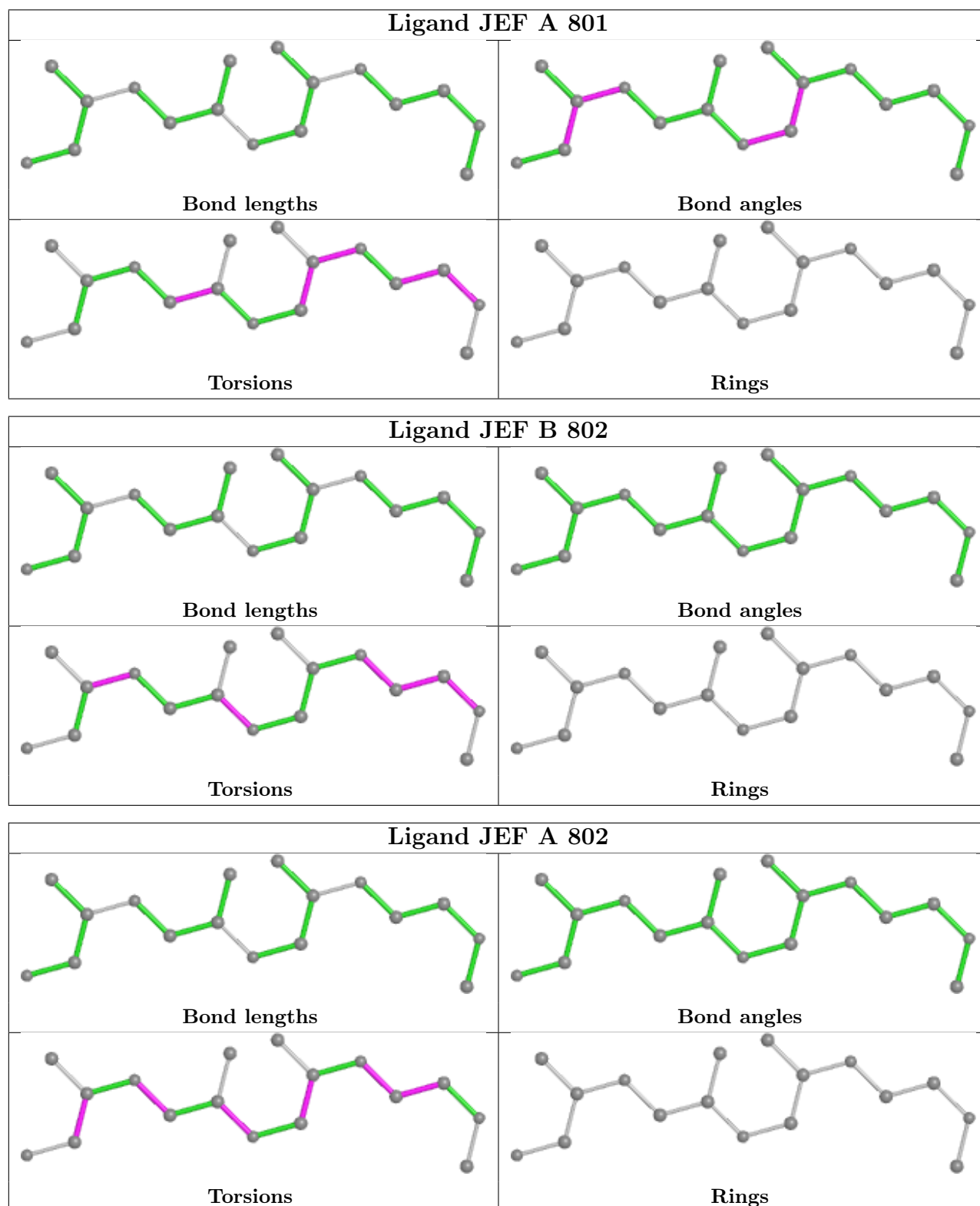
There are no ring outliers.

