



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 13, 2024 – 05:54 pm GMT

PDB ID : 6S6Y
Title : X-ray crystal structure of the formyltransferase/hydrolase complex (Fh-cABCD) from *Methylorubrum extorquens* in complex with methylofuran
Authors : Wagner, T.; Hemmann, J.L.; Shima, S.; Vorholt, J.
Deposited on : 2019-07-04
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 : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

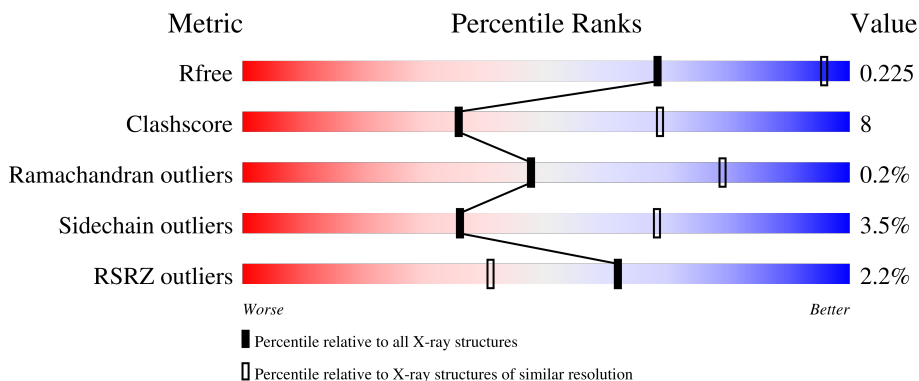
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 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.



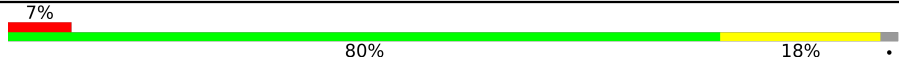





Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

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	548	
1	E	548	
1	I	548	
1	M	548	
2	B	361	

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Mol	Chain	Length	Quality of chain
2	F	361	 7% 80% 18%
2	J	361	 80% 17%
2	N	361	 5% 81% 17%
3	C	276	 75% 21%
3	G	276	 5% 75% 20%
3	K	276	 71% 25%
3	O	276	 1% 73% 22%
4	D	310	 1% 83% 16%
4	H	310	 82% 17%
4	L	310	 75% 23%
4	P	310	 76% 23%

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
11	CL	C	301	-	-	X	-
12	DGL	P	403	-	-	X	X
13	NH2	B	403	-	-	-	X
16	L6K	I	602	-	-	-	X
6	MFN	A	602	-	-	-	X

2 Entry composition [i](#)

There are 18 unique types of molecules in this entry. The entry contains 43288 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 Formylmethanofuran dehydrogenase subunit A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	548	Total 4104	C 2572	N 731	O 786	S 15	0	0	0
1	E	542	Total 4063	C 2548	N 724	O 776	S 15	0	0	0
1	I	545	Total 4087	C 2561	N 727	O 784	S 15	0	0	0
1	M	546	Total 4085	C 2561	N 728	O 781	S 15	0	0	0

- Molecule 2 is a protein called Tungsten-containing formylmethanofuran dehydrogenase, subunit B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	356	Total 2552	C 1603	N 461	O 486	S 2	0	0	0
2	F	355	Total 2551	C 1602	N 460	O 487	S 2	0	0	0
2	J	355	Total 2558	C 1605	N 462	O 489	S 2	0	0	0
2	N	355	Total 2554	C 1603	N 461	O 488	S 2	0	0	0

- Molecule 3 is a protein called Formylmethanofuran dehydrogenase subunit C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	265	Total 1864	C 1152	N 344	O 363	S 5	0	0	0
3	G	265	Total 1864	C 1152	N 344	O 363	S 5	0	0	0
3	K	265	Total 1864	C 1152	N 344	O 363	S 5	0	0	0
3	O	265	Total 1864	C 1152	N 344	O 363	S 5	0	0	0

