



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 11:14 PM UTC

PDB ID : 1D3B / pdb_00001d3b
Title : CRYSTAL STRUCTURE OF THE D3B SUBCOMPLEX OF THE HUMAN CORE SNRNP DOMAIN AT 2.0Å RESOLUTION
Authors : Kambach, C.; Walke, S.; Avis, J.M.; De La Fortelle, E.; Li, J.; Nagai, K.
Deposited on : 1998-12-22
Resolution : 2.00 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	:	4-5-2 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

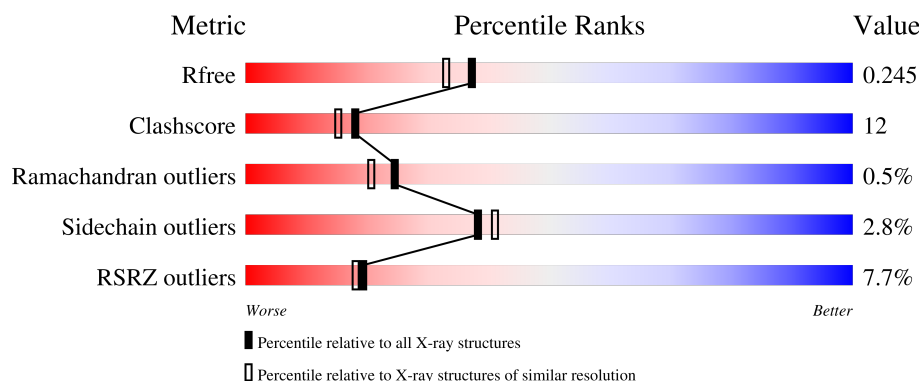
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	10052 (2.00-2.00)
Clashscore	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)
RSRZ outliers	180081	10067 (2.00-2.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	75	 3% 79% 16% . .
1	C	75	 3% 77% 17% 5%
1	E	75	 4% 83% 15% ..
1	G	75	 4% 79% 17% . .
1	I	75	 4% 72% 23% . .

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Mol	Chain	Length	Quality of chain
1	K	75	
2	B	91	
2	D	91	
2	F	91	
2	H	91	
2	J	91	
2	L	91	

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
3	GOL	E	612	-	-	X	-
3	GOL	G	603	-	-	X	-
4	CIT	B	702	-	X	-	-
4	CIT	G	701	-	X	X	-
4	CIT	I	703	-	X	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 8248 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 PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	72	Total	C	N	O	S	0	1	0
			572	356	102	109	5			
1	C	71	Total	C	N	O	S	0	0	0
			564	352	100	107	5			
1	E	74	Total	C	N	O	S	0	0	0
			582	363	103	111	5			
1	G	73	Total	C	N	O	S	0	0	0
			576	360	102	109	5			
1	I	73	Total	C	N	O	S	0	0	0
			576	360	102	109	5			
1	K	71	Total	C	N	O	S	0	0	0
			564	352	100	107	5			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	66	CYS	SER	engineered mutation	UNP P62318
C	66	CYS	SER	engineered mutation	UNP P14678
E	66	CYS	SER	engineered mutation	UNP P62318
G	66	CYS	SER	engineered mutation	UNP P14678
I	66	CYS	SER	engineered mutation	UNP P62318
K	66	CYS	SER	engineered mutation	UNP P14678

- Molecule 2 is a protein called PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B).

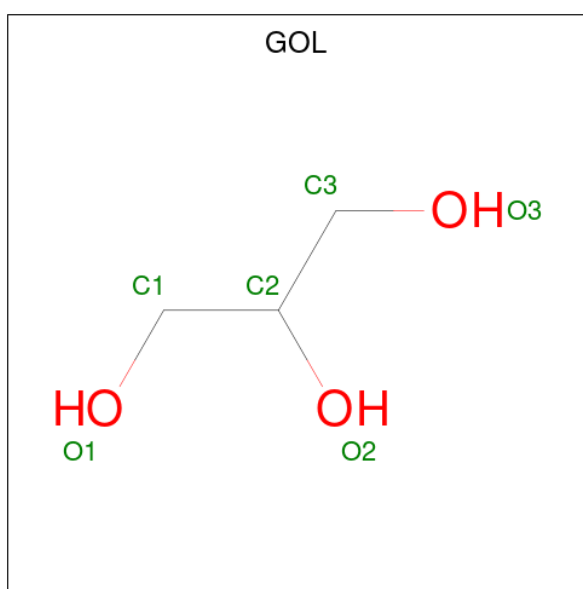
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	81	Total	C	N	O	S	0	0	0
			658	416	120	115	7			
2	D	86	Total	C	N	O	S	0	0	0
			691	436	126	122	7			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	F	83	Total	C	N	O	S	0	1	0
			674	425	123	118	8			
2	H	86	Total	C	N	O	S	0	2	0
			699	441	127	123	8			
2	J	86	Total	C	N	O	S	0	0	0
			691	436	126	122	7			
2	L	90	Total	C	N	O	S	0	2	0
			724	453	134	129	8			

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



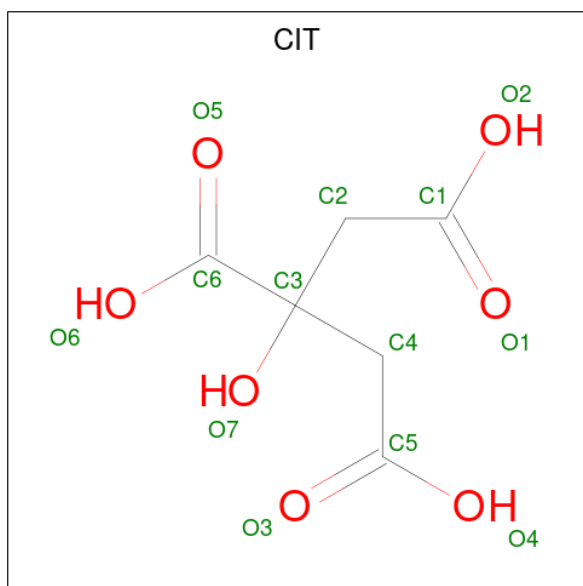
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	C	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		
3	E	1	Total	C	O	0	0
			6	3	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	F	1	Total	C	O	0	0
			6	3	3		
3	F	1	Total	C	O	0	0
			6	3	3		
3	F	1	Total	C	O	0	0
			6	3	3		
3	G	1	Total	C	O	0	0
			6	3	3		
3	H	1	Total	C	O	0	0
			6	3	3		
3	I	1	Total	C	O	0	0
			6	3	3		
3	L	1	Total	C	O	0	0
			6	3	3		

- Molecule 4 is CITRIC ACID (CCD ID: CIT) (formula: $C_6H_8O_7$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			13	6	7		
4	G	1	Total	C	O	0	0
			13	6	7		
4	I	1	Total	C	O	0	0
			13	6	7		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	26	Total 26	O 26	0	0
5	B	54	Total 54	O 54	0	0
5	C	35	Total 35	O 35	0	0
5	D	46	Total 46	O 46	0	0
5	E	59	Total 59	O 59	0	0
5	F	51	Total 51	O 51	0	0
5	G	55	Total 55	O 55	0	0
5	H	58	Total 58	O 58	0	0
5	I	42	Total 42	O 42	0	0
5	J	44	Total 44	O 44	0	0
5	K	34	Total 34	O 34	0	0
5	L	50	Total 50	O 50	0	0

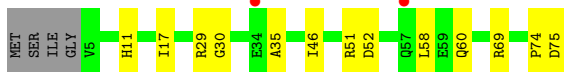
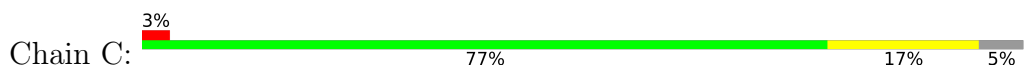
3 Residue-property plots [i](#)

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.

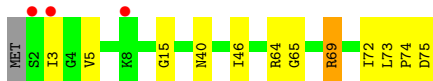
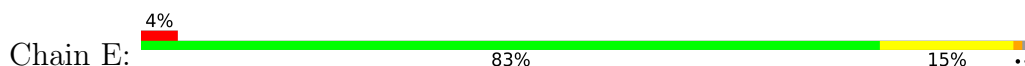
- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



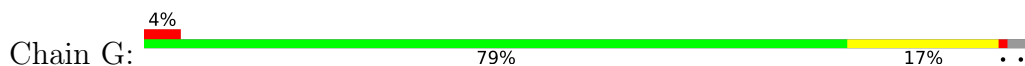
- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



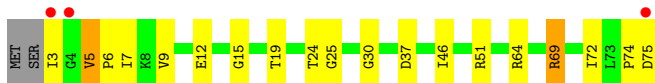
- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



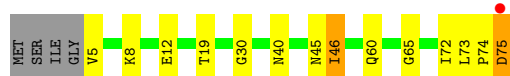
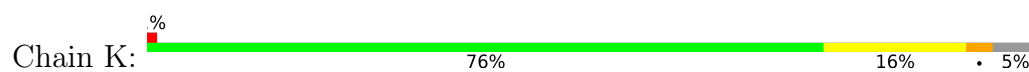
- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



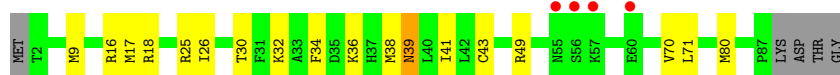
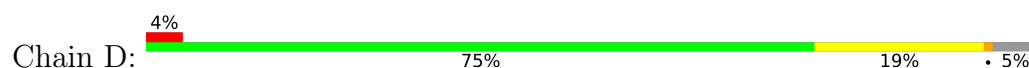
- Molecule 1: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN SM D3)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



- Molecule 2: PROTEIN (SMALL NUCLEAR RIBONUCLEOPROTEIN ASSOCIATED PROTEIN B)



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	107.35Å 108.45Å 110.42Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.00 20.00 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.2 (20.00-2.00) 98.9 (20.00-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.49 (at 1.98Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.213 , 0.265 0.202 , 0.245	Depositor DCC
R_{free} test set	4414 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	24.0	Xtriage
Anisotropy	0.290	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 51.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.015 for -h,l,k 0.015 for -l,-k,-h 0.014 for k,h,-l 0.000 for k,l,h 0.000 for l,h,k	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	8248	wwPDB-VP
Average B, all atoms (Å ²)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.12% 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: GOL, CIT

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	0.59	0/584	1.51	6/788 (0.8%)
1	C	0.59	0/571	1.47	2/771 (0.3%)
1	E	0.67	0/589	1.55	4/795 (0.5%)
1	G	0.62	0/583	1.57	4/787 (0.5%)
1	I	0.66	0/583	1.60	6/787 (0.8%)
1	K	0.58	0/571	1.50	4/771 (0.5%)
2	B	0.69	0/668	1.50	4/891 (0.4%)
2	D	0.71	0/701	1.52	3/935 (0.3%)
2	F	0.75	0/689	1.85	14/918 (1.5%)
2	H	0.72	0/718	1.54	6/956 (0.6%)
2	J	0.79	2/701 (0.3%)	1.69	17/935 (1.8%)
2	L	0.74	0/746	1.71	16/994 (1.6%)
All	All	0.68	2/7704 (0.0%)	1.59	86/10328 (0.8%)

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	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	57	LYS	C-O	-6.22	1.16	1.24
2	J	56	SER	C-N	-5.92	1.25	1.33

All (86) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	55	ASN	N-CA-C	-16.30	93.47	113.20
2	F	53	PRO	CA-N-CD	-11.49	95.91	112.00
2	J	58	GLN	OE1-CD-NE2	-10.64	111.96	122.60
2	L	58	GLN	OE1-CD-NE2	-9.83	112.77	122.60
2	F	58	GLN	OE1-CD-NE2	-9.76	112.84	122.60
2	F	41	ILE	N-CA-CB	8.39	122.03	111.46
2	F	56	SER	CA-C-N	-8.19	109.82	122.60
2	F	56	SER	C-N-CA	-8.19	109.82	122.60
2	J	56	SER	N-CA-C	8.10	128.06	110.80
2	J	16	ARG	NE-CZ-NH1	-7.94	113.56	121.50
2	B	78	VAL	N-CA-CB	-7.91	101.44	112.35
1	I	5	VAL	CA-C-O	7.58	123.88	119.94
2	F	58	GLN	CG-CD-NE2	7.07	127.00	116.40
2	J	57	LYS	CA-C-O	6.74	130.15	120.51
2	H	9	MET	CA-C-N	6.73	131.37	120.60
2	H	9	MET	C-N-CA	6.73	131.37	120.60
2	L	58	GLN	CG-CD-NE2	6.69	126.43	116.40
2	L	60	GLU	N-CA-C	-6.69	100.38	110.28
2	L	58	GLN	CA-C-O	-6.68	113.23	120.92
2	J	58	GLN	CG-CD-NE2	6.64	126.36	116.40
1	E	40	ASN	N-CA-C	-6.55	100.13	109.96
1	I	5	VAL	CB-CA-C	6.42	116.64	110.16
2	F	53	PRO	O-C-N	6.34	131.20	122.64
2	F	70	VAL	N-CA-C	6.31	117.68	108.53
2	F	55	ASN	CA-C-N	6.22	137.47	126.45
2	F	55	ASN	C-N-CA	6.22	137.47	126.45
2	J	16	ARG	NH1-CZ-NH2	6.21	127.38	119.30
2	D	41	ILE	N-CA-CB	6.17	119.66	111.64
2	H	70	VAL	N-CA-C	6.05	117.30	108.53
1	I	64	ARG	NE-CZ-NH2	6.04	124.64	119.20
2	L	59	ALA	N-CA-C	6.03	118.97	110.23
2	L	2	THR	CA-CB-OG1	-5.97	100.64	109.60
2	F	55	ASN	CA-C-O	5.96	126.93	119.12
2	L	20	ILE	N-CA-C	5.94	116.48	108.17
2	B	41	ILE	N-CA-CB	5.82	119.00	111.67
2	H	9	MET	N-CA-C	-5.80	106.17	113.18
1	K	45	ASN	CA-CB-CG	-5.72	106.88	112.60
2	D	70	VAL	N-CA-C	5.67	116.75	108.53
2	F	39	ASN	N-CA-C	-5.64	101.93	110.28
2	B	20	ILE	N-CA-C	5.64	116.42	108.36
1	K	40	ASN	CA-C-O	-5.61	114.88	121.16
2	J	55	ASN	CA-C-N	5.59	132.21	121.54
2	J	55	ASN	C-N-CA	5.59	132.21	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	16	ARG	CA-C-O	-5.56	114.04	120.49
2	J	52	LYS	CA-C-O	5.54	124.20	119.71
1	C	51	ARG	CA-CB-CG	5.51	125.12	114.10
1	E	15	GLY	N-CA-C	-5.51	108.05	115.21
1	A	68	ILE	N-CA-C	5.49	116.48	108.58
1	A	28	TYR	CA-C-N	-5.45	115.30	122.99
1	A	28	TYR	C-N-CA	-5.45	115.30	122.99
2	J	59	ALA	N-CA-C	-5.43	102.85	110.35
1	G	5	VAL	N-CA-C	-5.43	97.15	108.88
2	D	39	ASN	N-CA-C	-5.42	102.27	110.28
1	I	69	ARG	N-CA-C	-5.41	104.25	112.04
1	E	72	ILE	N-CA-CB	5.40	118.26	111.46
2	L	27	PHE	CA-CB-CG	-5.39	108.41	113.80
2	B	70	VAL	N-CA-C	5.38	116.23	108.48
2	L	41	ILE	N-CA-CB	5.34	118.18	111.46
2	L	47	GLU	CB-CG-CD	5.32	121.65	112.60
1	A	19	THR	N-CA-CB	5.28	118.87	110.57
1	G	34	GLU	N-CA-CB	-5.28	101.64	110.99
1	K	46	ILE	N-CA-C	5.28	117.30	109.17
1	I	37	ASP	CA-CB-CG	-5.26	107.33	112.60
2	L	3	VAL	N-CA-C	-5.24	102.08	109.63
2	H	20	ILE	N-CA-C	5.19	115.44	108.17
2	J	41	ILE	N-CA-CB	5.19	118.00	111.46
2	L	55	ASN	CA-CB-CG	5.19	117.79	112.60
2	J	71	LEU	N-CA-CB	5.16	119.19	110.46
2	H	83	GLU	N-CA-C	-5.15	106.69	113.12
1	C	69	ARG	N-CA-C	-5.15	104.63	112.04
2	J	16	ARG	N-CA-C	-5.13	100.80	108.96
2	J	49	ARG	CD-NE-CZ	-5.13	117.21	124.40
1	I	15	GLY	N-CA-C	-5.10	108.58	115.21
1	G	50	TYR	CA-C-N	5.08	127.34	120.38
1	G	50	TYR	C-N-CA	5.08	127.34	120.38
2	J	61	ARG	N-CA-C	-5.08	100.76	109.24
1	K	40	ASN	N-CA-C	-5.07	102.78	110.28
2	J	75	GLU	CA-CB-CG	5.06	124.23	114.10
1	E	69	ARG	N-CA-C	-5.03	104.75	111.24
1	A	69	ARG	N-CA-C	-5.02	104.76	111.24
2	L	7	SER	CA-C-N	-5.02	113.55	120.28
2	L	7	SER	C-N-CA	-5.02	113.55	120.28
2	L	39	ASN	OD1-CG-ND2	5.01	127.61	122.60
1	A	40	ASN	N-CA-C	-5.01	102.63	110.10
2	J	39	ASN	N-CA-C	-5.01	102.86	110.28

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Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
2	L	31	PHE	CA-CB-CG	5.00	118.80	113.80

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	F	16	ARG	Sidechain

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	572	0	574	7	0
1	C	564	0	567	6	0
1	E	582	0	586	7	0
1	G	576	0	581	13	0
1	I	576	0	581	14	0
1	K	564	0	567	9	0
2	B	658	0	685	17	0
2	D	691	0	722	17	0
2	F	674	0	703	45	0
2	H	699	0	731	26	0
2	J	691	0	722	21	0
2	L	724	0	751	12	0
3	A	12	0	15	1	0
3	B	12	0	16	3	0
3	C	6	0	8	1	0
3	D	6	0	8	3	0
3	E	6	0	8	4	0
3	F	18	0	24	1	0
3	G	6	0	8	5	0
3	H	6	0	8	0	0
3	I	6	0	8	0	0
3	L	6	0	8	1	0
4	B	13	0	8	4	0
4	G	13	0	8	7	0
4	I	13	0	8	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	26	0	0	0	0
5	B	54	0	0	3	0
5	C	35	0	0	0	0
5	D	46	0	0	0	0
5	E	59	0	0	1	0
5	F	51	0	0	8	0
5	G	55	0	0	1	0
5	H	58	0	0	5	0
5	I	42	0	0	0	0
5	J	44	0	0	1	0
5	K	34	0	0	0	0
5	L	50	0	0	2	0
All	All	8248	0	7905	191	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 12.

All (191) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:53:PRO:CD	2:F:54:LYS:N	1.68	1.52
2:F:52:LYS:CG	2:F:54:LYS:HG3	1.60	1.31
2:F:52:LYS:HG3	2:F:54:LYS:CG	1.61	1.29
2:F:53:PRO:CD	2:F:54:LYS:HG2	1.69	1.22
2:F:53:PRO:HD3	2:F:54:LYS:HG2	1.20	1.19
2:F:53:PRO:HD2	2:F:54:LYS:CA	1.76	1.14
2:F:53:PRO:HD2	2:F:54:LYS:N	0.97	1.03
2:F:77:LEU:HD21	2:F:80:MET:HE2	1.50	0.92
2:F:53:PRO:CG	2:F:54:LYS:N	2.31	0.92
2:F:54:LYS:C	2:F:56:SER:N	2.26	0.89
2:H:77:LEU:HD11	2:H:80:MET:HE2	1.59	0.84
2:F:54:LYS:CD	5:F:643:HOH:O	2.26	0.83
2:F:38:MET:HE3	2:F:38:MET:HA	1.60	0.83
4:I:703:CIT:H22	2:J:25:ARG:NH2	1.95	0.82
2:F:53:PRO:CD	2:F:54:LYS:CG	2.56	0.82
2:H:9:MET:HA	5:H:654:HOH:O	1.80	0.82
1:G:25:GLY:HA3	4:G:701:CIT:O7	1.81	0.80
2:J:56:SER:O	2:J:57:LYS:HG3	1.81	0.79
2:F:54:LYS:C	2:F:56:SER:H	1.59	0.77
2:F:53:PRO:HD2	2:F:54:LYS:CG	2.13	0.77
2:B:37:HIS:O	2:B:38:MET:HB2	1.86	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:54:LYS:O	2:J:55:ASN:OD1	2.04	0.75
2:D:25:ARG:NH2	2:D:49:ARG:HH11	1.85	0.74
2:H:10:LEU:HD12	2:H:13:ILE:HG13	1.70	0.73
2:J:56:SER:O	2:J:57:LYS:CG	2.37	0.71
2:F:53:PRO:HD2	2:F:54:LYS:CB	2.21	0.70
2:H:9:MET:HE1	2:H:38:MET:HE1	1.73	0.70
2:F:9:MET:SD	2:F:38:MET:HE2	2.32	0.69
2:F:18:ARG:HB2	2:F:83:GLU:HG2	1.74	0.68
1:G:69:ARG:HE	3:G:603:GOL:H31	1.59	0.68
2:B:38:MET:HE2	4:B:702:CIT:O3	1.94	0.67
2:F:54:LYS:HD2	5:F:643:HOH:O	1.92	0.67
2:D:25:ARG:HH12	2:D:49:ARG:NH1	1.93	0.66
2:F:53:PRO:HG2	2:F:58:GLN:HB2	1.77	0.66
2:D:80:MET:HB2	3:D:604:GOL:H31	1.77	0.66
4:I:703:CIT:H22	2:J:25:ARG:HH22	1.59	0.66
2:H:87:PRO:O	2:H:88:LYS:HB2	1.97	0.66
1:I:69:ARG:HH12	4:I:703:CIT:H21	1.59	0.65
2:F:52:LYS:HE2	2:F:54:LYS:HD2	1.79	0.65
2:F:54:LYS:HD3	5:F:643:HOH:O	1.94	0.65
2:F:10:LEU:H	2:F:10:LEU:HD12	1.61	0.65
2:D:25:ARG:CZ	2:D:49:ARG:HH11	2.10	0.65
1:E:69:ARG:NH1	3:E:612:GOL:O1	2.29	0.64
2:F:53:PRO:HD3	2:F:54:LYS:CG	2.14	0.63
1:A:33:ILE:HD11	1:A:44:SER:HB3	1.81	0.63
2:D:25:ARG:HH22	2:D:49:ARG:NH1	1.97	0.63
4:G:701:CIT:H41	2:H:25:ARG:NH2	2.14	0.63
2:F:32:LYS:HG3	2:F:43[B]:CYS:SG	2.39	0.62
2:D:9:MET:SD	2:D:38:MET:SD	2.98	0.61
3:E:612:GOL:H11	5:F:664:HOH:O	2.00	0.61
2:H:37:HIS:O	2:H:38:MET:HB2	1.98	0.61
2:H:9:MET:HE1	2:H:38:MET:CE	2.31	0.61
2:L:8:LYS:O	2:L:11:GLN:HG2	2.01	0.61
2:B:37:HIS:O	2:B:38:MET:CB	2.50	0.60
2:H:32:LYS:HG3	2:H:43[B]:CYS:SG	2.42	0.60
1:K:65:GLY:O	2:L:73:ARG:HD2	2.02	0.60
2:D:25:ARG:HH22	2:D:49:ARG:HH11	1.46	0.59
2:J:54:LYS:HE2	2:J:54:LYS:N	2.17	0.59
2:F:16:ARG:HD3	5:F:653:HOH:O	2.02	0.59
1:G:74:PRO:O	1:G:75:ASP:HB2	2.03	0.59
5:H:604:HOH:O	1:I:51:ARG:HG3	2.01	0.58
2:D:30:THR:HG22	2:D:32:LYS:HE2	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:612:GOL:C1	5:E:613:HOH:O	2.50	0.58
2:H:3:VAL:HG13	2:H:38:MET:HE2	1.84	0.58
1:G:69:ARG:HH12	4:G:701:CIT:H42	1.68	0.58
3:E:612:GOL:H12	5:F:624:HOH:O	2.02	0.58
2:H:16:ARG:HD3	5:H:617:HOH:O	2.03	0.57
2:J:54:LYS:HE2	2:J:54:LYS:H	1.70	0.57
1:G:69:ARG:HG3	3:G:603:GOL:H31	1.86	0.57
4:G:701:CIT:H41	2:H:25:ARG:HH22	1.68	0.57
2:L:2:THR:OG1	2:L:8:LYS:HE2	2.05	0.56
1:A:62:TYR:CE2	2:F:6:SER:HB2	2.41	0.56
2:F:54:LYS:CA	2:F:56:SER:H	2.14	0.56
2:H:7:SER:O	2:H:8:LYS:C	2.49	0.56
1:I:24:THR:O	1:I:51:ARG:HD3	2.05	0.56
2:B:18:ARG:HB2	2:B:83:GLU:HG3	1.87	0.56
2:D:25:ARG:NH1	2:D:49:ARG:NH1	2.54	0.56
3:G:603:GOL:H11	2:H:23:ASP:CG	2.31	0.55
1:C:30:GLY:HA3	1:C:46:ILE:HG22	1.89	0.55
2:D:25:ARG:NH1	2:D:49:ARG:HH11	2.05	0.55
1:G:69:ARG:NH2	4:G:701:CIT:O5	2.27	0.55
1:E:74:PRO:O	1:E:75:ASP:HB2	2.07	0.54
2:J:9:MET:SD	2:J:38:MET:SD	3.06	0.54
2:H:4:GLY:O	2:H:5:LYS:C	2.49	0.54
2:J:14:ASP:OD1	2:J:32:LYS:NZ	2.41	0.53
1:A:65:GLY:HA2	1:A:68:ILE:HD12	1.91	0.53
4:I:703:CIT:O7	2:J:25:ARG:NH2	2.41	0.53
1:E:73:LEU:HB3	1:E:74:PRO:HD2	1.90	0.53
1:I:69:ARG:HH12	4:I:703:CIT:C2	2.22	0.53
2:H:9:MET:CE	2:H:38:MET:HE1	2.39	0.52
2:F:9:MET:CE	2:F:38:MET:HE2	2.39	0.52
2:F:9:MET:HE1	2:F:38:MET:HE2	1.92	0.52
2:F:13:ILE:O	2:F:14:ASP:HB2	2.09	0.52
2:F:38:MET:HA	2:F:38:MET:CE	2.36	0.52
2:F:37:HIS:O	2:F:38:MET:HB2	2.10	0.52
2:D:71:LEU:C	2:D:71:LEU:HD23	2.36	0.51
1:G:20:CYS:SG	1:G:68:ILE:HG12	2.51	0.51
2:J:25:ARG:NH1	5:J:111:HOH:O	2.44	0.51
1:I:74:PRO:O	1:I:75:ASP:HB2	2.11	0.51
2:B:7:SER:HB2	5:B:715:HOH:O	2.10	0.51
2:B:38:MET:CE	4:B:702:CIT:O3	2.58	0.51
1:A:46:ILE:C	1:A:46:ILE:HD12	2.36	0.51
2:B:9:MET:HE1	4:B:702:CIT:H22	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:5:VAL:HG12	1:G:7:ILE:HG22	1.92	0.51
2:J:2:THR:HG23	1:K:60:GLN:HE21	1.76	0.51
1:E:65:GLY:O	2:F:73:ARG:HD2	2.11	0.51
1:K:73:LEU:HB3	1:K:74:PRO:HD2	1.93	0.50
1:E:5:VAL:HG12	5:F:621:HOH:O	2.11	0.50
2:L:9:MET:SD	2:L:38:MET:SD	3.10	0.50
2:D:30:THR:CG2	2:D:32:LYS:HE2	2.41	0.50
1:K:46:ILE:C	1:K:46:ILE:HD12	2.37	0.50
2:H:9:MET:SD	2:H:38:MET:HE1	2.52	0.50
1:A:39:MET:SD	2:B:73:ARG:NH2	2.75	0.49
1:C:52:ASP:HB3	3:C:606:GOL:H31	1.93	0.49
1:C:17:ILE:HG21	1:C:29:ARG:NH1	2.28	0.49
2:H:10:LEU:HA	2:H:13:ILE:HG12	1.95	0.49
2:H:13:ILE:O	2:H:14:ASP:HB2	2.11	0.49
2:B:76:ASN:CG	3:B:608:GOL:H32	2.38	0.48
2:J:32:LYS:HG3	2:J:43:CYS:SG	2.53	0.48
1:A:33:ILE:HD11	1:A:44:SER:CB	2.42	0.48
2:L:49[A]:ARG:HH21	2:L:65:ARG:HH11	1.61	0.48
2:B:23:ASP:N	3:B:608:GOL:O1	2.47	0.48
2:H:3:VAL:HA	5:H:639:HOH:O	2.13	0.48
1:C:46:ILE:HD11	1:C:58:LEU:HB2	1.95	0.48
2:B:49:ARG:HH21	3:B:611:GOL:H11	1.79	0.48
2:F:52:LYS:HE2	2:F:54:LYS:CD	2.43	0.47
1:I:46:ILE:C	1:I:46:ILE:HD12	2.39	0.47
2:J:54:LYS:O	2:J:55:ASN:CG	2.58	0.47
1:I:3:ILE:HB	1:I:9:VAL:HG22	1.97	0.47
1:I:25:GLY:N	4:I:703:CIT:O6	2.48	0.47
2:L:62:GLU:OE2	3:L:605:GOL:H11	2.15	0.47
1:K:75:ASP:HB2	2:L:69:LEU:HD22	1.97	0.47
2:B:13:ILE:HG22	2:B:14:ASP:OD2	2.15	0.46
2:B:38:MET:CE	5:B:752:HOH:O	2.63	0.46
2:J:34:PHE:HA	2:J:39:ASN:O	2.16	0.46
2:F:73:ARG:NH2	5:F:641:HOH:O	2.47	0.46
2:B:49:ARG:HG2	5:B:704:HOH:O	2.16	0.46
2:H:16:ARG:CD	5:H:617:HOH:O	2.62	0.46
2:H:4:GLY:O	2:H:5:LYS:O	2.35	0.45
1:I:5:VAL:CG1	1:I:7:ILE:HG22	2.46	0.45
1:I:30:GLY:HA3	1:I:46:ILE:HG22	1.98	0.45
2:F:54:LYS:HA	2:F:56:SER:H	1.82	0.44
1:K:30:GLY:HA3	1:K:46:ILE:HG22	1.99	0.44
1:K:74:PRO:O	1:K:75:ASP:HB2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:3:ILE:HD11	2:F:41:ILE:HG21	2.00	0.44
1:K:8:LYS:O	1:K:12:GLU:HG3	2.18	0.44
2:D:25:ARG:NH2	2:D:49:ARG:NH1	2.57	0.44
1:G:69:ARG:HH12	4:G:701:CIT:C4	2.30	0.44
2:J:9:MET:HE3	2:J:80:MET:SD	2.58	0.44
2:B:33:ALA:HB3	2:B:41:ILE:HB	2.00	0.44
2:J:56:SER:C	2:J:57:LYS:HG3	2.41	0.43
2:D:80:MET:CB	3:D:604:GOL:H31	2.46	0.43
2:H:86:PRO:HA	2:H:87:PRO:HD3	1.80	0.43
1:G:23:ASN:OD1	3:G:603:GOL:O3	2.28	0.43
2:B:38:MET:SD	4:B:702:CIT:O3	2.76	0.43
2:L:49[A]:ARG:HH21	2:L:65:ARG:NH1	2.16	0.43
1:G:73:LEU:HB3	1:G:74:PRO:HD2	2.00	0.43
2:H:8:LYS:O	2:H:11:GLN:HG2	2.19	0.43
3:G:603:GOL:H12	2:H:21:LEU:HB3	2.00	0.43
2:F:41:ILE:HD13	2:F:41:ILE:HA	1.90	0.42
2:L:18:ARG:HD3	5:L:644:HOH:O	2.19	0.42
2:B:18:ARG:NH2	2:B:83:GLU:OE2	2.39	0.42
1:C:11:HIS:HE1	1:C:35:ALA:O	2.03	0.42
2:F:9:MET:SD	2:F:80:MET:HE1	2.60	0.42
2:F:12:HIS:O	2:F:15:TYR:HB2	2.20	0.42
2:J:51:ILE:O	2:J:53:PRO:HD3	2.20	0.42
2:D:18:ARG:HG3	2:D:26:ILE:HG23	2.01	0.42
2:F:18:ARG:HB2	2:F:83:GLU:CG	2.46	0.41
1:I:3:ILE:HG13	1:I:12:GLU:OE1	2.20	0.41
2:L:47:GLU:CD	5:L:617:HOH:O	2.63	0.41
2:F:37:HIS:O	2:F:38:MET:CB	2.68	0.41
4:G:701:CIT:C5	5:G:713:HOH:O	2.69	0.41
1:I:19:THR:HB	1:I:72:ILE:HB	2.02	0.41
1:A:55:VAL:HG11	3:A:607:GOL:H31	2.03	0.41
1:E:46:ILE:HD12	1:E:46:ILE:C	2.46	0.41
1:G:11:HIS:HE1	1:G:35:ALA:O	2.04	0.41
1:K:19:THR:HB	1:K:72:ILE:HB	2.03	0.41
2:D:17:MET:CE	3:D:604:GOL:H32	2.51	0.41
2:H:43[B]:CYS:SG	2:H:69:LEU:CD1	3.09	0.41
2:J:86:PRO:HA	2:J:87:PRO:HD3	1.97	0.40
2:F:71:LEU:HD23	2:F:71:LEU:C	2.46	0.40
2:J:37:HIS:O	2:J:38:MET:HB2	2.20	0.40
2:J:53:PRO:O	2:J:54:LYS:C	2.64	0.40
2:L:51:ILE:O	2:L:60:GLU:HG3	2.21	0.40
1:C:74:PRO:O	1:C:75:ASP:HB2	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:76:ASN:HB3	3:F:610:GOL:H11	2.02	0.40
1:I:5:VAL:HA	1:I:6:PRO:HD3	1.96	0.40
2:D:34:PHE:HA	2:D:39:ASN:O	2.21	0.40
1:G:74:PRO:O	1:G:75:ASP:CB	2.68	0.40
1:I:24:THR:C	4:I:703:CIT:O6	2.64	0.40
2:L:71:LEU:HD23	2:L:71:LEU:C	2.47	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	71/75 (95%)	71 (100%)	0	0	100	100
1	C	69/75 (92%)	68 (99%)	1 (1%)	0	100	100
1	E	72/75 (96%)	72 (100%)	0	0	100	100
1	G	71/75 (95%)	70 (99%)	1 (1%)	0	100	100
1	I	71/75 (95%)	69 (97%)	2 (3%)	0	100	100
1	K	69/75 (92%)	68 (99%)	1 (1%)	0	100	100
2	B	79/91 (87%)	76 (96%)	3 (4%)	0	100	100
2	D	84/91 (92%)	83 (99%)	1 (1%)	0	100	100
2	F	82/91 (90%)	74 (90%)	6 (7%)	2 (2%)	4	2
2	H	86/91 (94%)	81 (94%)	3 (4%)	2 (2%)	5	2
2	J	84/91 (92%)	78 (93%)	5 (6%)	1 (1%)	10	6
2	L	90/91 (99%)	87 (97%)	3 (3%)	0	100	100
All	All	928/996 (93%)	897 (97%)	26 (3%)	5 (0%)	24	21

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	F	8	LYS
2	F	54	LYS
2	H	5	LYS
2	H	6	SER
2	J	57	LYS

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	64/66 (97%)	63 (98%)	1 (2%)	55	62
1	C	63/66 (96%)	62 (98%)	1 (2%)	55	62
1	E	65/66 (98%)	64 (98%)	1 (2%)	57	64
1	G	64/66 (97%)	63 (98%)	1 (2%)	55	62
1	I	64/66 (97%)	64 (100%)	0	100	100
1	K	63/66 (96%)	61 (97%)	2 (3%)	34	35
2	B	74/82 (90%)	68 (92%)	6 (8%)	11	7
2	D	78/82 (95%)	75 (96%)	3 (4%)	29	29
2	F	77/82 (94%)	75 (97%)	2 (3%)	40	44
2	H	80/82 (98%)	77 (96%)	3 (4%)	29	29
2	J	78/82 (95%)	75 (96%)	3 (4%)	29	29
2	L	83/82 (101%)	82 (99%)	1 (1%)	63	70
All	All	853/888 (96%)	829 (97%)	24 (3%)	38	41

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

Mol	Chain	Res	Type
1	A	75	ASP
2	B	9	MET
2	B	43	CYS
2	B	49	ARG
2	B	73	ARG
2	B	78	VAL

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Mol	Chain	Res	Type
2	B	83	GLU
1	C	60	GLN
2	D	16	ARG
2	D	36	LYS
2	D	43	CYS
1	E	64	ARG
2	F	16	ARG
2	F	38	MET
1	G	5	VAL
2	H	3	VAL
2	H	16	ARG
2	H	77	LEU
2	J	16	ARG
2	J	54	LYS
2	J	58	GLN
1	K	5	VAL
1	K	75	ASP
2	L	73	ARG

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

Mol	Chain	Res	Type
1	A	57	GLN
2	B	11	GLN
2	B	76	ASN
1	C	11	HIS
1	C	60	GLN
2	D	37	HIS
1	E	57	GLN
2	F	58	GLN
1	G	11	HIS
1	G	45	ASN
2	H	11	GLN
2	J	76	ASN
1	K	16	HIS
1	K	45	ASN
1	K	60	GLN
2	L	55	ASN
2	L	76	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

17 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$
3	GOL	E	612	-	5,5,5	0.80	0	5,5,5	1.10	0
3	GOL	B	608	-	5,5,5	0.86	0	5,5,5	1.78	1 (20%)
3	GOL	I	602	-	5,5,5	0.77	0	5,5,5	1.72	1 (20%)
3	GOL	F	610	-	5,5,5	0.81	0	5,5,5	1.32	1 (20%)
3	GOL	F	613	-	5,5,5	0.71	0	5,5,5	1.59	1 (20%)
4	CIT	B	702	-	12,12,12	3.51	7 (58%)	17,17,17	2.90	10 (58%)
4	CIT	I	703	-	12,12,12	3.00	7 (58%)	17,17,17	3.10	8 (47%)
3	GOL	A	614	-	5,5,5	0.63	0	5,5,5	1.21	0
3	GOL	C	606	-	5,5,5	0.72	0	5,5,5	1.56	2 (40%)
3	GOL	G	603	-	5,5,5	0.82	0	5,5,5	1.51	1 (20%)
3	GOL	L	605	-	5,5,5	0.83	0	5,5,5	1.10	0
3	GOL	F	609	-	5,5,5	0.72	0	5,5,5	1.66	1 (20%)
4	CIT	G	701	-	12,12,12	3.28	8 (66%)	17,17,17	3.03	8 (47%)
3	GOL	A	607	-	5,5,5	0.64	0	5,5,5	2.43	3 (60%)
3	GOL	D	604	-	5,5,5	0.80	0	5,5,5	1.58	2 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	GOL	B	611	-	5,5,5	0.65	0	5,5,5	1.68	2 (40%)
3	GOL	H	601	-	5,5,5	0.80	0	5,5,5	1.43	1 (20%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	E	612	-	-	3/4/4/4	-
3	GOL	B	608	-	-	3/4/4/4	-
3	GOL	I	602	-	-	3/4/4/4	-
3	GOL	F	610	-	-	2/4/4/4	-
3	GOL	F	613	-	-	3/4/4/4	-
4	CIT	B	702	-	-	9/16/16/16	-
4	CIT	I	703	-	-	11/16/16/16	-
3	GOL	A	614	-	-	3/4/4/4	-
3	GOL	C	606	-	-	3/4/4/4	-
3	GOL	G	603	-	-	3/4/4/4	-
3	GOL	L	605	-	-	2/4/4/4	-
3	GOL	F	609	-	-	2/4/4/4	-
4	CIT	G	701	-	-	7/16/16/16	-
3	GOL	A	607	-	-	2/4/4/4	-
3	GOL	D	604	-	-	3/4/4/4	-
3	GOL	B	611	-	-	1/4/4/4	-
3	GOL	H	601	-	-	4/4/4/4	-

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	702	CIT	C3-C6	5.99	1.59	1.53
4	B	702	CIT	O6-C6	4.70	1.47	1.30
4	I	703	CIT	O4-C5	4.59	1.46	1.30
4	I	703	CIT	O6-C6	4.57	1.46	1.30
4	G	701	CIT	O6-C6	4.55	1.46	1.30
4	B	702	CIT	O2-C1	4.47	1.45	1.30
4	B	702	CIT	C2-C3	4.44	1.59	1.54
4	G	701	CIT	O4-C5	4.40	1.45	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	702	CIT	O4-C5	4.26	1.44	1.30
4	G	701	CIT	C3-C6	4.22	1.57	1.53
4	I	703	CIT	O2-C1	4.18	1.44	1.30
4	I	703	CIT	O7-C3	4.13	1.51	1.43
4	G	701	CIT	O2-C1	4.11	1.44	1.30
4	G	701	CIT	C2-C3	4.11	1.59	1.54
4	B	702	CIT	O7-C3	4.07	1.51	1.43
4	G	701	CIT	O7-C3	3.89	1.50	1.43
4	I	703	CIT	C3-C6	3.47	1.57	1.53
4	G	701	CIT	C4-C3	3.43	1.58	1.54
4	I	703	CIT	C2-C3	2.67	1.57	1.54
4	B	702	CIT	O3-C5	2.29	1.29	1.22
4	G	701	CIT	O3-C5	2.06	1.28	1.22
4	I	703	CIT	O3-C5	2.02	1.28	1.22

All (42) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	I	703	CIT	O6-C6-C3	6.84	126.27	113.14
4	G	701	CIT	O6-C6-C3	6.68	125.95	113.14
4	I	703	CIT	O2-C1-O1	-5.77	108.50	123.33
4	B	702	CIT	O7-C3-C6	-5.52	101.12	108.96
4	G	701	CIT	O2-C1-O1	-5.49	109.20	123.33
4	B	702	CIT	O4-C5-O3	-5.15	110.09	123.33
4	I	703	CIT	O4-C5-O3	-4.81	110.96	123.33
4	G	701	CIT	O4-C5-O3	-4.52	111.72	123.33
4	G	701	CIT	C3-C2-C1	4.44	126.05	113.92
4	B	702	CIT	C3-C4-C5	4.41	125.97	113.92
4	B	702	CIT	O2-C1-O1	-3.97	113.13	123.33
4	B	702	CIT	O1-C1-C2	3.57	133.07	122.95
4	G	701	CIT	O6-C6-O5	-3.54	112.53	123.86
4	I	703	CIT	O6-C6-O5	-3.52	112.58	123.86
4	I	703	CIT	C3-C2-C1	3.49	123.48	113.92
3	A	607	GOL	O3-C3-C2	3.21	124.81	110.38
4	B	702	CIT	C3-C2-C1	3.11	122.42	113.92
3	A	607	GOL	C3-C2-C1	3.01	122.84	111.80
3	I	602	GOL	C3-C2-C1	2.96	122.67	111.80
4	I	703	CIT	O1-C1-C2	2.89	131.13	122.95
4	B	702	CIT	O6-C6-O5	-2.84	114.78	123.86
4	G	701	CIT	O7-C3-C2	-2.80	102.98	109.38
3	F	609	GOL	C3-C2-C1	2.78	122.01	111.80
4	I	703	CIT	O7-C3-C2	-2.78	103.04	109.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	I	703	CIT	C4-C3-C2	2.77	116.42	109.31
4	G	701	CIT	O1-C1-C2	2.72	130.65	122.95
3	G	603	GOL	O2-C2-C1	2.68	120.25	109.18
3	B	608	GOL	O2-C2-C1	2.60	119.96	109.18
3	F	613	GOL	C3-C2-C1	2.58	121.27	111.80
4	G	701	CIT	C4-C3-C2	2.48	115.68	109.31
3	C	606	GOL	C3-C2-C1	2.41	120.64	111.80
3	D	604	GOL	C3-C2-C1	2.37	120.49	111.80
4	B	702	CIT	C4-C3-C2	2.36	115.37	109.31
4	B	702	CIT	O3-C5-C4	2.32	129.51	122.95
3	B	611	GOL	C3-C2-C1	2.23	119.99	111.80
3	C	606	GOL	O2-C2-C1	2.15	118.06	109.18
3	H	601	GOL	C3-C2-C1	2.12	119.58	111.80
3	D	604	GOL	O3-C3-C2	2.08	119.75	110.38
4	B	702	CIT	C4-C3-C6	2.06	114.59	110.03
3	B	611	GOL	O2-C2-C1	2.05	117.68	109.18
3	F	610	GOL	O2-C2-C1	2.03	117.60	109.18
3	A	607	GOL	O2-C2-C1	2.03	117.59	109.18

There are no chirality outliers.

All (64) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	607	GOL	O1-C1-C2-O2
3	A	607	GOL	C1-C2-C3-O3
3	A	614	GOL	C1-C2-C3-O3
3	A	614	GOL	O2-C2-C3-O3
3	B	608	GOL	O1-C1-C2-C3
3	B	608	GOL	C1-C2-C3-O3
3	C	606	GOL	C1-C2-C3-O3
3	D	604	GOL	C1-C2-C3-O3
3	E	612	GOL	O1-C1-C2-C3
3	F	609	GOL	O1-C1-C2-C3
3	F	613	GOL	O1-C1-C2-O2
3	F	613	GOL	O1-C1-C2-C3
3	F	613	GOL	C1-C2-C3-O3
3	G	603	GOL	O1-C1-C2-C3
3	G	603	GOL	C1-C2-C3-O3
3	H	601	GOL	O1-C1-C2-C3
3	I	602	GOL	C1-C2-C3-O3
4	B	702	CIT	C2-C3-C4-C5
4	B	702	CIT	O7-C3-C4-C5

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Mol	Chain	Res	Type	Atoms
4	B	702	CIT	O7-C3-C6-O5
4	B	702	CIT	O7-C3-C6-O6
4	B	702	CIT	C4-C3-C6-O5
4	B	702	CIT	C4-C3-C6-O6
4	G	701	CIT	C1-C2-C3-O7
4	G	701	CIT	C1-C2-C3-C4
4	G	701	CIT	C1-C2-C3-C6
4	G	701	CIT	O7-C3-C6-O5
4	G	701	CIT	O7-C3-C6-O6
4	G	701	CIT	C4-C3-C6-O5
4	G	701	CIT	C4-C3-C6-O6
4	I	703	CIT	C1-C2-C3-O7
4	I	703	CIT	C1-C2-C3-C4
4	I	703	CIT	C1-C2-C3-C6
4	I	703	CIT	C2-C3-C4-C5
4	I	703	CIT	C6-C3-C4-C5
4	I	703	CIT	O7-C3-C6-O5
4	I	703	CIT	O7-C3-C6-O6
4	I	703	CIT	C4-C3-C6-O5
4	I	703	CIT	C4-C3-C6-O6
3	B	608	GOL	O1-C1-C2-O2
4	I	703	CIT	O7-C3-C4-C5
3	E	612	GOL	C1-C2-C3-O3
3	F	610	GOL	C1-C2-C3-O3
3	H	601	GOL	C1-C2-C3-O3
3	L	605	GOL	O1-C1-C2-C3
4	B	702	CIT	C2-C3-C6-O5
3	B	611	GOL	O2-C2-C3-O3
3	F	609	GOL	O1-C1-C2-O2
3	H	601	GOL	O2-C2-C3-O3
3	I	602	GOL	O1-C1-C2-O2
4	B	702	CIT	C6-C3-C4-C5
3	A	614	GOL	O1-C1-C2-O2
3	E	612	GOL	O1-C1-C2-O2
3	C	606	GOL	O1-C1-C2-O2
3	D	604	GOL	O1-C1-C2-O2
3	D	604	GOL	O2-C2-C3-O3
3	I	602	GOL	O2-C2-C3-O3
3	C	606	GOL	O2-C2-C3-O3
3	G	603	GOL	O1-C1-C2-O2
3	H	601	GOL	O1-C1-C2-O2
4	I	703	CIT	C2-C3-C6-O6

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Mol	Chain	Res	Type	Atoms
4	B	702	CIT	C1-C2-C3-C4
3	L	605	GOL	O1-C1-C2-O2
3	F	610	GOL	O1-C1-C2-O2

There are no ring outliers.

12 monomers are involved in 37 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	612	GOL	4	0
3	B	608	GOL	2	0
3	F	610	GOL	1	0
4	B	702	CIT	4	0
4	I	703	CIT	7	0
3	C	606	GOL	1	0
3	G	603	GOL	5	0
3	L	605	GOL	1	0
4	G	701	CIT	7	0
3	A	607	GOL	1	0
3	D	604	GOL	3	0
3	B	611	GOL	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

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	72/75 (96%)	0.15	2 (2%) 55 54	19, 29, 45, 65	1 (1%)
1	C	71/75 (94%)	0.10	2 (2%) 55 54	17, 28, 43, 56	1 (1%)
1	E	74/75 (98%)	-0.14	3 (4%) 41 40	16, 23, 41, 67	1 (1%)
1	G	73/75 (97%)	-0.07	3 (4%) 41 40	16, 24, 43, 62	1 (1%)
1	I	73/75 (97%)	-0.09	3 (4%) 41 40	17, 24, 39, 66	0
1	K	71/75 (94%)	-0.08	1 (1%) 73 73	18, 27, 42, 56	1 (1%)
2	B	81/91 (89%)	0.83	16 (19%) 3 3	16, 31, 52, 69	4 (4%)
2	D	86/91 (94%)	-0.05	4 (4%) 36 35	17, 25, 43, 72	1 (1%)
2	F	83/91 (91%)	0.83	14 (16%) 4 4	17, 29, 72, 88	5 (6%)
2	H	86/91 (94%)	0.39	9 (10%) 11 10	15, 26, 55, 81	4 (4%)
2	J	86/91 (94%)	0.26	9 (10%) 11 10	18, 28, 54, 81	2 (2%)
2	L	90/91 (98%)	0.57	7 (7%) 19 18	6, 27, 41, 63	6 (6%)
All	All	946/996 (94%)	0.24	73 (7%) 19 18	6, 27, 51, 88	27 (2%)

All (73) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	L	56	SER	27.4
2	H	5	LYS	15.5
2	F	54	LYS	12.4
2	D	57	LYS	10.1
2	J	57	LYS	9.7
2	L	57	LYS	8.7
2	F	8	LYS	8.7
2	H	88	LYS	8.5
2	B	8	LYS	8.4
2	F	57	LYS	7.9
2	H	4	GLY	7.7

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Mol	Chain	Res	Type	RSRZ
2	B	13	ILE	6.6
2	B	54	LYS	6.0
2	F	55	ASN	5.5
2	J	59	ALA	5.5
1	I	4	GLY	5.4
2	H	3	VAL	5.3
2	H	8	LYS	5.2
2	L	54	LYS	5.2
2	F	59	ALA	5.0
2	J	55	ASN	4.9
1	I	3	ILE	4.8
2	L	58	GLN	4.8
2	B	10	LEU	4.7
2	F	6	SER	4.6
2	F	10	LEU	4.6
2	F	7	SER	4.2
1	A	75	ASP	4.1
2	F	56	SER	4.0
2	F	5	LYS	4.0
1	C	34	GLU	3.9
2	B	9	MET	3.9
2	J	54	LYS	3.8
1	E	3	ILE	3.7
2	F	9	MET	3.3
1	A	4	GLY	3.2
2	J	58	GLN	3.2
2	B	12	HIS	3.2
2	L	8	LYS	3.1
2	L	2	THR	3.1
2	B	14	ASP	3.1
2	J	60	GLU	3.1
1	G	4	GLY	3.0
2	H	6	SER	3.0
2	H	7	SER	2.9
2	B	11	GLN	2.8
2	B	34	PHE	2.8
2	F	11	GLN	2.8
2	H	9	MET	2.8
2	F	53	PRO	2.7
2	B	15	TYR	2.6
1	E	2	SER	2.6
1	E	8	LYS	2.6

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Mol	Chain	Res	Type	RSRZ
2	J	56	SER	2.5
2	B	7	SER	2.5
2	H	10	LEU	2.4
1	G	3	ILE	2.4
1	G	75	ASP	2.4
2	B	38	MET	2.3
2	F	58	GLN	2.2
2	J	2	THR	2.2
2	B	87	PRO	2.2
1	C	57	GLN	2.2
2	D	56	SER	2.1
2	B	31	PHE	2.1
2	B	75	GLU	2.1
2	L	55	ASN	2.1
2	D	60	GLU	2.1
2	J	87	PRO	2.1
2	B	82	VAL	2.1
1	I	75	ASP	2.0
1	K	75	ASP	2.0
2	D	55	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(Å ²)	Q<0.9
4	CIT	I	703	13/13	0.43	0.24	48,55,58,60	0
3	GOL	L	605	6/6	0.56	0.28	63,65,66,69	0
4	CIT	G	701	13/13	0.69	0.23	54,59,61,63	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	GOL	F	609	6/6	0.69	0.21	54,56,57,58	0
3	GOL	C	606	6/6	0.70	0.15	64,64,66,66	0
3	GOL	F	613	6/6	0.71	0.17	57,58,58,59	0
4	CIT	B	702	13/13	0.72	0.17	54,59,63,65	0
3	GOL	E	612	6/6	0.73	0.18	37,43,44,46	0
3	GOL	A	614	6/6	0.74	0.15	41,43,48,48	0
3	GOL	I	602	6/6	0.75	0.18	47,53,54,54	0
3	GOL	D	604	6/6	0.77	0.19	55,59,61,63	0
3	GOL	H	601	6/6	0.79	0.19	43,47,50,50	0
3	GOL	A	607	6/6	0.82	0.21	46,48,50,51	0
3	GOL	B	611	6/6	0.83	0.18	41,45,47,49	0
3	GOL	F	610	6/6	0.86	0.14	32,34,37,38	0
3	GOL	B	608	6/6	0.86	0.16	33,37,40,40	0
3	GOL	G	603	6/6	0.87	0.14	35,37,37,38	0

6.5 Other polymers [i](#)

There are no such residues in this entry.