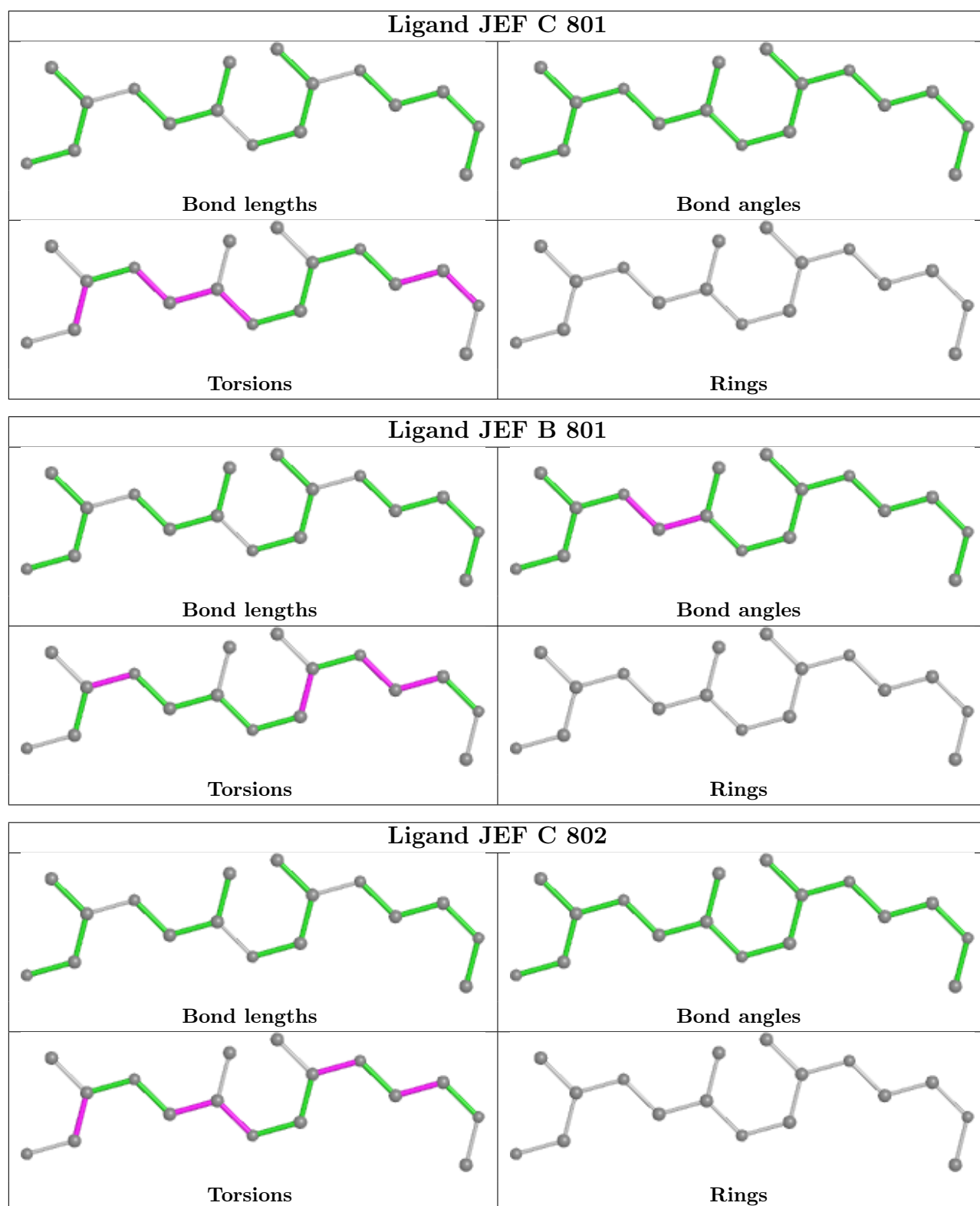
16 monomers are involved in 55 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	G	102	M12	2	0
7	H	103	MAN	1	0
9	J	103	WOO	2	0
4	A	801	JEF	10	0
7	G	103	MAN	1	0
4	B	802	JEF	9	0
8	I	102	F8X	1	0
4	A	802	JEF	3	0
4	C	801	JEF	10	0
9	I	103	WOO	2	0
4	B	801	JEF	3	0
6	I	101	M12	1	0
7	F	103	MAN	1	0
6	F	102	M12	2	0
4	C	802	JEF	5	0
6	H	102	M12	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 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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	581/585 (99%)	-0.53	3 (0%) 91 88	32, 54, 99, 190	0
1	B	581/585 (99%)	-0.17	32 (5%) 25 16	29, 59, 174, 221	0
1	C	581/585 (99%)	-0.51	1 (0%) 95 94	29, 50, 95, 141	0
2	F	1/8 (12%)	-0.69	0 100 100	92, 92, 92, 92	0
2	G	1/8 (12%)	-0.24	0 100 100	101, 101, 101, 101	0
2	H	1/8 (12%)	0.01	0 100 100	83, 83, 83, 83	0
3	I	1/8 (12%)	-0.24	0 100 100	73, 73, 73, 73	0
3	J	1/8 (12%)	-0.05	0 100 100	64, 64, 64, 64	0
All	All	1748/1795 (97%)	-0.40	36 (2%) 63 54	29, 54, 123, 221	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	516	LEU	4.7
1	B	563	ASP	4.6
1	B	507	PHE	4.4
1	B	562	ASP	4.2
1	B	551	PHE	4.0
1	B	561	ALA	4.0
1	B	559	CYS	3.7
1	B	513	ILE	3.7
1	B	535	HIS	3.6
1	B	539	ALA	3.4
1	B	502	PHE	3.2
1	B	565	GLU	3.1
1	B	554	PHE	2.9
1	B	509	PHE	2.9
1	B	504	ALA	2.8
1	B	2	ALA	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	562	ASP	2.6
1	B	560	LYS	2.6
1	B	541	LYS	2.6
1	A	564	LYS	2.5
1	B	506	THR	2.4
1	B	508	THR	2.4
1	B	569	ALA	2.4
1	B	83	THR	2.4
1	B	558	CYS	2.4
1	B	582	ALA	2.3
1	B	519	LYS	2.2
1	A	562	ASP	2.2
1	B	515	THR	2.2