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	266	HIS	-	expression tag	UNP A9W3R7
C	267	GLY	-	expression tag	UNP A9W3R7
C	268	SER	-	expression tag	UNP A9W3R7
C	269	ALA	-	expression tag	UNP A9W3R7
C	270	TRP	-	expression tag	UNP A9W3R7
C	271	SER	-	expression tag	UNP A9W3R7
C	272	HIS	-	expression tag	UNP A9W3R7
C	273	PRO	-	expression tag	UNP A9W3R7
C	274	GLN	-	expression tag	UNP A9W3R7
C	275	PHE	-	expression tag	UNP A9W3R7
C	276	GLU	-	expression tag	UNP A9W3R7
C	277	LYS	-	expression tag	UNP A9W3R7
G	266	HIS	-	expression tag	UNP A9W3R7
G	267	GLY	-	expression tag	UNP A9W3R7
G	268	SER	-	expression tag	UNP A9W3R7
G	269	ALA	-	expression tag	UNP A9W3R7
G	270	TRP	-	expression tag	UNP A9W3R7
G	271	SER	-	expression tag	UNP A9W3R7
G	272	HIS	-	expression tag	UNP A9W3R7
G	273	PRO	-	expression tag	UNP A9W3R7
G	274	GLN	-	expression tag	UNP A9W3R7
G	275	PHE	-	expression tag	UNP A9W3R7
G	276	GLU	-	expression tag	UNP A9W3R7
G	277	LYS	-	expression tag	UNP A9W3R7
K	266	HIS	-	expression tag	UNP A9W3R7
K	267	GLY	-	expression tag	UNP A9W3R7
K	268	SER	-	expression tag	UNP A9W3R7
K	269	ALA	-	expression tag	UNP A9W3R7
K	270	TRP	-	expression tag	UNP A9W3R7
K	271	SER	-	expression tag	UNP A9W3R7
K	272	HIS	-	expression tag	UNP A9W3R7
K	273	PRO	-	expression tag	UNP A9W3R7
K	274	GLN	-	expression tag	UNP A9W3R7
K	275	PHE	-	expression tag	UNP A9W3R7
K	276	GLU	-	expression tag	UNP A9W3R7
K	277	LYS	-	expression tag	UNP A9W3R7
O	266	HIS	-	expression tag	UNP A9W3R7
O	267	GLY	-	expression tag	UNP A9W3R7
O	268	SER	-	expression tag	UNP A9W3R7
O	269	ALA	-	expression tag	UNP A9W3R7
O	270	TRP	-	expression tag	UNP A9W3R7
O	271	SER	-	expression tag	UNP A9W3R7

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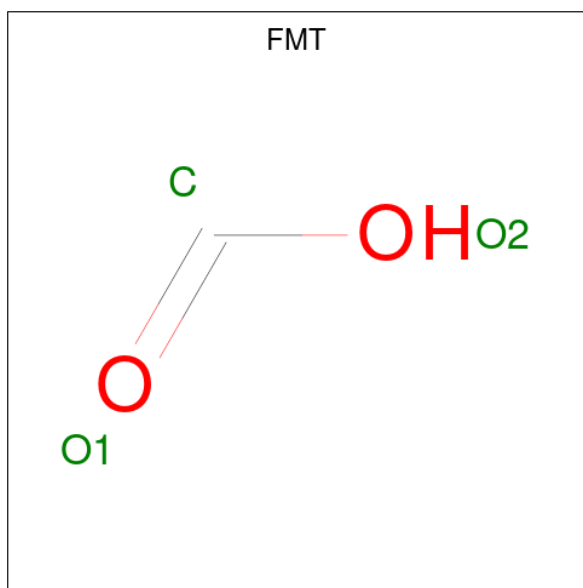
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Chain	Residue	Modelled	Actual	Comment	Reference
O	272	HIS	-	expression tag	UNP A9W3R7
O	273	PRO	-	expression tag	UNP A9W3R7
O	274	GLN	-	expression tag	UNP A9W3R7
O	275	PHE	-	expression tag	UNP A9W3R7
O	276	GLU	-	expression tag	UNP A9W3R7
O	277	LYS	-	expression tag	UNP A9W3R7

- Molecule 4 is a protein called Formylmethanofuran--tetrahydromethanopterin formyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	308	Total 2252	C 1422	N 396	O 420	S 14	0	0	0
4	H	308	Total 2252	C 1422	N 396	O 420	S 14	0	0	0
4	L	308	Total 2252	C 1422	N 396	O 420	S 14	0	0	0
4	P	308	Total 2252	C 1422	N 396	O 420	S 14	0	0	0

- Molecule 5 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



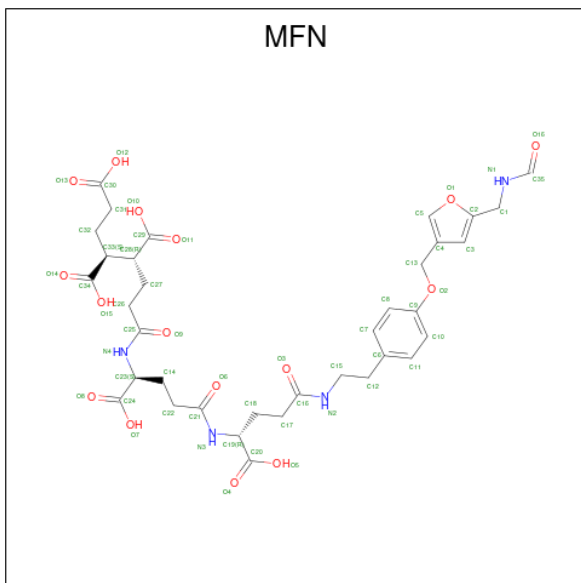
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
5	A	1	Total 3	C 1	O 2	0	0
5	I	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
5	J	1	3	1	2	0	0

- Molecule 6 is N-[4,5,7-TRICARBOXYHEPTANOYL]-L-GAMMA-GLUTAMYL-N-{2-[4-({5-[(FORMYLAMINO)METHYL]-3-FURYL}METHOXY)PHENYL]ETHYL}-D-GLUTAMINE (three-letter code: MFN) (formula: C₃₅H₄₄N₄O₁₆) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
6	A	1	21	16	2	3	0	0

- Molecule 7 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 6 3 3	0	0
7	H	1	Total C O 6 3 3	0	0

- Molecule 8 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	2	Total Zn 2 2	0	0
8	E	2	Total Zn 2 2	0	0
8	I	2	Total Zn 2 2	0	0
8	M	2	Total Zn 2 2	0	0

- Molecule 9 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	3	Total Ca 3 3	0	0
9	B	1	Total Ca 1 1	0	0
9	L	2	Total Ca 2 2	0	0

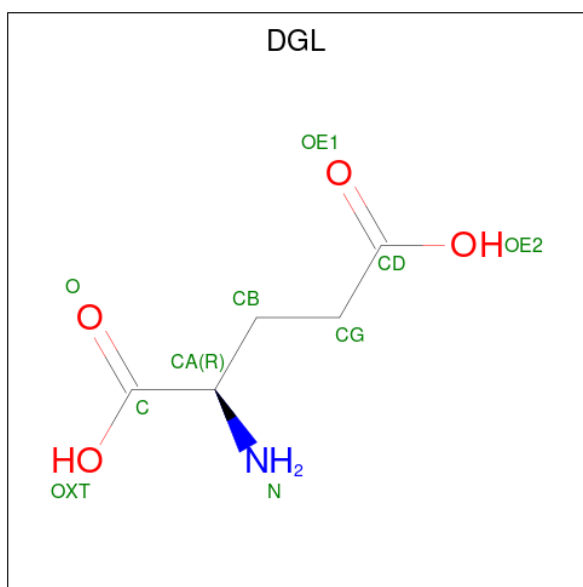
- Molecule 10 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	A	2	Total K 2 2	0	0
10	D	1	Total K 1 1	0	0
10	H	1	Total K 1 1	0	0
10	I	1	Total K 1 1	0	0
10	J	1	Total K 1 1	0	0
10	L	1	Total K 1 1	0	0
10	P	2	Total K 2 2	0	0

- Molecule 11 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

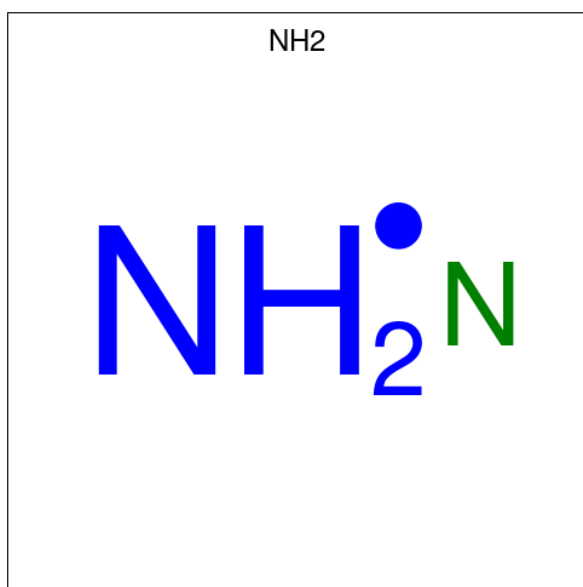
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	2	Total Cl 2 2	0	0
11	C	1	Total Cl 1 1	0	0
11	I	1	Total Cl 1 1	0	0
11	J	1	Total Cl 1 1	0	0

- Molecule 12 is D-GLUTAMIC ACID (three-letter code: DGL) (formula: C₅H₉NO₄).



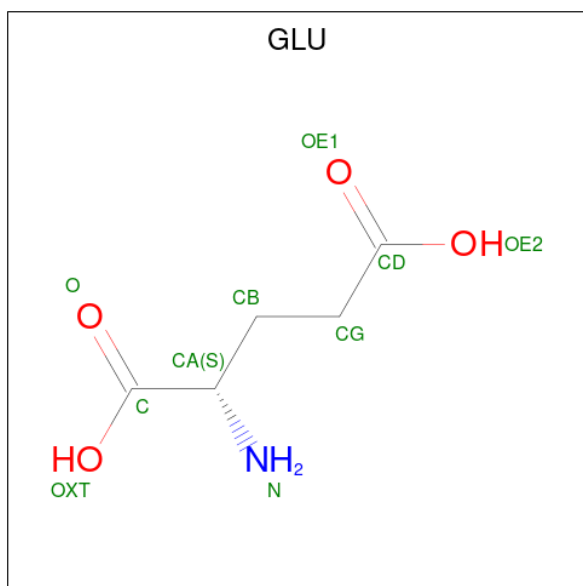
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
12	B	1	Total 9	C 5	N 1	O 3	0	0
12	C	1	Total 8	C 5	N 1	O 2	0	0
12	D	1	Total 9	C 5	N 1	O 3	0	0
12	I	1	Total 9	C 5	N 1	O 3	0	0
12	I	1	Total 10	C 5	N 1	O 4	0	0
12	K	1	Total 8	C 5	N 1	O 2	0	0
12	L	1	Total 10	C 5	N 1	O 4	0	0
12	L	1	Total 10	C 5	N 1	O 4	0	0
12	O	1	Total 8	C 5	N 1	O 2	0	0
12	P	1	Total 9	C 5	N 1	O 3	0	0

- Molecule 13 is AMINO GROUP (three-letter code: NH2) (formula: H₂N).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	B	1	Total N 1 1	0	0

- Molecule 14 is GLUTAMIC ACID (three-letter code: GLU) (formula: C₅H₉NO₄).



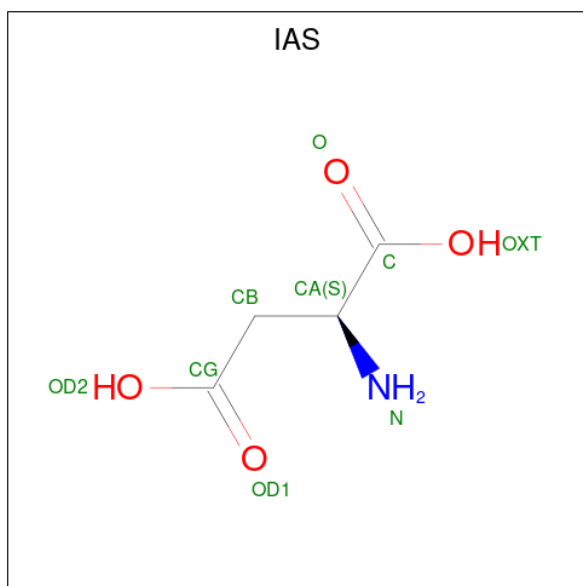
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	C	1	Total C N O 9 5 1 3	0	0
14	C	1	Total C N O 9 5 1 3	0	0
14	I	1	Total C N O 9 5 1 3	0	0

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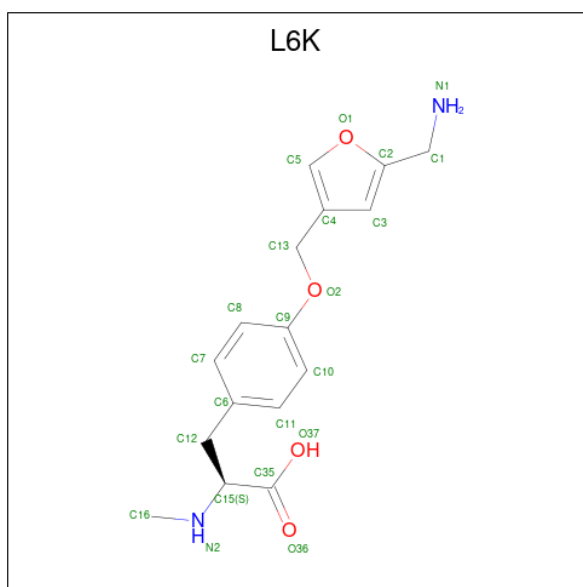
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
14	J	1	Total	C	N	O	0	0
			9	5	1	3		
14	K	1	Total	C	N	O	0	0
			8	5	1	2		
14	L	1	Total	C	N	O	0	0
			9	5	1	3		
14	O	1	Total	C	N	O	0	0
			9	5	1	3		
14	O	1	Total	C	N	O	0	0
			6	3	1	2		

- Molecule 15 is BETA-L-ASPARTIC ACID (three-letter code: IAS) (formula: C₄H₇NO₄).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
15	D	1	Total	C	N	O	0	0
			7	4	1	2		
15	P	1	Total	C	N	O	0	0
			7	4	1	2		

- Molecule 16 is (2 {S})-3-[4-[[5-(aminomethyl)furan-3-yl]methoxy]phenyl]-2-(methylamino)propanoic acid (three-letter code: L6K) (formula: C₁₆H₂₀N₂O₄).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
16	I	1	22	16	2	4	0	0

- Molecule 17 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
17	I	1	4	2	2	0	0

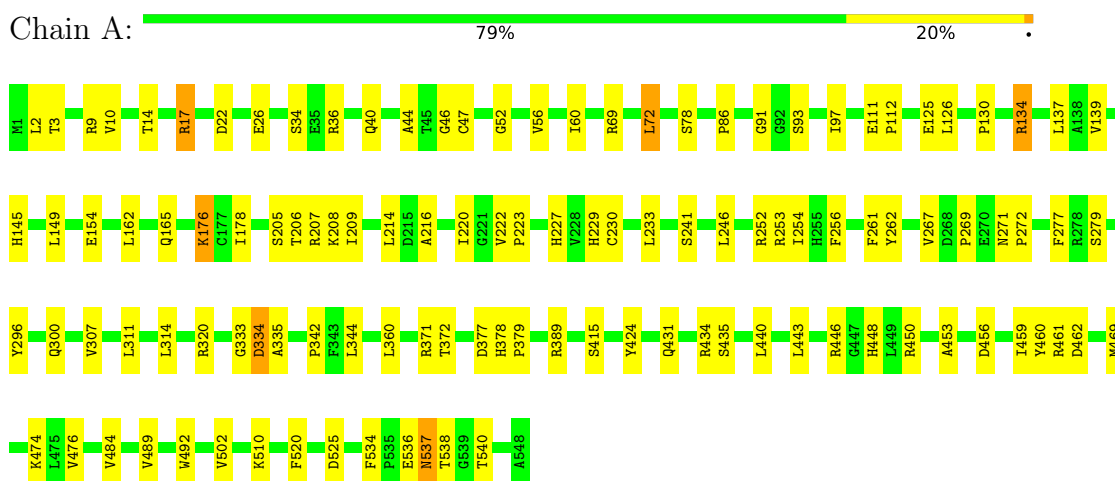
- Molecule 18 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
18	J	1	Total 1	Na 1	0	0

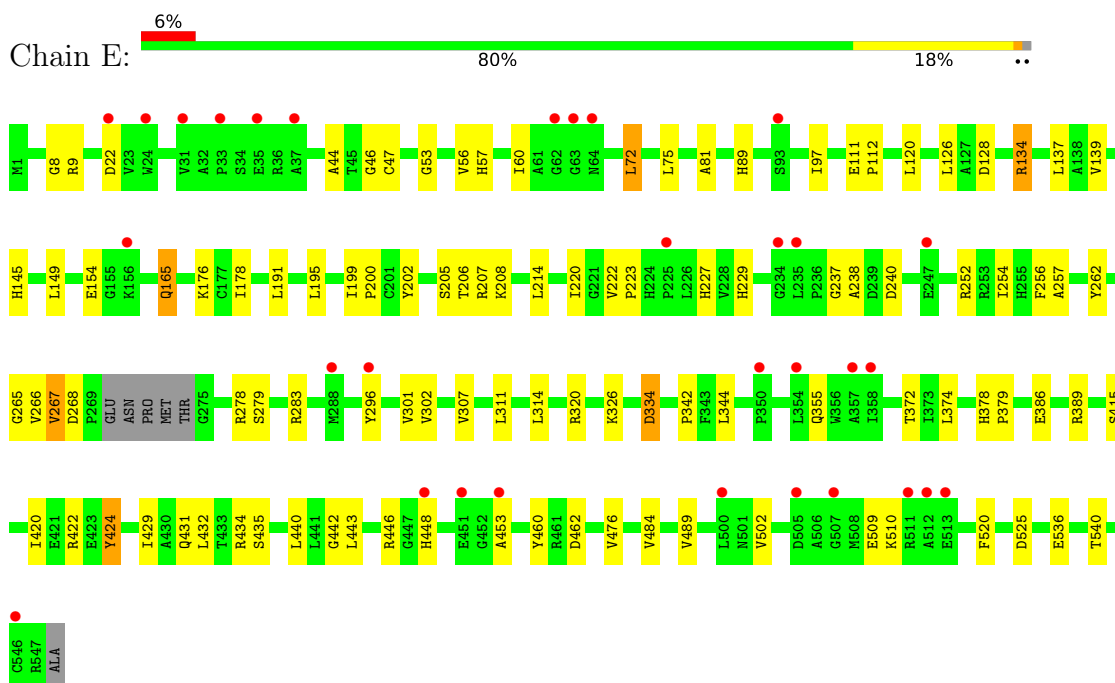
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

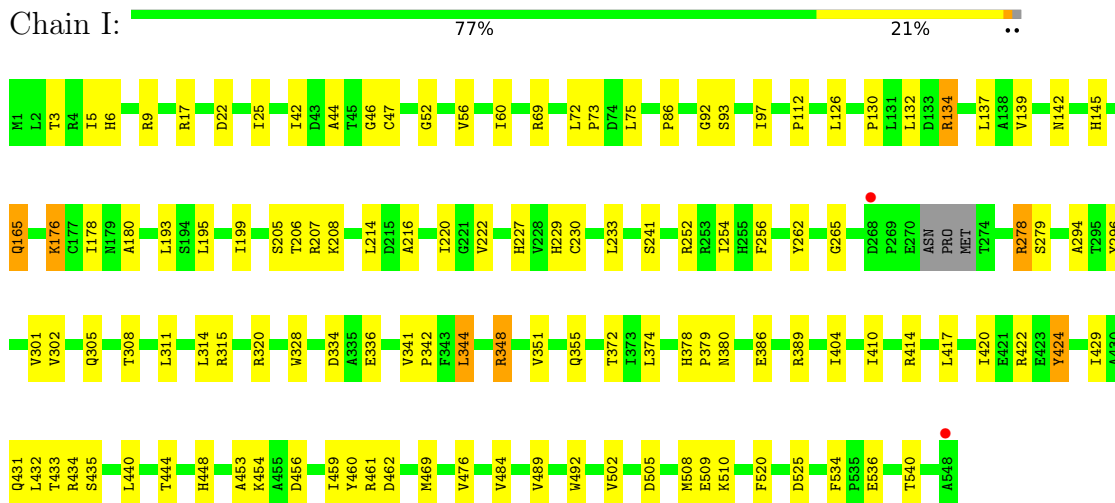
- Molecule 1: Formylmethanofuran dehydrogenase subunit A



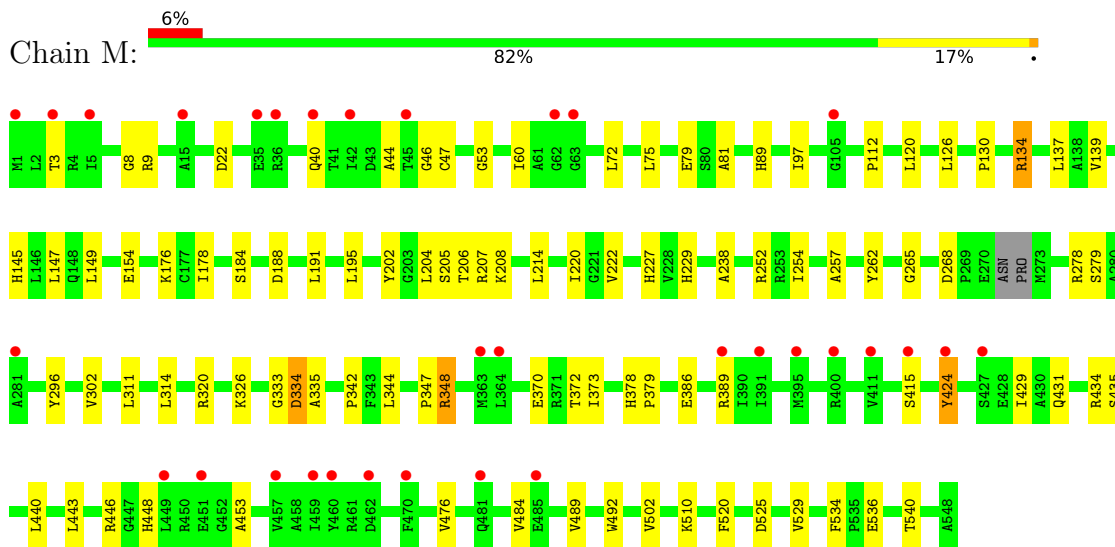
- Molecule 1: Formylmethanofuran dehydrogenase subunit A



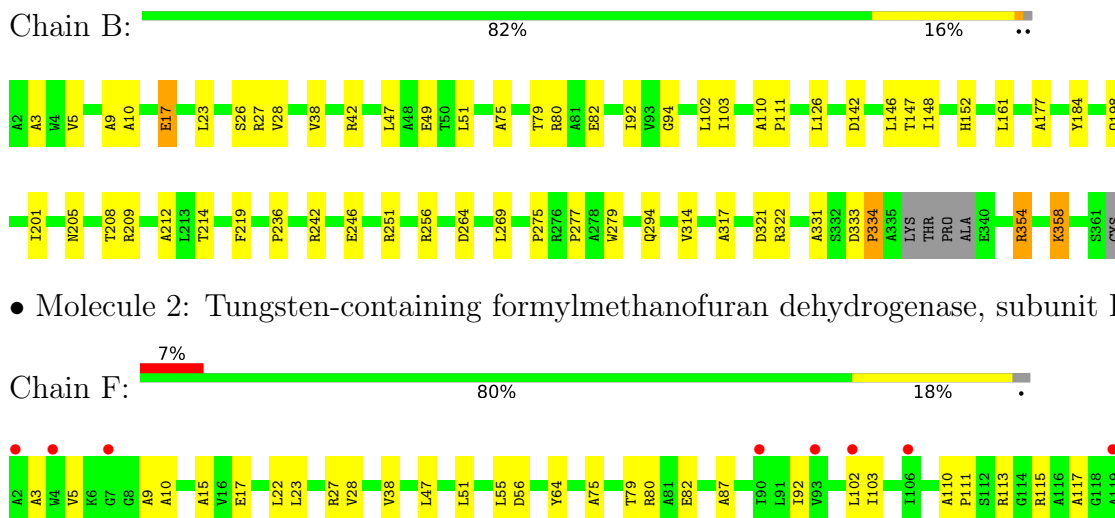
- Molecule 1: Formylmethanofuran dehydrogenase subunit A



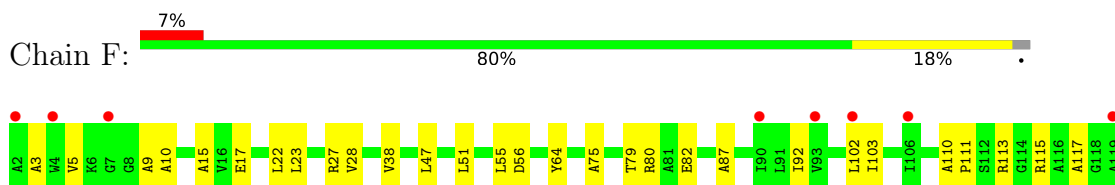
- Molecule 1: Formylmethanofuran dehydrogenase subunit A

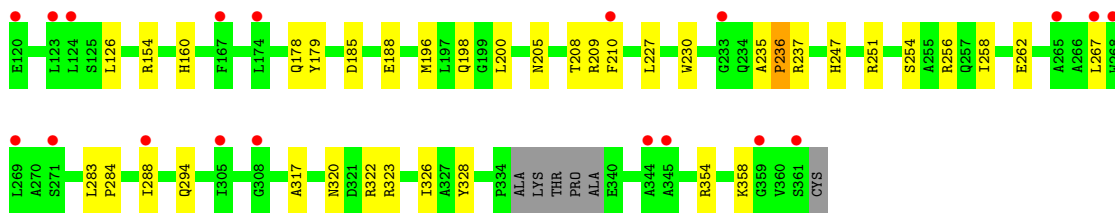


- