



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 25, 2026 – 05:13 AM EDT

PDB ID : 2C57 / pdb_00002c57
Title : H.pylori type II dehydroquinase in complex with FA1
Authors : Robinson, D.A.; Lapthorn, A.J.
Deposited on : 2005-10-26
Resolution : 3.10 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

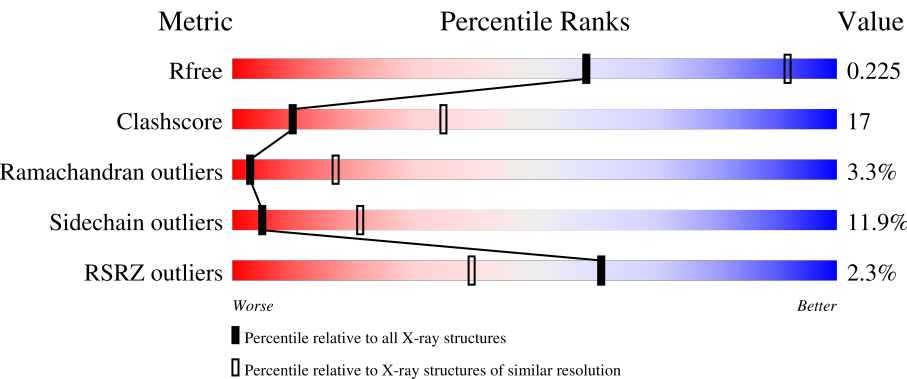
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1456 (3.10-3.10)
Clashscore	190562	1539 (3.10-3.10)
Ramachandran outliers	187476	1467 (3.10-3.10)
Sidechain outliers	187428	1467 (3.10-3.10)
RSRZ outliers	180081	1456 (3.10-3.10)

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	180	2% 44% 37% 9% • 9%
1	B	180	% 51% 27% 6% • 15%
1	C	180	6% 54% 24% 6% • 15%
1	D	180	% 46% 34% 10% • 9%
1	E	180	% 49% 30% 5% • 15%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	180	
1	G	180	
1	H	180	
1	I	180	
1	J	180	
1	K	180	
1	L	180	

2 Entry composition

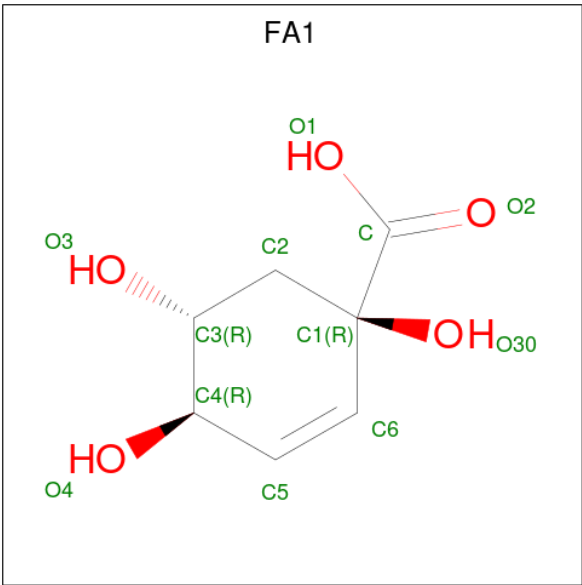
There are 2 unique types of molecules in this entry. The entry contains 14368 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 3-DEHYDROQUINATE DEHYDRATASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	164	Total	C	N	O	S	0	0	0
			1250	787	215	237	11			
1	B	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	C	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	D	164	Total	C	N	O	S	0	0	0
			1250	787	215	237	11			
1	E	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	F	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	G	164	Total	C	N	O	S	0	0	0
			1250	787	215	237	11			
1	H	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	I	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	J	164	Total	C	N	O	S	0	0	0
			1250	787	215	237	11			
1	K	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			
1	L	153	Total	C	N	O	S	0	0	0
			1153	732	190	221	10			

- Molecule 2 is 2,3 -ANHYDRO-QUINIC ACID (CCD ID: FA1) (formula: C₇H₁₀O₅).

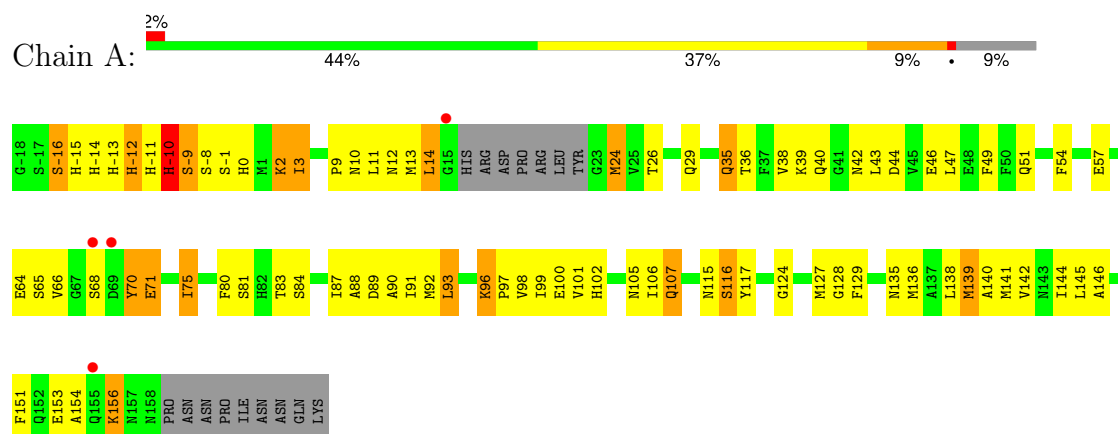


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			12	7	5		
2	B	1	Total	C	O	0	0
			12	7	5		
2	C	1	Total	C	O	0	0
			12	7	5		
2	D	1	Total	C	O	0	0
			12	7	5		
2	E	1	Total	C	O	0	0
			12	7	5		
2	F	1	Total	C	O	0	0
			12	7	5		
2	G	1	Total	C	O	0	0
			12	7	5		
2	H	1	Total	C	O	0	0
			12	7	5		
2	I	1	Total	C	O	0	0
			12	7	5		
2	J	1	Total	C	O	0	0
			12	7	5		
2	K	1	Total	C	O	0	0
			12	7	5		
2	L	1	Total	C	O	0	0
			12	7	5		

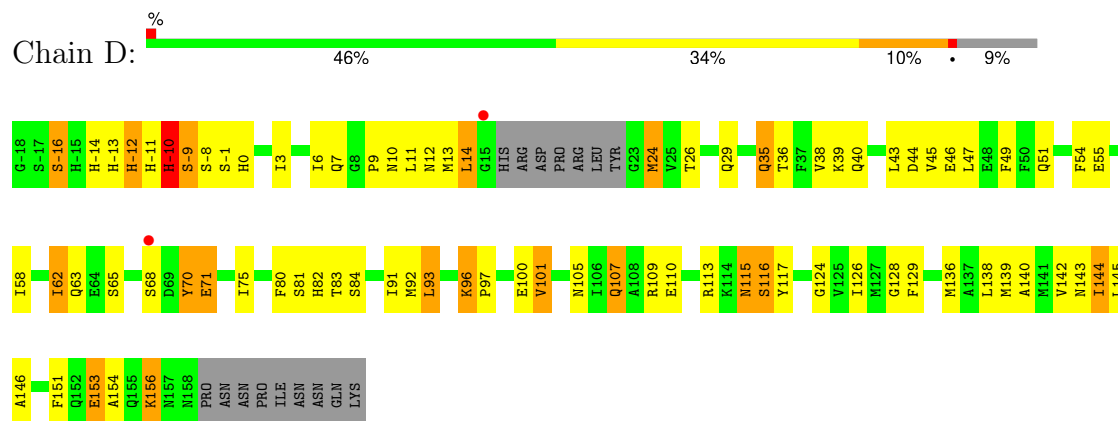
3 Residue-property plots [i](#)

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.

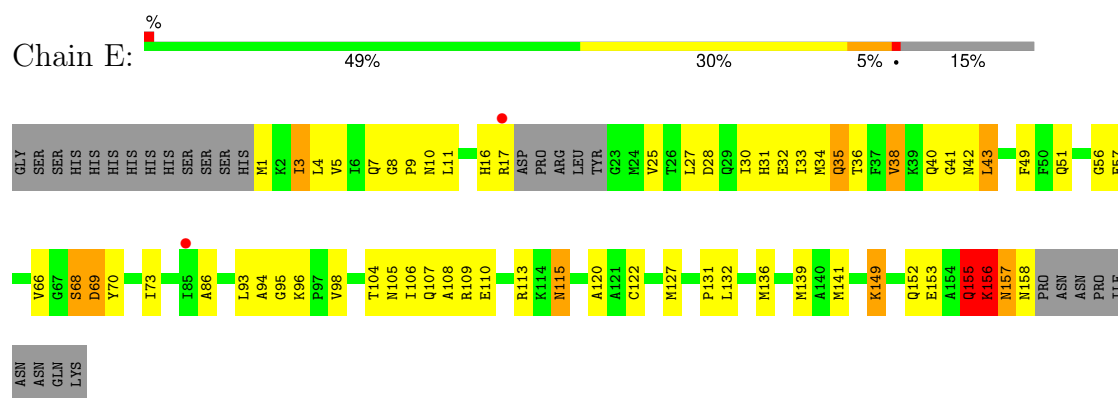
• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE



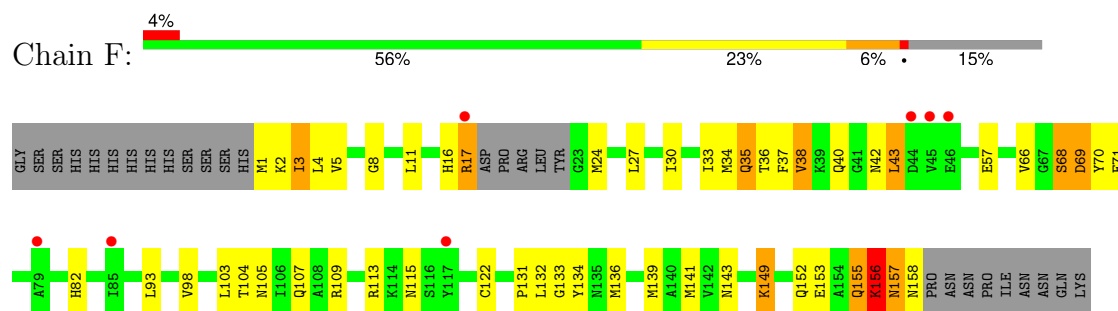
• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE



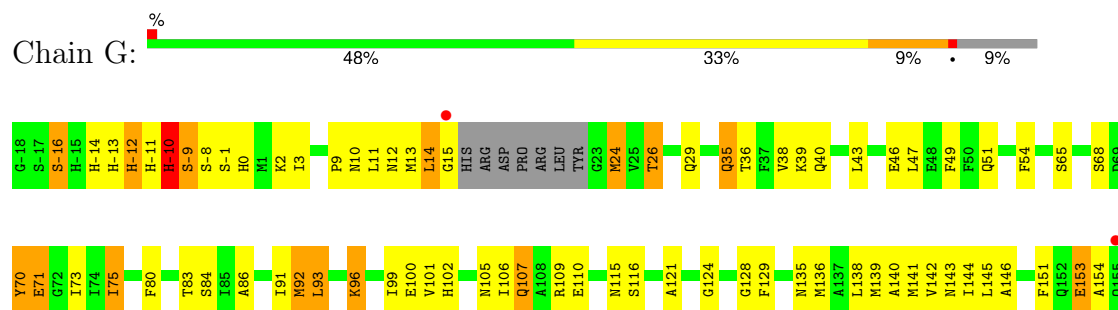
• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE

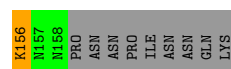


• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE

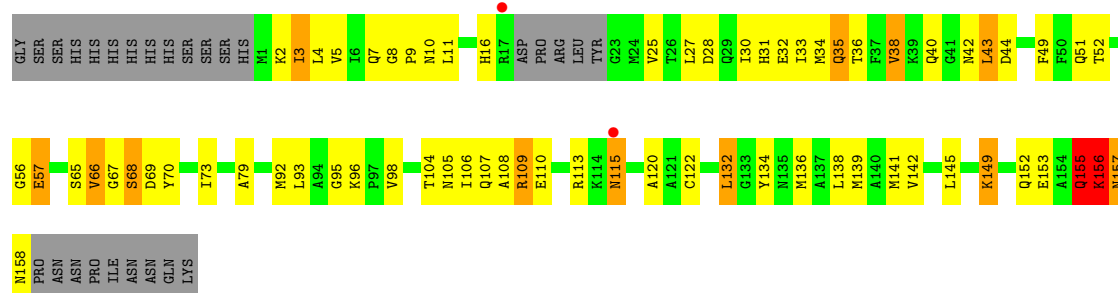


• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE

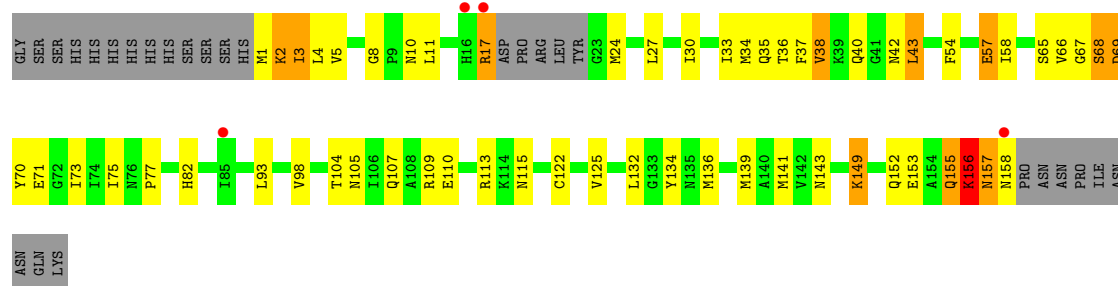




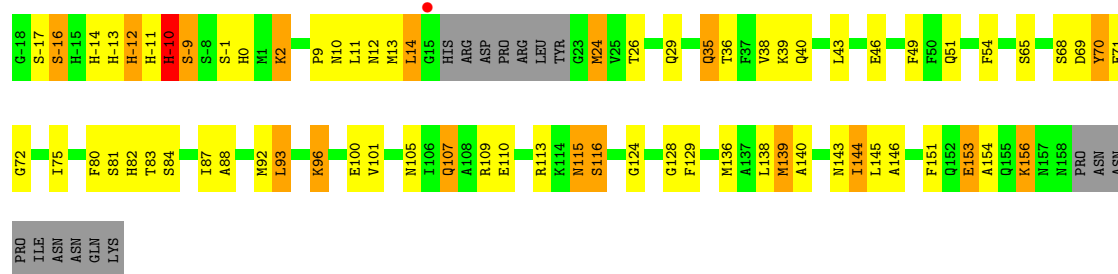
• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE



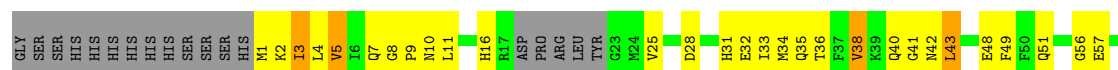
• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE

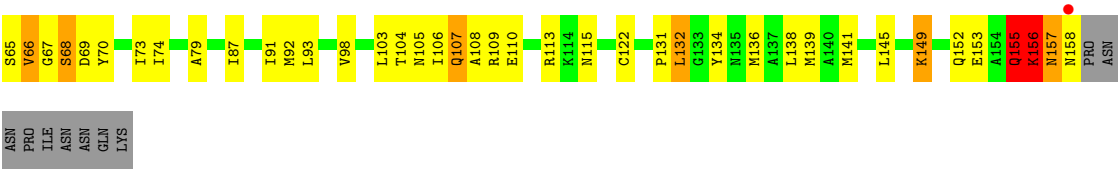


• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE

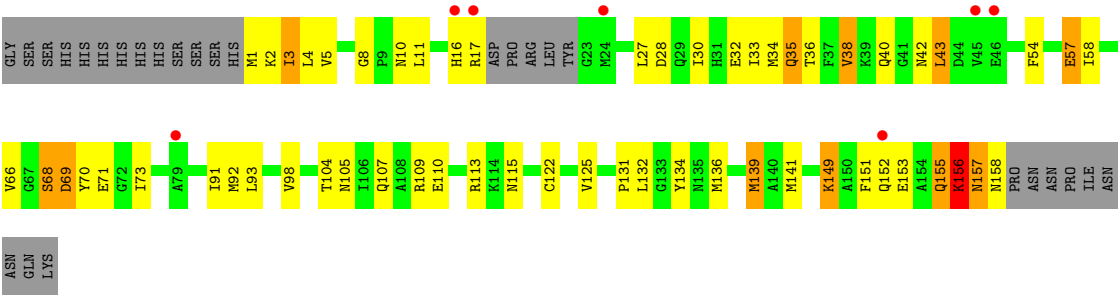


• Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE





● Molecule 1: 3-DEHYDROQUINATE DEHYDRATASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α , β , γ	103.86Å 103.86Å 217.53Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	25.00 – 3.10 25.00 – 3.10	Depositor EDS
% Data completeness (in resolution range)	83.8 (25.00-3.10) 83.7 (25.00-3.10)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.44 (at 3.11Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.207 , 0.237 0.194 , 0.225	Depositor DCC
R_{free} test set	3968 reflections (8.35%)	wwPDB-VP
Wilson B-factor (Å ²)	63.9	Xtriage
Anisotropy	0.020	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 60.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.459 for -h,-k,l 0.468 for h,-h-k,-l 0.460 for -k,-h,-l	Xtriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	14368	wwPDB-VP
Average B, all atoms (Å ²)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.99% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: FA1

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	1.51	9/1272 (0.7%)	1.43	6/1713 (0.4%)
1	B	1.40	3/1169 (0.3%)	1.34	6/1577 (0.4%)
1	C	1.23	2/1169 (0.2%)	1.29	9/1577 (0.6%)
1	D	1.50	7/1272 (0.6%)	1.45	9/1713 (0.5%)
1	E	1.36	8/1169 (0.7%)	1.34	4/1577 (0.3%)
1	F	1.26	3/1169 (0.3%)	1.27	8/1577 (0.5%)
1	G	1.47	5/1272 (0.4%)	1.41	7/1713 (0.4%)
1	H	1.41	7/1169 (0.6%)	1.38	8/1577 (0.5%)
1	I	1.26	3/1169 (0.3%)	1.26	7/1577 (0.4%)
1	J	1.47	5/1272 (0.4%)	1.41	5/1713 (0.3%)
1	K	1.37	5/1169 (0.4%)	1.36	5/1577 (0.3%)
1	L	1.25	3/1169 (0.3%)	1.28	8/1577 (0.5%)
All	All	1.38	60/14440 (0.4%)	1.36	82/19468 (0.4%)

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	J	24	MET	CA-C	7.73	1.62	1.52
1	B	17	ARG	CA-CB	7.60	1.68	1.53
1	E	17	ARG	CA-CB	7.42	1.68	1.53
1	D	58	ILE	CA-CB	-7.24	1.45	1.54
1	A	24	MET	CA-C	7.22	1.62	1.52
1	D	24	MET	CA-C	6.89	1.61	1.52
1	K	16	HIS	CA-C	6.68	1.60	1.52
1	F	24	MET	CA-CB	6.64	1.60	1.52
1	B	16	HIS	CA-C	6.55	1.61	1.52
1	F	17	ARG	CA-CB	6.16	1.65	1.53
1	A	75	ILE	C-O	6.13	1.30	1.24
1	D	115	ASN	CB-CG	6.13	1.67	1.52
1	I	24	MET	CA-CB	6.12	1.60	1.52
1	A	92	MET	SD-CE	6.08	1.94	1.79

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	K	79	ALA	CA-C	6.03	1.60	1.52
1	D	3	ILE	CA-CB	6.03	1.62	1.54
1	L	91	ILE	CA-CB	-6.01	1.47	1.54
1	H	25	VAL	CA-CB	5.99	1.62	1.54
1	B	106	ILE	CA-CB	-5.94	1.47	1.54
1	A	24	MET	N-CA	5.91	1.53	1.46
1	H	16	HIS	CA-C	5.91	1.60	1.52
1	H	52	THR	CA-C	-5.87	1.45	1.52
1	G	24	MET	CA-C	5.86	1.60	1.52
1	J	69	ASP	CA-C	-5.81	1.48	1.52
1	C	17	ARG	CA-CB	5.79	1.65	1.53
1	E	115	ASN	CA-C	5.69	1.59	1.52
1	K	25	VAL	N-CA	5.64	1.52	1.46
1	L	16	HIS	CA-C	5.62	1.59	1.52
1	L	125	VAL	CA-CB	-5.61	1.47	1.54
1	G	24	MET	N-CA	5.60	1.52	1.46
1	E	16	HIS	CA-C	5.57	1.59	1.52
1	D	6	ILE	CA-CB	-5.55	1.47	1.54
1	E	115	ASN	CB-CG	5.49	1.65	1.52
1	I	17	ARG	CA-CB	5.48	1.64	1.53
1	H	120	ALA	CA-CB	-5.46	1.44	1.53
1	K	74	ILE	CA-CB	-5.45	1.47	1.54
1	F	16	HIS	CA-C	5.45	1.59	1.52
1	H	115	ASN	CB-CG	5.44	1.65	1.52
1	H	106	ILE	CA-CB	-5.43	1.47	1.54
1	D	24	MET	N-CA	5.43	1.52	1.46
1	E	86	ALA	CA-CB	-5.41	1.45	1.53
1	D	92	MET	SD-CE	5.39	1.93	1.79
1	I	125	VAL	CA-CB	-5.38	1.47	1.54
1	G	15	GLY	N-CA	5.38	1.54	1.45
1	J	2	LYS	CA-C	5.38	1.59	1.52
1	C	76	ASN	N-CA	-5.37	1.41	1.46
1	A	99	ILE	C-O	5.37	1.29	1.24
1	J	115	ASN	CB-CG	5.36	1.65	1.52
1	K	106	ILE	CA-CB	-5.34	1.47	1.54
1	G	75	ILE	C-O	5.27	1.29	1.24
1	E	25	VAL	CA-C	5.26	1.59	1.52
1	A	3	ILE	CA-C	5.22	1.58	1.52
1	A	127	MET	N-CA	-5.20	1.39	1.45
1	E	120	ALA	CA-CB	-5.15	1.44	1.53
1	J	24	MET	N-CA	5.10	1.52	1.46
1	G	86	ALA	CA-CB	-5.09	1.45	1.53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	2	LYS	CA-C	5.08	1.59	1.52
1	H	25	VAL	N-CA	5.07	1.52	1.46
1	E	106	ILE	CA-CB	-5.04	1.48	1.54
1	A	98	VAL	CA-C	5.03	1.58	1.52

All (82) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	38	VAL	CB-CA-C	-7.84	101.76	111.87
1	H	38	VAL	CB-CA-C	-7.70	101.94	111.87
1	E	38	VAL	CB-CA-C	-7.36	102.40	112.04
1	A	71	GLU	N-CA-C	-7.17	102.86	113.61
1	K	38	VAL	CB-CA-C	-7.13	102.67	111.87
1	J	92	MET	CG-SD-CE	7.03	116.37	100.90
1	D	92	MET	CG-SD-CE	6.88	116.04	100.90
1	A	39	LYS	N-CA-C	-6.82	103.02	111.75
1	H	3	ILE	N-CA-C	6.81	117.70	108.17
1	C	155	GLN	N-CA-C	6.79	118.56	111.03
1	I	38	VAL	CB-CA-C	-6.58	103.25	111.94
1	D	91	ILE	N-CA-C	6.48	117.17	110.36
1	A	84	SER	N-CA-C	6.44	119.72	108.52
1	F	38	VAL	CB-CA-C	-6.41	103.65	112.04
1	J	-10	HIS	N-CA-C	6.40	121.35	112.45
1	D	117	TYR	N-CA-C	-6.40	103.82	111.69
1	D	39	LYS	N-CA-C	-6.36	103.61	111.75
1	C	38	VAL	CB-CA-C	-6.28	103.64	111.94
1	D	62	ILE	N-CA-C	-6.25	104.66	110.53
1	I	143	ASN	N-CA-C	6.21	118.05	111.28
1	D	71	GLU	N-CA-C	-6.16	104.38	113.61
1	F	2	LYS	N-CA-C	6.15	119.27	109.24
1	L	38	VAL	CB-CA-C	-6.09	103.90	111.94
1	L	2	LYS	N-CA-C	6.05	119.11	109.24
1	D	-10	HIS	N-CA-C	6.00	120.79	112.45
1	G	84	SER	N-CA-C	5.96	119.19	108.17
1	F	143	ASN	N-CA-C	5.92	117.40	111.07
1	H	155	GLN	N-CA-C	5.88	118.83	111.24
1	E	155	GLN	N-CA-C	5.81	118.74	111.24
1	A	-10	HIS	N-CA-C	5.81	120.53	112.45
1	H	3	ILE	CB-CA-C	-5.81	102.17	110.83
1	G	71	GLU	N-CA-C	-5.81	104.89	113.61
1	G	39	LYS	N-CA-C	-5.77	104.36	111.75
1	K	92	MET	N-CA-C	5.77	119.57	112.54

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	2	LYS	N-CA-C	5.74	118.08	108.73
1	I	2	LYS	N-CA-C	5.71	118.55	109.24
1	E	3	ILE	N-CA-C	5.70	116.15	108.17
1	C	2	LYS	N-CA-C	5.67	118.49	109.24
1	E	3	ILE	CB-CA-C	-5.67	102.39	110.83
1	J	39	LYS	N-CA-C	-5.66	104.50	111.75
1	B	155	GLN	N-CA-C	5.65	118.53	111.24
1	K	155	GLN	N-CA-C	5.63	118.51	111.24
1	K	3	ILE	CB-CA-C	-5.61	102.28	110.81
1	F	103	LEU	N-CA-C	-5.56	105.14	111.14
1	G	-10	HIS	N-CA-C	5.54	120.16	112.45
1	L	92	MET	CB-CG-SD	-5.51	96.17	112.70
1	C	69	ASP	N-CA-C	5.49	122.48	110.80
1	J	84	SER	N-CA-C	5.48	118.31	108.17
1	B	3	ILE	N-CA-C	5.46	115.76	108.11
1	C	3	ILE	N-CA-C	5.46	115.75	108.11
1	L	57	GLU	CA-CB-CG	-5.42	103.27	114.10
1	H	57	GLU	CA-CB-CG	-5.38	103.34	114.10
1	F	69	ASP	N-CA-C	5.36	122.22	110.80
1	F	3	ILE	N-CA-C	5.34	116.17	108.48
1	G	91	ILE	N-CA-C	5.34	115.54	110.42
1	C	57	GLU	CA-CB-CG	-5.33	103.43	114.10
1	C	103	LEU	N-CA-C	-5.33	105.39	111.14
1	B	69	ASP	N-CA-C	5.31	122.12	110.80
1	A	91	ILE	N-CA-C	5.31	115.94	110.36
1	G	73	ILE	N-CA-C	5.28	116.08	108.48
1	G	92	MET	CG-SD-CE	5.27	112.50	100.90
1	L	69	ASP	N-CA-C	5.27	122.02	110.80
1	I	69	ASP	N-CA-C	5.22	121.92	110.80
1	I	3	ILE	N-CA-C	5.22	115.99	108.48
1	H	92	MET	CB-CG-SD	-5.21	97.07	112.70
1	C	3	ILE	CB-CA-C	-5.20	102.94	110.63
1	C	92	MET	N-CA-C	5.20	118.88	112.54
1	K	2	LYS	N-CA-C	5.19	117.70	109.24
1	H	109	ARG	CA-CB-CG	-5.16	103.78	114.10
1	J	69	ASP	O-C-N	5.15	127.69	121.76
1	A	117	TYR	N-CA-C	-5.15	105.36	111.69
1	F	57	GLU	CA-CB-CG	-5.12	103.87	114.10
1	D	55	GLU	N-CA-C	-5.11	105.79	111.36
1	B	3	ILE	CB-CA-C	-5.11	103.07	110.63
1	I	58	ILE	N-CA-C	-5.10	105.44	111.00
1	L	58	ILE	N-CA-C	-5.10	105.74	110.53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	84	SER	N-CA-C	5.09	117.59	108.17
1	L	3	ILE	CB-CA-C	-5.08	103.06	110.62
1	I	57	GLU	CA-CB-CG	-5.07	103.96	114.10
1	L	151	PHE	N-CA-C	5.07	116.61	111.14
1	B	2	LYS	N-CA-C	5.02	117.42	109.24
1	F	3	ILE	CB-CA-C	-5.01	103.16	110.62

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1250	0	1214	58	1
1	B	1153	0	1132	41	0
1	C	1153	0	1132	35	0
1	D	1250	0	1214	52	0
1	E	1153	0	1132	38	0
1	F	1153	0	1132	32	0
1	G	1250	0	1214	53	0
1	H	1153	0	1132	43	0
1	I	1153	0	1132	38	0
1	J	1250	0	1214	50	1
1	K	1153	0	1132	45	0
1	L	1153	0	1132	37	0
2	A	12	0	9	0	0
2	B	12	0	9	1	0
2	C	12	0	9	1	0
2	D	12	0	9	0	0
2	E	12	0	9	1	0
2	F	12	0	9	1	0
2	G	12	0	9	0	0
2	H	12	0	9	1	0
2	I	12	0	9	1	0
2	J	12	0	9	0	0
2	K	12	0	9	1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	L	12	0	9	1	0
All	All	14368	0	14020	494	1

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 17.

All (494) 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:B:152:GLN:O	1:B:156:LYS:HG2	1.72	0.90
1:F:152:GLN:O	1:F:156:LYS:HG2	1.73	0.89
1:H:152:GLN:O	1:H:156:LYS:HG2	1.73	0.88
1:E:152:GLN:O	1:E:156:LYS:HG2	1.74	0.87
1:L:152:GLN:O	1:L:156:LYS:HG2	1.73	0.87
1:K:152:GLN:O	1:K:156:LYS:HG2	1.76	0.85
1:I:152:GLN:O	1:I:156:LYS:HG2	1.75	0.85
1:J:-10:HIS:O	1:J:-9:SER:OG	1.94	0.84
1:C:152:GLN:O	1:C:156:LYS:HG2	1.78	0.83
1:A:-10:HIS:O	1:A:-9:SER:OG	1.96	0.82
1:D:-10:HIS:O	1:D:-9:SER:OG	2.00	0.79
1:G:-10:HIS:O	1:G:-9:SER:OG	2.00	0.78
1:A:54:PHE:HZ	1:B:57:GLU:HG3	1.52	0.74
1:E:3:ILE:HD12	1:E:141:MET:HG2	1.71	0.72
1:A:-13:HIS:O	1:A:-12:HIS:CB	2.37	0.72
1:B:3:ILE:HD12	1:B:141:MET:HG2	1.69	0.72
1:K:3:ILE:HD12	1:K:141:MET:HG2	1.70	0.71
1:G:-13:HIS:O	1:G:-12:HIS:CB	2.38	0.71
1:K:8:GLY:H	1:K:11:LEU:HD12	1.53	0.70
1:D:-13:HIS:O	1:D:-12:HIS:CB	2.39	0.70
1:G:-13:HIS:O	1:G:-12:HIS:HB2	1.92	0.69
1:J:153:GLU:HA	1:J:153:GLU:OE2	1.92	0.69
1:A:-13:HIS:O	1:A:-12:HIS:HB2	1.92	0.69
1:F:113:ARG:HD3	2:F:1159:FA1:O3	1.93	0.68
1:E:38:VAL:HA	1:E:43:LEU:HD12	1.75	0.68
1:B:38:VAL:HA	1:B:43:LEU:HD12	1.74	0.67
1:H:8:GLY:H	1:H:11:LEU:HD12	1.59	0.67
1:G:-10:HIS:O	1:G:-9:SER:CB	2.41	0.67
1:A:-10:HIS:O	1:A:-9:SER:CB	2.42	0.67
1:D:-10:HIS:O	1:D:-9:SER:CB	2.42	0.67
1:G:9:PRO:O	1:G:10:ASN:HB2	1.93	0.67
1:J:-13:HIS:O	1:J:-12:HIS:CB	2.41	0.67

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:28:ASP:O	1:B:32:GLU:HG2	1.94	0.67
1:H:3:ILE:HD12	1:H:141:MET:HG2	1.76	0.67
1:H:38:VAL:HA	1:H:43:LEU:HD12	1.74	0.67
1:C:38:VAL:HA	1:C:43:LEU:HD12	1.76	0.66
1:K:38:VAL:HA	1:K:43:LEU:HD12	1.75	0.66
1:I:38:VAL:HA	1:I:43:LEU:HD12	1.77	0.66
1:J:-10:HIS:O	1:J:-9:SER:CB	2.42	0.66
1:D:54:PHE:HZ	1:E:57:GLU:HG3	1.61	0.65
1:L:38:VAL:HA	1:L:43:LEU:HD12	1.78	0.65
1:K:28:ASP:O	1:K:32:GLU:HG2	1.96	0.65
1:G:153:GLU:OE2	1:G:153:GLU:HA	1.96	0.65
1:J:-13:HIS:O	1:J:-12:HIS:HB2	1.97	0.65
1:D:153:GLU:OE2	1:D:153:GLU:HA	1.97	0.65
1:D:151:PHE:O	1:D:154:ALA:HB3	1.97	0.64
1:J:9:PRO:O	1:J:10:ASN:HB2	1.97	0.64
1:K:132:LEU:O	1:K:136:MET:HG3	1.97	0.64
1:B:98:VAL:HG12	1:B:122:CYS:SG	2.37	0.64
1:E:110:GLU:OE1	1:E:113:ARG:NE	2.28	0.64
1:D:-12:HIS:O	1:D:-11:HIS:HB3	1.97	0.64
1:G:11:LEU:O	1:G:14:LEU:HD12	1.97	0.64
1:D:54:PHE:CZ	1:E:57:GLU:HG3	2.33	0.63
1:E:8:GLY:H	1:E:11:LEU:HD12	1.63	0.63
1:D:11:LEU:O	1:D:14:LEU:HD12	2.00	0.62
1:E:132:LEU:O	1:E:136:MET:HG3	1.99	0.62
1:K:36:THR:O	1:K:40:GLN:HB3	1.99	0.62
1:D:-13:HIS:O	1:D:-12:HIS:HB2	2.00	0.62
1:J:151:PHE:O	1:J:154:ALA:HB3	1.98	0.62
1:B:36:THR:O	1:B:40:GLN:HB3	1.99	0.62
1:C:36:THR:O	1:C:40:GLN:HB3	2.00	0.62
1:F:3:ILE:HD12	1:F:141:MET:HG2	1.82	0.62
1:A:151:PHE:O	1:A:154:ALA:HB3	2.00	0.61
1:E:36:THR:O	1:E:40:GLN:HB3	1.99	0.61
1:A:54:PHE:CZ	1:B:57:GLU:HG3	2.33	0.61
1:A:153:GLU:OE2	1:A:153:GLU:HA	2.00	0.61
1:C:132:LEU:O	1:C:136:MET:HG3	2.00	0.61
1:E:4:LEU:HB2	1:E:70:TYR:CD2	2.36	0.61
1:C:3:ILE:HD12	1:C:141:MET:HG2	1.82	0.61
1:J:54:PHE:HZ	1:K:57:GLU:HG3	1.66	0.61
1:A:9:PRO:O	1:A:10:ASN:HB2	1.98	0.61
1:F:155:GLN:O	1:F:158:ASN:N	2.32	0.61
1:F:38:VAL:HA	1:F:43:LEU:HD12	1.82	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:36:THR:O	1:H:40:GLN:HB3	2.01	0.61
1:H:132:LEU:O	1:H:136:MET:HG3	2.00	0.60
1:K:98:VAL:HG12	1:K:122:CYS:SG	2.41	0.60
1:L:36:THR:O	1:L:40:GLN:HB3	2.02	0.60
1:L:155:GLN:O	1:L:158:ASN:N	2.32	0.60
1:J:12:ASN:HB3	1:J:51:GLN:OE1	2.02	0.60
1:J:54:PHE:CZ	1:K:57:GLU:HG3	2.36	0.60
1:A:38:VAL:HG13	1:A:43:LEU:HB2	1.84	0.60
1:I:36:THR:O	1:I:40:GLN:HB3	2.02	0.60
1:L:132:LEU:O	1:L:136:MET:HG3	2.02	0.60
1:C:4:LEU:HB2	1:C:70:TYR:CD2	2.38	0.59
1:D:93:LEU:HD22	1:F:17:ARG:CB	2.32	0.59
1:B:110:GLU:OE1	1:B:113:ARG:NE	2.33	0.59
1:A:36:THR:O	1:A:40:GLN:CB	2.51	0.59
1:B:113:ARG:HD3	2:B:1159:FA1:O3	2.03	0.59
1:K:110:GLU:OE1	1:K:113:ARG:NE	2.36	0.59
1:C:155:GLN:O	1:C:158:ASN:N	2.35	0.58
1:G:151:PHE:O	1:G:154:ALA:HB3	2.02	0.58
1:G:54:PHE:HZ	1:H:57:GLU:HG3	1.68	0.58
1:G:36:THR:O	1:G:40:GLN:CB	2.51	0.58
1:C:105:ASN:OD1	1:C:107:GLN:HB2	2.04	0.58
1:A:-16:SER:HA	1:A:49:PHE:O	2.03	0.58
1:F:4:LEU:HB2	1:F:70:TYR:CD2	2.39	0.58
1:G:156:LYS:CG	1:G:156:LYS:O	2.52	0.58
1:L:105:ASN:OD1	1:L:107:GLN:HB2	2.04	0.58
1:E:149:LYS:O	1:E:153:GLU:HG3	2.03	0.57
1:I:3:ILE:HD12	1:I:141:MET:HG2	1.85	0.57
1:G:12:ASN:HB3	1:G:51:GLN:OE1	2.04	0.57
1:H:8:GLY:N	1:H:11:LEU:HD12	2.20	0.57
1:I:105:ASN:OD1	1:I:107:GLN:HB2	2.05	0.57
1:J:11:LEU:O	1:J:14:LEU:HD12	2.04	0.57
1:L:3:ILE:HD12	1:L:141:MET:HG2	1.86	0.57
1:D:35:GLN:NE2	1:D:49:PHE:HE2	2.03	0.56
1:J:38:VAL:HG13	1:J:43:LEU:HB2	1.87	0.56
1:G:140:ALA:O	1:G:144:ILE:HG13	2.05	0.56
1:H:28:ASP:O	1:H:32:GLU:HG2	2.05	0.56
1:J:9:PRO:HG3	1:J:80:PHE:CE2	2.40	0.56
1:G:54:PHE:CZ	1:H:57:GLU:HG3	2.40	0.56
1:D:38:VAL:HG13	1:D:43:LEU:HB2	1.87	0.56
1:D:9:PRO:O	1:D:10:ASN:HB2	2.04	0.56
1:F:36:THR:O	1:F:40:GLN:HB3	2.06	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:155:GLN:C	1:L:157:ASN:H	2.14	0.56
1:E:8:GLY:N	1:E:11:LEU:HD12	2.21	0.56
1:J:-14:HIS:NE2	1:J:46:GLU:OE2	2.39	0.55
1:K:4:LEU:HB2	1:K:70:TYR:CD2	2.40	0.55
1:E:98:VAL:HG12	1:E:122:CYS:SG	2.47	0.55
1:A:35:GLN:NE2	1:A:49:PHE:HE2	2.04	0.55
1:K:8:GLY:N	1:K:11:LEU:HD12	2.20	0.55
1:E:155:GLN:O	1:E:158:ASN:N	2.40	0.55
1:F:152:GLN:O	1:F:156:LYS:CG	2.53	0.55
1:I:155:GLN:C	1:I:157:ASN:H	2.15	0.55
1:A:11:LEU:O	1:A:14:LEU:HD12	2.07	0.55
1:I:155:GLN:O	1:I:158:ASN:N	2.38	0.55
1:E:113:ARG:HD3	2:E:1159:FA1:O3	2.07	0.55
1:H:149:LYS:O	1:H:153:GLU:HG3	2.06	0.55
1:I:132:LEU:O	1:I:136:MET:HG3	2.07	0.55
1:K:73:ILE:HB	1:K:98:VAL:HG22	1.88	0.55
1:A:35:GLN:HE21	1:A:49:PHE:HE2	1.55	0.54
1:G:75:ILE:O	1:G:100:GLU:HA	2.06	0.54
1:H:73:ILE:HB	1:H:98:VAL:HG22	1.89	0.54
1:B:132:LEU:O	1:B:136:MET:HG3	2.06	0.54
1:C:113:ARG:HD3	2:C:1159:FA1:O3	2.06	0.54
1:G:-16:SER:HA	1:G:49:PHE:O	2.07	0.54
1:G:-12:HIS:O	1:G:-11:HIS:HB3	2.06	0.54
1:K:113:ARG:HD3	2:K:1159:FA1:O3	2.07	0.54
1:E:104:THR:OG1	1:E:109:ARG:NH1	2.41	0.54
1:J:12:ASN:HB3	1:J:51:GLN:CD	2.32	0.54
1:F:155:GLN:C	1:F:157:ASN:H	2.16	0.54
1:A:36:THR:O	1:A:40:GLN:HB2	2.07	0.54
1:G:-14:HIS:NE2	1:G:46:GLU:OE2	2.41	0.54
1:B:152:GLN:O	1:B:156:LYS:CG	2.51	0.54
1:D:156:LYS:O	1:D:156:LYS:CG	2.56	0.54
1:J:35:GLN:NE2	1:J:49:PHE:HE2	2.05	0.54
1:G:12:ASN:HB3	1:G:51:GLN:CD	2.32	0.53
1:K:149:LYS:O	1:K:153:GLU:HG3	2.08	0.53
1:A:75:ILE:O	1:A:100:GLU:HA	2.09	0.53
1:G:35:GLN:NE2	1:G:49:PHE:HE2	2.06	0.53
1:I:4:LEU:HB2	1:I:70:TYR:CD2	2.43	0.53
1:K:104:THR:OG1	1:K:109:ARG:NH1	2.42	0.53
1:A:-12:HIS:O	1:A:-11:HIS:HB3	2.08	0.53
1:F:105:ASN:OD1	1:F:107:GLN:HB2	2.08	0.53
1:H:27:LEU:HA	1:H:30:ILE:HD12	1.89	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:140:ALA:O	1:J:144:ILE:HG13	2.08	0.53
1:G:70:TYR:CD1	1:G:70:TYR:N	2.75	0.53
1:K:40:GLN:C	1:K:42:ASN:H	2.15	0.53
1:G:36:THR:O	1:G:40:GLN:HB2	2.08	0.53
1:B:65:SER:OG	1:B:66:VAL:N	2.42	0.53
1:J:105:ASN:OD1	1:J:107:GLN:HB2	2.08	0.53
1:A:156:LYS:CG	1:A:156:LYS:O	2.57	0.53
1:K:155:GLN:O	1:K:158:ASN:N	2.39	0.52
1:L:4:LEU:HB2	1:L:70:TYR:CD2	2.44	0.52
1:D:-16:SER:HA	1:D:49:PHE:O	2.08	0.52
1:E:27:LEU:HA	1:E:30:ILE:HD12	1.91	0.52
1:F:34:MET:HE3	1:F:134:TYR:HB3	1.90	0.52
1:C:155:GLN:C	1:C:157:ASN:H	2.18	0.52
1:J:26:THR:O	1:J:29:GLN:HB2	2.10	0.52
1:K:155:GLN:C	1:K:157:ASN:H	2.18	0.52
1:D:0:HIS:HA	1:D:44:ASP:OD2	2.10	0.52
1:D:-14:HIS:NE2	1:D:46:GLU:OE2	2.42	0.52
1:D:75:ILE:O	1:D:100:GLU:HA	2.10	0.52
1:D:124:GLY:HA2	1:J:128:GLY:HA3	1.92	0.52
1:H:155:GLN:C	1:H:157:ASN:H	2.17	0.52
1:A:12:ASN:HB3	1:A:51:GLN:OE1	2.09	0.52
1:B:8:GLY:H	1:B:11:LEU:HD12	1.75	0.52
1:C:68:SER:O	1:C:70:TYR:N	2.43	0.52
1:J:36:THR:O	1:J:40:GLN:CB	2.58	0.52
1:A:36:THR:O	1:A:40:GLN:HB3	2.10	0.52
1:F:98:VAL:HG12	1:F:122:CYS:SG	2.49	0.52
1:G:36:THR:O	1:G:40:GLN:HB3	2.09	0.52
1:L:98:VAL:HG12	1:L:122:CYS:SG	2.51	0.51
1:B:40:GLN:C	1:B:42:ASN:H	2.18	0.51
1:K:34:MET:O	1:K:38:VAL:HG23	2.09	0.51
1:G:71:GLU:O	1:G:96:LYS:HB2	2.11	0.51
1:I:8:GLY:H	1:I:11:LEU:HD12	1.75	0.51
1:A:140:ALA:O	1:A:144:ILE:HG13	2.09	0.51
1:E:28:ASP:O	1:E:32:GLU:HG2	2.10	0.51
1:J:81:SER:HB3	1:J:116:SER:HB2	1.92	0.51
1:D:36:THR:O	1:D:40:GLN:CB	2.59	0.51
1:J:109:ARG:HB3	1:J:110:GLU:OE1	2.11	0.51
1:C:40:GLN:C	1:C:42:ASN:H	2.18	0.51
1:D:156:LYS:O	1:D:156:LYS:HG3	2.11	0.51
1:C:149:LYS:O	1:C:153:GLU:HG3	2.11	0.51
1:E:36:THR:O	1:E:40:GLN:CB	2.58	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:73:ILE:HB	1:E:98:VAL:HG22	1.93	0.51
1:E:155:GLN:C	1:E:157:ASN:H	2.19	0.51
1:G:38:VAL:HG13	1:G:43:LEU:HB2	1.92	0.51
1:D:71:GLU:O	1:D:96:LYS:HB2	2.10	0.51
1:B:105:ASN:OD1	1:B:107:GLN:HB2	2.11	0.50
1:B:155:GLN:C	1:B:157:ASN:H	2.19	0.50
1:E:40:GLN:C	1:E:42:ASN:H	2.19	0.50
1:D:70:TYR:CD1	1:D:70:TYR:N	2.79	0.50
1:F:104:THR:OG1	1:F:109:ARG:NH1	2.45	0.50
1:K:87:ILE:O	1:K:91:ILE:HG13	2.12	0.50
1:G:9:PRO:HG3	1:G:80:PHE:CE2	2.46	0.50
1:G:109:ARG:HB3	1:G:110:GLU:OE1	2.12	0.50
1:B:155:GLN:O	1:B:158:ASN:N	2.45	0.50
1:B:68:SER:O	1:B:70:TYR:N	2.45	0.50
1:E:152:GLN:O	1:E:156:LYS:CG	2.54	0.50
1:H:110:GLU:OE1	1:H:113:ARG:NE	2.39	0.50
1:L:28:ASP:O	1:L:32:GLU:HG2	2.12	0.50
1:B:149:LYS:O	1:B:153:GLU:HG3	2.11	0.50
1:D:145:LEU:O	1:D:146:ALA:C	2.54	0.50
1:J:-16:SER:HA	1:J:49:PHE:O	2.11	0.50
1:J:-12:HIS:O	1:J:-11:HIS:HB3	2.11	0.50
1:A:81:SER:OG	1:A:102:HIS:HE1	1.95	0.50
1:G:26:THR:O	1:G:29:GLN:HB2	2.12	0.50
1:J:70:TYR:CD1	1:J:70:TYR:N	2.79	0.50
1:D:140:ALA:O	1:D:144:ILE:HG13	2.12	0.49
1:H:98:VAL:HG12	1:H:122:CYS:SG	2.52	0.49
1:L:155:GLN:C	1:L:157:ASN:N	2.70	0.49
1:C:28:ASP:O	1:C:32:GLU:HG2	2.12	0.49
1:I:155:GLN:C	1:I:157:ASN:N	2.70	0.49
1:A:47:LEU:HD13	1:A:49:PHE:CZ	2.46	0.49
1:F:149:LYS:O	1:F:153:GLU:HG3	2.13	0.49
1:J:145:LEU:O	1:J:146:ALA:C	2.56	0.49
1:E:68:SER:O	1:E:70:TYR:N	2.45	0.49
1:H:40:GLN:C	1:H:42:ASN:H	2.19	0.49
1:I:68:SER:O	1:I:70:TYR:N	2.46	0.49
1:D:38:VAL:C	1:D:40:GLN:N	2.68	0.49
1:E:94:ALA:O	1:E:96:LYS:HD2	2.13	0.49
1:L:110:GLU:OE1	1:L:113:ARG:NE	2.45	0.49
1:D:35:GLN:HE21	1:D:49:PHE:HE2	1.59	0.49
1:F:8:GLY:H	1:F:11:LEU:HD12	1.77	0.49
1:I:40:GLN:C	1:I:42:ASN:H	2.21	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:36:THR:O	1:J:40:GLN:HB2	2.13	0.48
1:A:70:TYR:CD1	1:A:70:TYR:N	2.81	0.48
1:A:105:ASN:OD1	1:A:107:GLN:HB2	2.13	0.48
1:L:68:SER:O	1:L:70:TYR:N	2.47	0.48
1:D:82:HIS:CE1	1:D:113:ARG:O	2.66	0.48
1:J:156:LYS:CG	1:J:156:LYS:O	2.61	0.48
1:D:-11:HIS:CE1	1:D:0:HIS:ND1	2.81	0.48
1:H:34:MET:O	1:H:35:GLN:C	2.56	0.48
1:K:68:SER:O	1:K:70:TYR:N	2.47	0.48
1:B:73:ILE:HB	1:B:98:VAL:HG22	1.96	0.48
1:L:1:MET:HG3	1:L:71:GLU:OE1	2.14	0.48
1:I:82:HIS:CE1	1:I:113:ARG:O	2.66	0.48
1:J:75:ILE:O	1:J:100:GLU:HA	2.13	0.48
1:L:152:GLN:O	1:L:156:LYS:CG	2.55	0.48
1:H:68:SER:O	1:H:70:TYR:N	2.47	0.48
1:L:149:LYS:O	1:L:153:GLU:HG3	2.13	0.48
1:E:95:GLY:O	1:E:96:LYS:HB3	2.14	0.48
1:L:30:ILE:O	1:L:34:MET:HG3	2.14	0.48
1:F:155:GLN:C	1:F:157:ASN:N	2.71	0.48
1:K:40:GLN:O	1:K:42:ASN:N	2.47	0.48
1:H:40:GLN:C	1:H:40:GLN:CD	2.82	0.48
1:K:155:GLN:C	1:K:157:ASN:N	2.72	0.48
1:L:40:GLN:C	1:L:42:ASN:H	2.22	0.48
1:C:1:MET:HG3	1:C:71:GLU:OE1	2.13	0.47
1:E:155:GLN:C	1:E:157:ASN:N	2.72	0.47
1:F:40:GLN:C	1:F:42:ASN:H	2.22	0.47
1:H:95:GLY:O	1:H:96:LYS:HB3	2.14	0.47
1:H:152:GLN:O	1:H:156:LYS:CG	2.55	0.47
1:H:155:GLN:O	1:H:158:ASN:N	2.44	0.47
1:I:75:ILE:HG12	1:I:77:PRO:HD3	1.96	0.47
1:A:54:PHE:HB2	1:A:57:GLU:HB2	1.97	0.47
1:D:105:ASN:OD1	1:D:107:GLN:HB2	2.14	0.47
1:J:35:GLN:HE21	1:J:49:PHE:HE2	1.61	0.47
1:L:104:THR:OG1	1:L:109:ARG:NH1	2.47	0.47
1:H:105:ASN:OD1	1:H:107:GLN:HB2	2.15	0.47
1:H:4:LEU:HB2	1:H:70:TYR:CD2	2.49	0.47
1:J:82:HIS:CE1	1:J:113:ARG:O	2.67	0.47
1:L:113:ARG:HD3	2:L:1159:FA1:O3	2.14	0.47
1:A:54:PHE:CD1	1:B:56:GLY:HA3	2.50	0.47
1:A:71:GLU:O	1:A:96:LYS:HB2	2.14	0.47
1:B:4:LEU:HB2	1:B:70:TYR:CD2	2.50	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:36:THR:O	1:D:40:GLN:HB3	2.15	0.47
1:F:68:SER:O	1:F:70:TYR:N	2.48	0.47
1:F:82:HIS:CE1	1:F:113:ARG:O	2.68	0.47
1:I:149:LYS:O	1:I:153:GLU:HG3	2.14	0.47
1:J:38:VAL:C	1:J:40:GLN:N	2.69	0.47
1:A:-8:SER:O	1:A:-8:SER:OG	2.32	0.47
1:D:9:PRO:HG3	1:D:80:PHE:CE2	2.50	0.47
1:H:155:GLN:C	1:H:157:ASN:N	2.72	0.47
1:J:71:GLU:O	1:J:96:LYS:HB2	2.15	0.47
1:C:155:GLN:C	1:C:157:ASN:N	2.72	0.47
1:D:81:SER:HB3	1:D:116:SER:HB2	1.97	0.47
1:I:30:ILE:O	1:I:34:MET:HG3	2.15	0.47
1:A:0:HIS:HA	1:A:44:ASP:OD2	2.15	0.47
1:G:156:LYS:O	1:G:156:LYS:HG3	2.14	0.47
1:K:105:ASN:OD1	1:K:107:GLN:HB2	2.14	0.47
1:D:12:ASN:HB3	1:D:51:GLN:OE1	2.15	0.46
1:D:62:ILE:O	1:D:63:GLN:C	2.56	0.46
1:H:11:LEU:HD23	1:H:11:LEU:HA	1.73	0.46
1:K:65:SER:OG	1:K:66:VAL:N	2.47	0.46
1:I:113:ARG:HD3	2:I:1159:FA1:O3	2.15	0.46
1:B:95:GLY:O	1:B:96:LYS:HB3	2.15	0.46
1:H:7:GLN:O	1:H:51:GLN:HA	2.14	0.46
1:J:2:LYS:O	1:J:70:TYR:HB3	2.15	0.46
1:B:131:PRO:O	1:B:132:LEU:C	2.59	0.46
1:F:1:MET:HG3	1:F:71:GLU:OE1	2.14	0.46
1:K:36:THR:O	1:K:40:GLN:CB	2.64	0.46
1:L:155:GLN:O	1:L:157:ASN:N	2.49	0.46
1:I:104:THR:OG1	1:I:109:ARG:NH1	2.49	0.46
1:K:152:GLN:O	1:K:156:LYS:CG	2.57	0.46
1:A:12:ASN:HB3	1:A:51:GLN:CD	2.40	0.46
1:A:156:LYS:O	1:A:156:LYS:HG3	2.16	0.46
1:G:35:GLN:HE21	1:G:49:PHE:HE2	1.63	0.46
1:I:40:GLN:C	1:I:40:GLN:CD	2.83	0.46
1:B:9:PRO:C	1:B:11:LEU:H	2.24	0.46
1:B:155:GLN:C	1:B:157:ASN:N	2.73	0.46
1:C:110:GLU:CD	1:C:110:GLU:H	2.22	0.46
1:E:7:GLN:O	1:E:51:GLN:HA	2.16	0.46
1:I:27:LEU:HA	1:I:30:ILE:HD12	1.98	0.46
1:A:2:LYS:O	1:A:70:TYR:HB3	2.16	0.46
1:I:152:GLN:O	1:I:156:LYS:CG	2.57	0.46
1:A:3:ILE:HD12	1:A:141:MET:HG2	1.98	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:34:MET:HE3	1:C:134:TYR:HB3	1.98	0.46
1:D:129:PHE:CE1	1:D:136:MET:HE1	2.50	0.46
1:E:40:GLN:C	1:E:40:GLN:CD	2.84	0.46
1:A:3:ILE:HD12	1:A:141:MET:CG	2.46	0.45
1:F:27:LEU:HA	1:F:30:ILE:HD12	1.97	0.45
1:K:131:PRO:O	1:K:132:LEU:C	2.60	0.45
1:L:8:GLY:N	1:L:11:LEU:HD12	2.31	0.45
1:B:34:MET:O	1:B:35:GLN:C	2.59	0.45
1:F:133:GLY:O	1:F:136:MET:HB2	2.17	0.45
1:J:139:MET:O	1:J:143:ASN:ND2	2.49	0.45
1:A:38:VAL:C	1:A:40:GLN:N	2.71	0.45
1:F:40:GLN:C	1:F:40:GLN:CD	2.84	0.45
1:F:30:ILE:O	1:F:34:MET:HG3	2.16	0.45
1:H:9:PRO:C	1:H:11:LEU:H	2.25	0.45
1:J:2:LYS:C	1:J:70:TYR:HB3	2.42	0.45
1:D:12:ASN:HB3	1:D:51:GLN:CD	2.41	0.45
1:C:104:THR:OG1	1:C:109:ARG:NH1	2.50	0.45
1:D:26:THR:O	1:D:29:GLN:HB2	2.17	0.45
1:F:132:LEU:O	1:F:136:MET:HG3	2.16	0.45
1:H:36:THR:O	1:H:40:GLN:CB	2.65	0.45
1:I:1:MET:HG3	1:I:71:GLU:OE1	2.17	0.45
1:L:27:LEU:HA	1:L:30:ILE:HD12	1.99	0.45
1:E:11:LEU:HD23	1:E:11:LEU:HA	1.80	0.45
1:H:31:HIS:CE1	1:H:49:PHE:HB3	2.52	0.45
1:I:98:VAL:HG12	1:I:122:CYS:SG	2.56	0.45
1:J:36:THR:O	1:J:40:GLN:HB3	2.16	0.45
1:E:34:MET:O	1:E:35:GLN:C	2.60	0.45
1:H:104:THR:OG1	1:H:109:ARG:NH1	2.50	0.45
1:B:5:VAL:HG23	1:B:48:GLU:O	2.17	0.44
1:C:98:VAL:HG12	1:C:122:CYS:SG	2.56	0.44
1:G:54:PHE:CD1	1:G:54:PHE:N	2.85	0.44
1:L:110:GLU:H	1:L:110:GLU:CD	2.25	0.44
1:J:156:LYS:O	1:J:156:LYS:HG3	2.16	0.44
1:A:124:GLY:HA2	1:G:128:GLY:HA3	2.00	0.44
1:D:109:ARG:HB3	1:D:110:GLU:OE1	2.17	0.44
1:A:145:LEU:O	1:A:146:ALA:C	2.60	0.44
1:C:65:SER:O	1:C:67:GLY:N	2.51	0.44
1:E:127:MET:O	1:E:127:MET:HG3	2.17	0.44
1:F:8:GLY:N	1:F:11:LEU:HD12	2.32	0.44
1:I:110:GLU:OE1	1:I:113:ARG:NE	2.50	0.44
1:A:54:PHE:CE1	1:B:56:GLY:HA3	2.52	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:51:GLN:CD	1:B:51:GLN:C	2.85	0.44
1:B:145:LEU:HD23	1:B:145:LEU:HA	1.77	0.44
1:G:38:VAL:C	1:G:40:GLN:N	2.72	0.44
1:D:145:LEU:HD23	1:D:145:LEU:HA	1.79	0.44
1:G:99:ILE:HD12	1:G:141:MET:HE2	1.98	0.44
1:L:40:GLN:C	1:L:40:GLN:CD	2.85	0.44
1:B:11:LEU:HD23	1:B:11:LEU:HA	1.78	0.44
1:H:145:LEU:HD23	1:H:145:LEU:HA	1.74	0.44
1:A:135:ASN:HB3	1:G:139:MET:HE1	2.00	0.44
1:F:155:GLN:O	1:F:157:ASN:N	2.51	0.44
1:I:2:LYS:O	1:I:70:TYR:HA	2.18	0.44
1:K:7:GLN:O	1:K:51:GLN:HA	2.16	0.43
1:A:9:PRO:HG3	1:A:80:PHE:CE2	2.53	0.43
1:B:40:GLN:C	1:B:40:GLN:CD	2.86	0.43
1:G:145:LEU:O	1:G:146:ALA:C	2.61	0.43
1:J:-11:HIS:CE1	1:J:0:HIS:ND1	2.86	0.43
1:J:54:PHE:CD1	1:K:56:GLY:HA3	2.52	0.43
1:K:5:VAL:HG23	1:K:48:GLU:O	2.18	0.43
1:K:108:ALA:C	1:K:109:ARG:HG3	2.43	0.43
1:A:89:ASP:O	1:A:90:ALA:C	2.62	0.43
1:F:35:GLN:HE21	1:F:35:GLN:HB2	1.57	0.43
1:F:131:PRO:O	1:F:132:LEU:C	2.61	0.43
1:G:2:LYS:C	1:G:70:TYR:HB3	2.44	0.43
1:I:11:LEU:HA	1:I:11:LEU:HD23	1.77	0.43
1:A:-11:HIS:CE1	1:A:0:HIS:ND1	2.86	0.43
1:H:65:SER:OG	1:H:66:VAL:N	2.50	0.43
1:K:31:HIS:CE1	1:K:49:PHE:HB3	2.54	0.43
1:L:8:GLY:H	1:L:11:LEU:HD12	1.83	0.43
1:D:36:THR:O	1:D:40:GLN:HB2	2.18	0.43
1:G:-11:HIS:CE1	1:G:0:HIS:ND1	2.87	0.43
1:J:54:PHE:CE1	1:K:56:GLY:HA3	2.54	0.43
1:L:11:LEU:HD23	1:L:11:LEU:HA	1.75	0.43
1:B:8:GLY:N	1:B:11:LEU:HD12	2.34	0.43
1:B:108:ALA:C	1:B:109:ARG:HG3	2.41	0.43
1:A:145:LEU:HA	1:A:145:LEU:HD23	1.72	0.43
1:E:105:ASN:OD1	1:E:107:GLN:HB2	2.18	0.43
1:G:93:LEU:HD22	1:I:17:ARG:CB	2.48	0.43
1:A:129:PHE:CE1	1:A:136:MET:HE1	2.53	0.42
1:C:40:GLN:C	1:C:40:GLN:CD	2.86	0.42
1:D:-8:SER:O	1:D:-8:SER:OG	2.36	0.42
1:G:139:MET:O	1:G:143:ASN:ND2	2.52	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:65:SER:O	1:K:67:GLY:N	2.51	0.42
1:L:73:ILE:HB	1:L:98:VAL:HG22	2.01	0.42
1:A:128:GLY:HA3	1:G:124:GLY:HA2	2.00	0.42
1:A:151:PHE:C	1:A:154:ALA:H	2.27	0.42
1:J:145:LEU:HD23	1:J:145:LEU:HA	1.71	0.42
1:K:34:MET:HE3	1:K:134:TYR:HB3	2.00	0.42
1:K:40:GLN:C	1:K:42:ASN:N	2.77	0.42
1:G:129:PHE:CE1	1:G:136:MET:HE1	2.54	0.42
1:J:87:ILE:O	1:J:88:ALA:C	2.61	0.42
1:A:2:LYS:C	1:A:70:TYR:HB3	2.45	0.42
1:I:8:GLY:N	1:I:11:LEU:HD12	2.34	0.42
1:J:93:LEU:HD22	1:L:17:ARG:CB	2.50	0.42
1:L:54:PHE:HB2	1:L:57:GLU:HB2	2.00	0.42
1:A:40:GLN:C	1:A:42:ASN:H	2.28	0.42
1:B:104:THR:OG1	1:B:109:ARG:NH1	2.50	0.42
1:C:110:GLU:OE1	1:C:113:ARG:NE	2.51	0.42
1:I:54:PHE:HB2	1:I:57:GLU:HB2	2.00	0.42
1:A:81:SER:HB3	1:A:116:SER:HB2	2.02	0.42
1:D:101:VAL:HG22	1:D:126:ILE:HB	2.02	0.42
1:L:131:PRO:O	1:L:132:LEU:C	2.61	0.42
1:B:36:THR:O	1:B:40:GLN:CB	2.67	0.42
1:G:92:MET:HG3	1:G:121:ALA:HB1	2.01	0.42
1:G:100:GLU:OE2	1:G:102:HIS:NE2	2.43	0.42
1:G:151:PHE:C	1:G:154:ALA:H	2.28	0.42
1:C:155:GLN:O	1:C:157:ASN:N	2.53	0.42
1:D:54:PHE:CD1	1:E:56:GLY:HA3	2.55	0.42
1:E:9:PRO:C	1:E:11:LEU:H	2.28	0.42
1:H:34:MET:HE3	1:H:134:TYR:HB3	2.02	0.42
1:I:37:PHE:CE1	1:L:139:MET:HE3	2.55	0.42
1:K:103:LEU:HD23	1:K:103:LEU:HA	1.91	0.42
1:A:3:ILE:HB	1:A:47:LEU:HD23	2.01	0.42
1:C:34:MET:O	1:C:35:GLN:C	2.63	0.42
1:C:40:GLN:C	1:C:42:ASN:N	2.78	0.42
1:D:128:GLY:HA3	1:J:124:GLY:HA2	2.02	0.42
1:E:108:ALA:C	1:E:109:ARG:HG3	2.45	0.42
1:I:34:MET:HE3	1:I:134:TYR:HB3	2.01	0.42
1:L:35:GLN:HE21	1:L:35:GLN:HB2	1.54	0.42
1:A:93:LEU:HD22	1:C:17:ARG:CB	2.49	0.41
1:C:73:ILE:HB	1:C:98:VAL:HG22	2.00	0.41
1:G:-11:HIS:CD2	1:G:-11:HIS:C	2.98	0.41
1:A:-14:HIS:NE2	1:A:46:GLU:OE2	2.53	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:7:GLN:O	1:D:51:GLN:HG2	2.20	0.41
1:D:143:ASN:N	1:D:143:ASN:HD22	2.18	0.41
1:D:151:PHE:C	1:D:154:ALA:H	2.28	0.41
1:B:97:PRO:HB2	1:B:141:MET:SD	2.60	0.41
1:K:34:MET:HB3	1:K:138:LEU:HD11	2.03	0.41
1:C:8:GLY:N	1:C:11:LEU:HD12	2.35	0.41
1:C:30:ILE:O	1:C:34:MET:HG3	2.20	0.41
1:C:82:HIS:CE1	1:C:113:ARG:O	2.73	0.41
1:C:139:MET:CE	1:F:37:PHE:CE1	3.03	0.41
1:D:47:LEU:HD13	1:D:49:PHE:CZ	2.55	0.41
1:K:9:PRO:C	1:K:11:LEU:H	2.29	0.41
1:D:105:ASN:OD1	1:D:105:ASN:C	2.61	0.41
1:G:54:PHE:CE1	1:H:56:GLY:HA3	2.56	0.41
1:I:155:GLN:O	1:I:157:ASN:N	2.54	0.41
1:A:26:THR:O	1:A:29:GLN:HB2	2.20	0.41
1:A:87:ILE:O	1:A:88:ALA:C	2.61	0.41
1:G:54:PHE:CD1	1:H:56:GLY:HA3	2.55	0.41
1:H:108:ALA:C	1:H:109:ARG:HG3	2.44	0.41
1:J:153:GLU:OE2	1:J:153:GLU:CA	2.65	0.41
1:G:105:ASN:OD1	1:G:107:GLN:HB2	2.20	0.41
1:H:65:SER:O	1:H:67:GLY:N	2.53	0.41
1:I:36:THR:O	1:I:40:GLN:CB	2.66	0.41
1:L:34:MET:HE3	1:L:134:TYR:HB3	2.02	0.41
1:I:110:GLU:CD	1:I:110:GLU:H	2.29	0.41
1:A:64:GLU:O	1:A:66:VAL:N	2.54	0.41
1:A:139:MET:HE1	1:G:135:ASN:HB3	2.03	0.41
1:C:40:GLN:O	1:C:42:ASN:N	2.54	0.41
1:C:97:PRO:HB2	1:C:141:MET:SD	2.61	0.41
1:E:131:PRO:O	1:E:132:LEU:C	2.64	0.41
1:G:-8:SER:O	1:G:-8:SER:OG	2.35	0.41
1:G:2:LYS:O	1:G:70:TYR:HB3	2.21	0.41
1:G:3:ILE:HB	1:G:47:LEU:HD23	2.03	0.41
1:H:34:MET:HB3	1:H:138:LEU:HD11	2.03	0.41
1:H:40:GLN:O	1:H:42:ASN:N	2.54	0.41
1:I:37:PHE:CE1	1:L:139:MET:CE	3.04	0.41
1:L:73:ILE:O	1:L:98:VAL:HA	2.20	0.41
1:J:129:PHE:CE1	1:J:136:MET:HE1	2.56	0.41
1:K:1:MET:HG2	1:K:1:MET:O	2.20	0.41
1:B:7:GLN:O	1:B:51:GLN:HA	2.20	0.40
1:C:131:PRO:O	1:C:132:LEU:C	2.64	0.40
1:H:65:SER:C	1:H:67:GLY:H	2.29	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:113:ARG:HD3	2:H:1159:FA1:O3	2.21	0.40
1:J:110:GLU:CD	1:J:113:ARG:HE	2.29	0.40
1:E:31:HIS:CE1	1:E:49:PHE:HB3	2.56	0.40
1:J:72:GLY:HA2	1:J:96:LYS:HG3	2.03	0.40
1:B:75:ILE:O	1:B:77:PRO:HD3	2.21	0.40
1:I:65:SER:C	1:I:67:GLY:N	2.79	0.40
1:I:73:ILE:HB	1:I:98:VAL:HG22	2.02	0.40
1:F:40:GLN:C	1:F:42:ASN:N	2.79	0.40
1:D:38:VAL:HG11	1:D:45:VAL:HB	2.04	0.40
1:K:40:GLN:C	1:K:40:GLN:CD	2.90	0.40
1:K:145:LEU:HD23	1:K:145:LEU:HA	1.79	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:-15:HIS:ND1	1:J:-17:SER:OG[3_554]	2.16	0.04

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	A	158/180 (88%)	131 (83%)	23 (15%)	4 (2%)	4	21
1	B	149/180 (83%)	132 (89%)	11 (7%)	6 (4%)	2	13
1	C	149/180 (83%)	133 (89%)	12 (8%)	4 (3%)	4	20
1	D	158/180 (88%)	132 (84%)	22 (14%)	4 (2%)	4	21
1	E	149/180 (83%)	132 (89%)	11 (7%)	6 (4%)	2	13
1	F	149/180 (83%)	135 (91%)	10 (7%)	4 (3%)	4	20
1	G	158/180 (88%)	133 (84%)	21 (13%)	4 (2%)	4	21

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	149/180 (83%)	134 (90%)	8 (5%)	7 (5%)	2	11
1	I	149/180 (83%)	134 (90%)	10 (7%)	5 (3%)	3	16
1	J	158/180 (88%)	137 (87%)	17 (11%)	4 (2%)	4	21
1	K	149/180 (83%)	132 (89%)	10 (7%)	7 (5%)	2	11
1	L	149/180 (83%)	134 (90%)	10 (7%)	5 (3%)	3	16
All	All	1824/2160 (84%)	1599 (88%)	165 (9%)	60 (3%)	3	17

All (60) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	-12	HIS
1	A	68	SER
1	B	66	VAL
1	B	68	SER
1	B	69	ASP
1	C	68	SER
1	C	69	ASP
1	D	-12	HIS
1	D	68	SER
1	E	68	SER
1	E	69	ASP
1	F	68	SER
1	F	69	ASP
1	G	-12	HIS
1	G	68	SER
1	H	68	SER
1	H	69	ASP
1	I	68	SER
1	I	69	ASP
1	J	-12	HIS
1	J	68	SER
1	K	66	VAL
1	K	68	SER
1	K	69	ASP
1	L	68	SER
1	L	69	ASP
1	A	65	SER
1	B	10	ASN
1	B	156	LYS
1	C	66	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	156	LYS
1	D	65	SER
1	E	66	VAL
1	E	156	LYS
1	F	156	LYS
1	G	65	SER
1	H	66	VAL
1	H	156	LYS
1	I	156	LYS
1	K	156	LYS
1	L	156	LYS
1	A	-9	SER
1	D	-9	SER
1	G	-9	SER
1	H	79	ALA
1	J	-9	SER
1	J	65	SER
1	L	66	VAL
1	E	10	ASN
1	H	132	LEU
1	I	10	ASN
1	K	132	LEU
1	L	10	ASN
1	F	66	VAL
1	I	66	VAL
1	H	10	ASN
1	K	10	ASN
1	K	41	GLY
1	B	96	LYS
1	E	41	GLY

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	A	133/151 (88%)	112 (84%)	21 (16%)	2 12

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	120/151 (80%)	109 (91%)	11 (9%)	8	31
1	C	120/151 (80%)	109 (91%)	11 (9%)	8	31
1	D	133/151 (88%)	111 (84%)	22 (16%)	2	11
1	E	120/151 (80%)	107 (89%)	13 (11%)	6	25
1	F	120/151 (80%)	109 (91%)	11 (9%)	8	31
1	G	133/151 (88%)	112 (84%)	21 (16%)	2	12
1	H	120/151 (80%)	107 (89%)	13 (11%)	6	25
1	I	120/151 (80%)	109 (91%)	11 (9%)	8	31
1	J	133/151 (88%)	113 (85%)	20 (15%)	3	13
1	K	120/151 (80%)	108 (90%)	12 (10%)	7	29
1	L	120/151 (80%)	109 (91%)	11 (9%)	8	31
All	All	1492/1812 (82%)	1315 (88%)	177 (12%)	5	21

All (177) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	-16	SER
1	A	-10	HIS
1	A	-1	SER
1	A	13	MET
1	A	14	LEU
1	A	24	MET
1	A	35	GLN
1	A	70	TYR
1	A	83	THR
1	A	93	LEU
1	A	96	LYS
1	A	97	PRO
1	A	101	VAL
1	A	106	ILE
1	A	107	GLN
1	A	115	ASN
1	A	116	SER
1	A	138	LEU
1	A	139	MET
1	A	142	VAL
1	A	156	LYS
1	B	5	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	33	ILE
1	B	35	GLN
1	B	43	LEU
1	B	93	LEU
1	B	115	ASN
1	B	139	MET
1	B	149	LYS
1	B	155	GLN
1	B	156	LYS
1	B	157	ASN
1	C	5	VAL
1	C	33	ILE
1	C	35	GLN
1	C	43	LEU
1	C	93	LEU
1	C	115	ASN
1	C	139	MET
1	C	149	LYS
1	C	155	GLN
1	C	156	LYS
1	C	157	ASN
1	D	-16	SER
1	D	-10	HIS
1	D	-1	SER
1	D	13	MET
1	D	14	LEU
1	D	24	MET
1	D	35	GLN
1	D	70	TYR
1	D	83	THR
1	D	93	LEU
1	D	96	LYS
1	D	97	PRO
1	D	101	VAL
1	D	107	GLN
1	D	115	ASN
1	D	116	SER
1	D	138	LEU
1	D	139	MET
1	D	142	VAL
1	D	144	ILE
1	D	153	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	D	156	LYS
1	E	1	MET
1	E	5	VAL
1	E	33	ILE
1	E	35	GLN
1	E	43	LEU
1	E	69	ASP
1	E	93	LEU
1	E	115	ASN
1	E	139	MET
1	E	149	LYS
1	E	155	GLN
1	E	156	LYS
1	E	157	ASN
1	F	5	VAL
1	F	33	ILE
1	F	35	GLN
1	F	43	LEU
1	F	93	LEU
1	F	115	ASN
1	F	139	MET
1	F	149	LYS
1	F	155	GLN
1	F	156	LYS
1	F	157	ASN
1	G	-16	SER
1	G	-10	HIS
1	G	-1	SER
1	G	13	MET
1	G	14	LEU
1	G	24	MET
1	G	26	THR
1	G	35	GLN
1	G	70	TYR
1	G	83	THR
1	G	93	LEU
1	G	96	LYS
1	G	101	VAL
1	G	106	ILE
1	G	107	GLN
1	G	115	ASN
1	G	116	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	138	LEU
1	G	142	VAL
1	G	153	GLU
1	G	156	LYS
1	H	5	VAL
1	H	33	ILE
1	H	35	GLN
1	H	43	LEU
1	H	44	ASP
1	H	93	LEU
1	H	115	ASN
1	H	139	MET
1	H	142	VAL
1	H	149	LYS
1	H	155	GLN
1	H	156	LYS
1	H	157	ASN
1	I	5	VAL
1	I	33	ILE
1	I	35	GLN
1	I	43	LEU
1	I	93	LEU
1	I	115	ASN
1	I	139	MET
1	I	149	LYS
1	I	155	GLN
1	I	156	LYS
1	I	157	ASN
1	J	-16	SER
1	J	-10	HIS
1	J	-1	SER
1	J	13	MET
1	J	14	LEU
1	J	24	MET
1	J	35	GLN
1	J	70	TYR
1	J	83	THR
1	J	93	LEU
1	J	96	LYS
1	J	101	VAL
1	J	107	GLN
1	J	115	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	J	116	SER
1	J	138	LEU
1	J	139	MET
1	J	144	ILE
1	J	153	GLU
1	J	156	LYS
1	K	5	VAL
1	K	33	ILE
1	K	35	GLN
1	K	43	LEU
1	K	93	LEU
1	K	107	GLN
1	K	115	ASN
1	K	139	MET
1	K	149	LYS
1	K	155	GLN
1	K	156	LYS
1	K	157	ASN
1	L	5	VAL
1	L	33	ILE
1	L	35	GLN
1	L	43	LEU
1	L	93	LEU
1	L	115	ASN
1	L	139	MET
1	L	149	LYS
1	L	155	GLN
1	L	156	LYS
1	L	157	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (36) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	-13	HIS
1	A	143	ASN
1	A	157	ASN
1	B	35	GLN
1	B	157	ASN
1	C	35	GLN
1	C	40	GLN
1	C	157	ASN
1	D	-13	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	D	143	ASN
1	D	157	ASN
1	E	35	GLN
1	E	157	ASN
1	F	35	GLN
1	F	40	GLN
1	F	157	ASN
1	G	-13	HIS
1	G	143	ASN
1	G	157	ASN
1	H	35	GLN
1	H	157	ASN
1	I	35	GLN
1	I	40	GLN
1	I	157	ASN
1	J	-13	HIS
1	J	143	ASN
1	J	157	ASN
1	K	7	GLN
1	K	31	HIS
1	K	35	GLN
1	K	157	ASN
1	L	10	ASN
1	L	35	GLN
1	L	40	GLN
1	L	155	GLN
1	L	157	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

12 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	FA1	G	1159	-	9,12,12	1.34	1 (11%)	10,18,18	2.32	2 (20%)
2	FA1	E	1159	-	9,12,12	1.64	3 (33%)	10,18,18	2.59	5 (50%)
2	FA1	J	1159	-	9,12,12	0.74	0	10,18,18	1.88	2 (20%)
2	FA1	L	1159	-	9,12,12	0.98	0	10,18,18	1.18	1 (10%)
2	FA1	F	1159	-	9,12,12	1.22	1 (11%)	10,18,18	1.23	1 (10%)
2	FA1	C	1159	-	9,12,12	1.05	1 (11%)	10,18,18	1.53	2 (20%)
2	FA1	K	1159	-	9,12,12	1.35	1 (11%)	10,18,18	2.49	6 (60%)
2	FA1	A	1159	-	9,12,12	1.06	1 (11%)	10,18,18	2.22	3 (30%)
2	FA1	B	1159	-	9,12,12	1.62	2 (22%)	10,18,18	2.16	4 (40%)
2	FA1	H	1159	-	9,12,12	1.28	0	10,18,18	2.07	4 (40%)
2	FA1	D	1159	-	9,12,12	1.80	2 (22%)	10,18,18	2.38	4 (40%)
2	FA1	I	1159	-	9,12,12	1.27	0	10,18,18	1.43	1 (10%)

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	FA1	G	1159	-	-	3/6/21/21	0/1/1/1
2	FA1	E	1159	-	-	3/6/21/21	0/1/1/1
2	FA1	J	1159	-	-	3/6/21/21	0/1/1/1
2	FA1	L	1159	-	-	5/6/21/21	0/1/1/1
2	FA1	F	1159	-	-	4/6/21/21	0/1/1/1
2	FA1	C	1159	-	-	4/6/21/21	0/1/1/1
2	FA1	K	1159	-	-	5/6/21/21	0/1/1/1
2	FA1	A	1159	-	-	3/6/21/21	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FA1	B	1159	-	-	3/6/21/21	0/1/1/1
2	FA1	H	1159	-	-	4/6/21/21	0/1/1/1
2	FA1	D	1159	-	-	3/6/21/21	0/1/1/1
2	FA1	I	1159	-	-	4/6/21/21	0/1/1/1

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1159	FA1	O30-C1	4.30	1.49	1.42
2	G	1159	FA1	O30-C1	3.06	1.47	1.42
2	E	1159	FA1	C2-C3	2.82	1.57	1.53
2	B	1159	FA1	C2-C3	2.45	1.56	1.53
2	E	1159	FA1	O3-C3	2.45	1.48	1.43
2	B	1159	FA1	C4-C5	2.36	1.55	1.50
2	F	1159	FA1	C2-C3	2.32	1.56	1.53
2	A	1159	FA1	O30-C1	2.30	1.46	1.42
2	K	1159	FA1	O30-C1	2.19	1.46	1.42
2	D	1159	FA1	C1-C6	2.16	1.54	1.50
2	C	1159	FA1	C2-C3	2.11	1.56	1.53
2	E	1159	FA1	O2-C	2.10	1.28	1.22

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	1159	FA1	C3-C4-C5	5.28	119.35	111.61
2	G	1159	FA1	O4-C4-C3	-5.11	100.34	109.44
2	D	1159	FA1	C2-C1-C	-5.02	100.03	110.70
2	A	1159	FA1	O4-C4-C3	-4.56	101.31	109.44
2	K	1159	FA1	O4-C4-C3	-4.14	102.06	109.44
2	J	1159	FA1	C2-C1-C	-4.09	102.01	110.70
2	K	1159	FA1	C2-C3-C4	-4.06	105.19	111.33
2	D	1159	FA1	O4-C4-C3	-3.81	102.64	109.44
2	A	1159	FA1	C2-C1-C	-3.65	102.93	110.70
2	H	1159	FA1	C2-C3-C4	-3.62	105.86	111.33
2	G	1159	FA1	C2-C1-C	-3.51	103.23	110.70
2	E	1159	FA1	C4-C5-C6	-3.38	119.06	123.55
2	B	1159	FA1	C3-C4-C5	3.32	116.48	111.61
2	H	1159	FA1	C3-C4-C5	3.27	116.41	111.61
2	K	1159	FA1	C3-C4-C5	3.20	116.30	111.61
2	B	1159	FA1	O4-C4-C3	-3.13	103.86	109.44
2	E	1159	FA1	O3-C3-C2	3.00	116.94	109.97

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	1159	FA1	C2-C3-C4	-2.87	106.99	111.33
2	B	1159	FA1	C4-C5-C6	-2.80	119.82	123.55
2	J	1159	FA1	O4-C4-C3	-2.78	104.48	109.44
2	B	1159	FA1	O3-C3-C2	2.78	116.42	109.97
2	D	1159	FA1	C4-C5-C6	-2.59	120.11	123.55
2	H	1159	FA1	O4-C4-C3	-2.44	105.09	109.44
2	K	1159	FA1	C2-C1-C	-2.37	105.65	110.70
2	C	1159	FA1	C2-C3-C4	-2.36	107.77	111.33
2	F	1159	FA1	C3-C4-C5	2.34	115.04	111.61
2	A	1159	FA1	C3-C4-C5	2.24	114.90	111.61
2	K	1159	FA1	O3-C3-C2	2.18	115.03	109.97
2	H	1159	FA1	C4-C5-C6	-2.13	120.71	123.55
2	K	1159	FA1	C4-C5-C6	-2.13	120.71	123.55
2	E	1159	FA1	C1-C6-C5	2.11	124.16	116.69
2	L	1159	FA1	C3-C4-C5	2.07	114.65	111.61
2	C	1159	FA1	C1-C6-C5	2.06	123.96	116.69
2	D	1159	FA1	C1-C6-C5	2.01	123.80	116.69
2	I	1159	FA1	O30-C1-C	-2.01	104.55	108.52

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1159	FA1	O1-C-C1-O30
2	A	1159	FA1	O2-C-C1-C6
2	B	1159	FA1	O1-C-C1-O30
2	C	1159	FA1	O1-C-C1-O30
2	D	1159	FA1	O1-C-C1-O30
2	D	1159	FA1	O2-C-C1-C6
2	D	1159	FA1	O2-C-C1-O30
2	E	1159	FA1	O1-C-C1-O30
2	F	1159	FA1	O1-C-C1-O30
2	G	1159	FA1	O1-C-C1-O30
2	G	1159	FA1	O2-C-C1-C6
2	H	1159	FA1	O1-C-C1-O30
2	I	1159	FA1	O1-C-C1-O30
2	J	1159	FA1	O1-C-C1-O30
2	J	1159	FA1	O2-C-C1-C6
2	J	1159	FA1	O2-C-C1-O30
2	K	1159	FA1	O1-C-C1-O30
2	L	1159	FA1	O1-C-C1-O30
2	H	1159	FA1	O2-C-C1-C6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	1159	FA1	O2-C-C1-O30
2	B	1159	FA1	O2-C-C1-O30
2	C	1159	FA1	O1-C-C1-C2
2	E	1159	FA1	O2-C-C1-O30
2	F	1159	FA1	O1-C-C1-C2
2	G	1159	FA1	O2-C-C1-O30
2	H	1159	FA1	O1-C-C1-C2
2	H	1159	FA1	O2-C-C1-O30
2	I	1159	FA1	O1-C-C1-C2
2	I	1159	FA1	O2-C-C1-O30
2	K	1159	FA1	O1-C-C1-C2
2	K	1159	FA1	O2-C-C1-O30
2	L	1159	FA1	O1-C-C1-C2
2	L	1159	FA1	O2-C-C1-O30
2	B	1159	FA1	O2-C-C1-C6
2	E	1159	FA1	O2-C-C1-C6
2	K	1159	FA1	O2-C-C1-C6
2	L	1159	FA1	O2-C-C1-C6
2	C	1159	FA1	O2-C-C1-C2
2	C	1159	FA1	O2-C-C1-O30
2	F	1159	FA1	O2-C-C1-C2
2	F	1159	FA1	O2-C-C1-O30
2	I	1159	FA1	O2-C-C1-C2
2	K	1159	FA1	O2-C-C1-C2
2	L	1159	FA1	O2-C-C1-C2

There are no ring outliers.

8 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	1159	FA1	1	0
2	L	1159	FA1	1	0
2	F	1159	FA1	1	0
2	C	1159	FA1	1	0
2	K	1159	FA1	1	0
2	B	1159	FA1	1	0
2	H	1159	FA1	1	0
2	I	1159	FA1	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	G	1
1	J	1
1	A	1
1	D	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	G	-8:SER	C	-1:SER	N	11.86
1	J	-8:SER	C	-1:SER	N	11.84
1	A	-8:SER	C	-1:SER	N	11.83
1	D	-8:SER	C	-1:SER	N	11.80

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	164/180 (91%)	0.08	4 (2%) 59 38	60, 61, 62, 63	0
1	B	153/180 (85%)	0.09	1 (0%) 84 68	60, 61, 62, 62	0
1	C	153/180 (85%)	0.66	10 (6%) 25 13	60, 61, 62, 62	0
1	D	164/180 (91%)	0.05	2 (1%) 76 58	60, 61, 62, 63	0
1	E	153/180 (85%)	0.02	2 (1%) 75 56	60, 61, 62, 62	0
1	F	153/180 (85%)	0.72	7 (4%) 37 20	60, 61, 62, 62	0
1	G	164/180 (91%)	0.27	2 (1%) 76 58	60, 61, 62, 63	0
1	H	153/180 (85%)	-0.02	2 (1%) 75 56	60, 61, 62, 62	0
1	I	153/180 (85%)	0.39	4 (2%) 57 36	60, 61, 62, 62	0
1	J	164/180 (91%)	-0.10	1 (0%) 85 70	59, 61, 62, 63	0
1	K	153/180 (85%)	-0.01	1 (0%) 84 68	60, 61, 62, 62	0
1	L	153/180 (85%)	0.65	7 (4%) 37 20	60, 61, 62, 62	0
All	All	1880/2160 (87%)	0.23	43 (2%) 61 39	59, 61, 62, 63	0

All (43) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	15	GLY	5.0
1	A	15	GLY	4.1
1	I	158	ASN	3.8
1	I	17	ARG	3.6
1	F	17	ARG	3.1
1	J	15	GLY	3.1
1	G	155	GLN	3.0
1	C	17	ARG	2.8
1	C	79	ALA	2.8
1	E	17	ARG	2.7
1	L	24	MET	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	45	VAL	2.6
1	L	45	VAL	2.6
1	F	85	ILE	2.5
1	C	117	TYR	2.5
1	L	17	ARG	2.5
1	L	46	GLU	2.5
1	D	15	GLY	2.5
1	C	85	ILE	2.4
1	H	17	ARG	2.4
1	A	69	ASP	2.4
1	I	16	HIS	2.4
1	L	79	ALA	2.4
1	A	68	SER	2.4
1	F	117	TYR	2.4
1	I	85	ILE	2.3
1	F	46	GLU	2.3
1	C	39	LYS	2.3
1	C	83	THR	2.3
1	D	68	SER	2.3
1	F	45	VAL	2.2
1	L	152	GLN	2.2
1	L	16	HIS	2.2
1	C	53	ASN	2.1
1	C	30	ILE	2.1
1	C	87	ILE	2.1
1	B	17	ARG	2.1
1	F	79	ALA	2.1
1	E	85	ILE	2.1
1	F	44	ASP	2.1
1	A	155	GLN	2.1
1	K	158	ASN	2.0
1	H	115	ASN	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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($\text{\AA}^2$)	Q<0.9
2	FA1	F	1159	12/12	0.85	0.18	61,61,62,63	0
2	FA1	C	1159	12/12	0.88	0.18	60,61,62,63	0
2	FA1	B	1159	12/12	0.88	0.18	60,61,62,64	0
2	FA1	L	1159	12/12	0.88	0.19	61,61,62,63	0
2	FA1	A	1159	12/12	0.89	0.17	60,61,62,62	0
2	FA1	E	1159	12/12	0.89	0.17	60,61,62,64	0
2	FA1	I	1159	12/12	0.90	0.16	60,61,62,63	0
2	FA1	K	1159	12/12	0.90	0.19	60,61,62,64	0
2	FA1	H	1159	12/12	0.90	0.16	61,61,62,63	0
2	FA1	G	1159	12/12	0.91	0.17	60,61,62,62	0
2	FA1	D	1159	12/12	0.92	0.16	60,61,62,62	0
2	FA1	J	1159	12/12	0.93	0.15	60,61,62,63	0

6.5 Other polymers [i](#)

There are no such residues in this entry.