1	B	501	GLU	2.2
1	A	2	ALA	2.1
1	B	581	ALA	2.1
1	B	548	MET	2.1
1	B	544	LEU	2.1
1	B	552	ALA	2.1
1	B	510	HIS	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [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
2	HCL	G	3	13/14	0.78	0.22	98,107,118,124	0
2	HCL	F	3	13/14	0.80	0.23	92,106,127,143	0
2	D4P	G	5	11/12	0.83	0.20	71,91,99,100	0
2	5PG	G	1	12/13	0.84	0.25	102,110,115,116	0
3	5PG	J	1	12/13	0.84	0.20	67,87,107,127	0
2	HCL	H	3	13/14	0.86	0.24	83,98,125,143	0
2	D4P	G	4	11/12	0.86	0.19	93,103,109,113	0
2	D3P	G	7	12/13	0.87	0.20	60,82,103,123	0
2	5PG	F	1	12/13	0.89	0.23	84,99,110,122	0
3	5PG	I	1	12/13	0.89	0.27	83,96,115,120	0
2	OMZ	G	6	14/15	0.89	0.23	91,100,107,116	0
3	HCL	J	3	13/14	0.89	0.21	78,91,120,139	0
2	5PG	H	1	12/13	0.90	0.21	70,86,91,104	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	HCL	I	3	13/14	0.91	0.19	81,88,110,136	0
2	D4P	H	4	11/12	0.92	0.13	69,74,81,89	0
2	D4P	F	4	11/12	0.92	0.17	71,75,93,95	0
2	OMZ	F	6	14/15	0.92	0.20	79,83,96,128	0
2	D3P	F	7	12/13	0.93	0.14	69,86,100,102	0
2	D4P	F	5	11/12	0.93	0.18	72,85,96,98	0
3	F93	I	6	14/15	0.93	0.17	56,72,88,111	0
3	D3P	I	7	12/13	0.93	0.14	62,67,71,82	0
2	OMZ	H	6	14/15	0.94	0.15	63,74,87,108	0
3	F93	J	6	14/15	0.94	0.22	54,62,80,109	0
3	D4P	I	5	11/12	0.94	0.12	57,64,72,82	0
3	D4P	I	4	11/12	0.95	0.11	43,51,72,92	0
3	D3P	J	7	12/13	0.95	0.18	50,61,75,76	0
2	D4P	H	5	11/12	0.96	0.16	67,80,88,99	0
3	D4P	J	4	11/12	0.96	0.12	36,51,66,86	0
2	D3P	H	7	12/13	0.96	0.11	55,70,82,91	0
3	D4P	J	5	11/12	0.96	0.13	46,48,66,77	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

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.

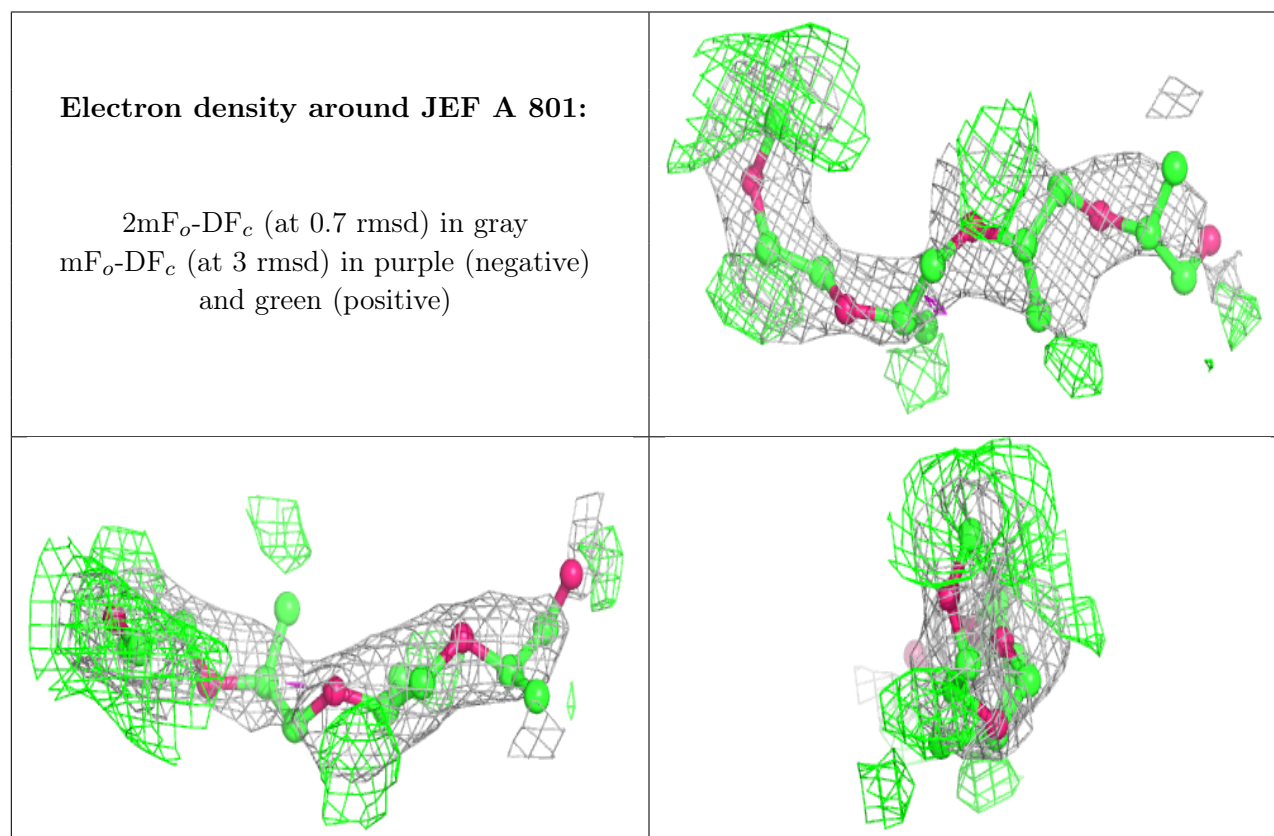
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	JEF	A	801	17/41	0.77	0.32	69,85,113,115	0
4	JEF	B	802	17/41	0.77	0.31	57,92,101,103	0
4	JEF	C	801	17/41	0.81	0.29	52,80,100,102	0
7	MAN	G	103	11/12	0.82	0.30	95,121,134,145	0
4	JEF	A	802	17/41	0.83	0.27	76,101,117,122	0
4	JEF	C	802	17/41	0.87	0.25	59,85,102,105	0
4	JEF	B	801	17/41	0.89	0.27	68,96,103,105	0
7	MAN	H	103	11/12	0.89	0.17	94,98,108,117	0
9	WOO	I	103	11/12	0.89	0.18	80,85,111,112	0
5	F8F	F	101	12/13	0.90	0.14	89,105,115,116	0
5	F8F	H	101	12/13	0.90	0.15	84,101,113,118	0

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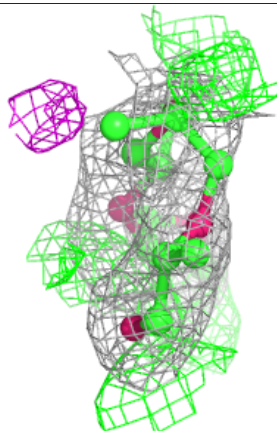
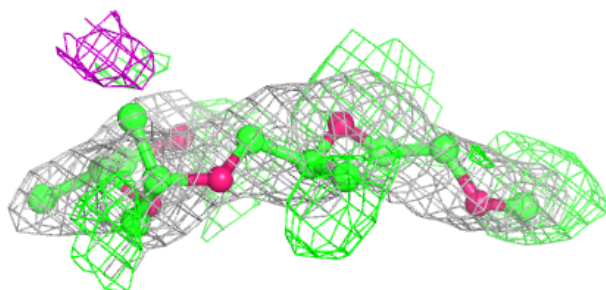
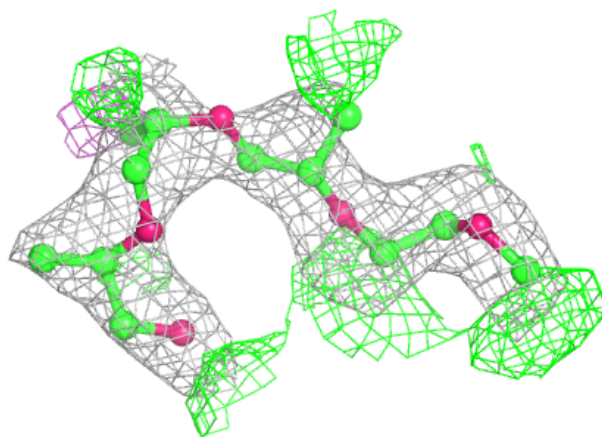
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
7	MAN	F	103	11/12	0.90	0.12	87,102,107,108	0
5	F8F	G	101	12/13	0.91	0.15	89,96,107,115	0
9	WOO	J	103	11/12	0.91	0.19	68,77,95,103	0
6	M12	H	102	13/14	0.92	0.26	43,53,84,89	0
6	M12	G	102	13/14	0.92	0.33	54,69,91,93	0
8	F8X	I	102	12/13	0.94	0.15	62,78,89,93	0
8	F8X	J	102	12/13	0.94	0.17	62,72,82,89	0
6	M12	J	101	13/14	0.95	0.32	63,67,75,76	0
6	M12	F	102	13/14	0.95	0.27	60,69,87,88	0
6	M12	I	101	13/14	0.96	0.34	60,70,78,78	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.

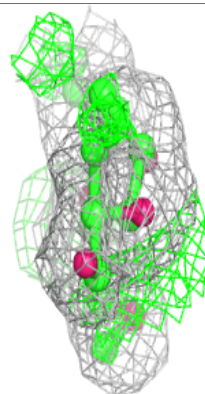
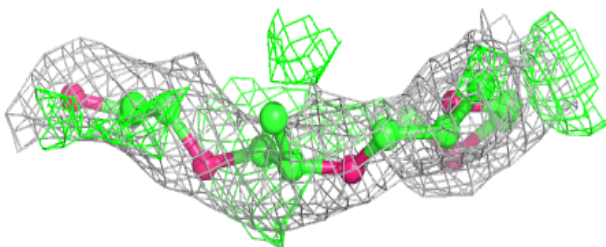
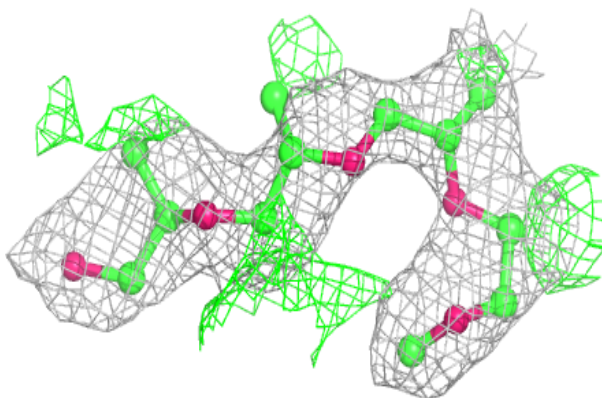


Electron density around JEF B 802:

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

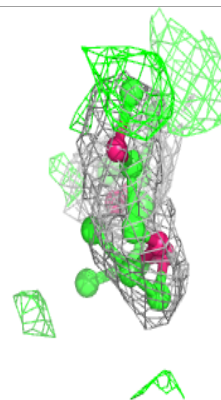
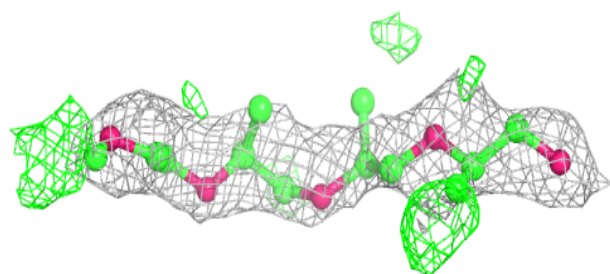
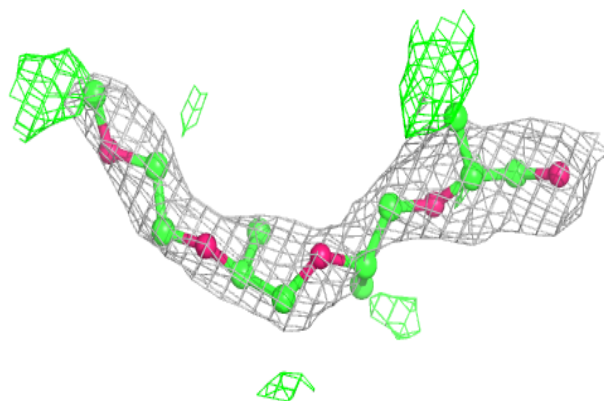
**Electron density around JEF C 801:**

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

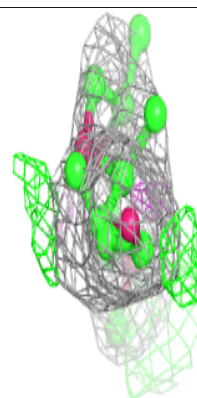
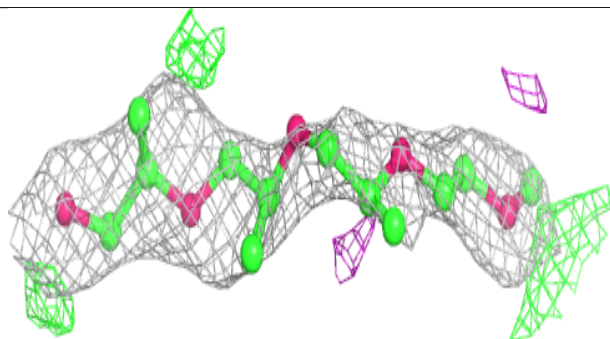
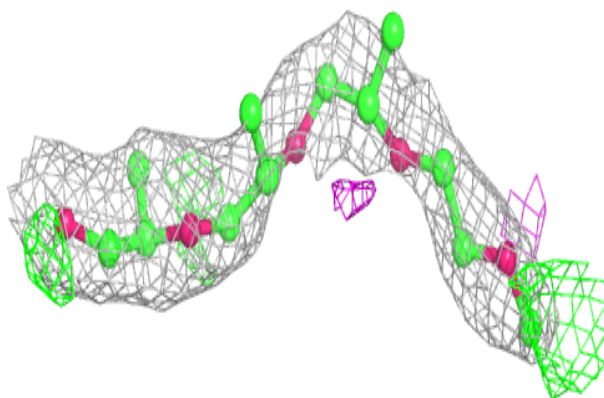


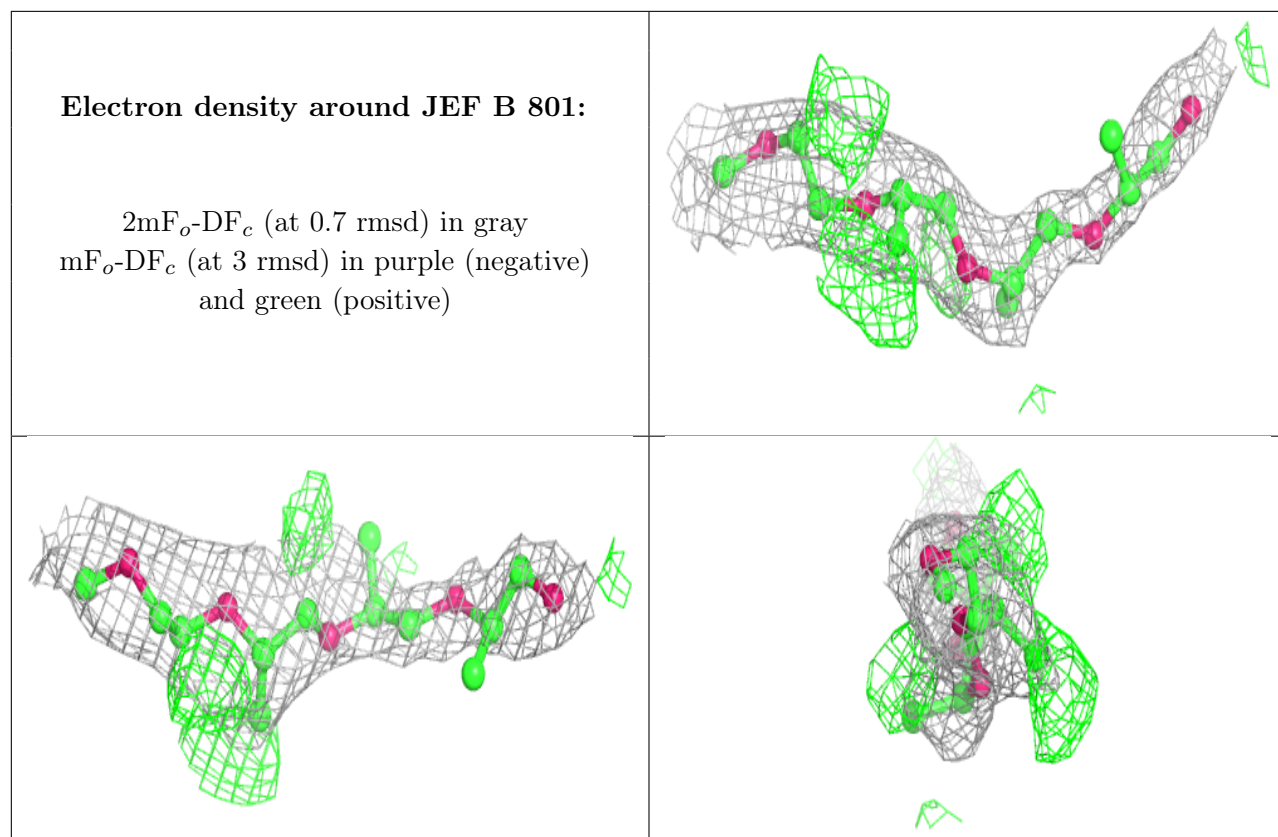
Electron density around JEF A 802:

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

**Electron density around JEF C 802:**

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





6.5 Other polymers [i](#)

There are no such residues in this entry.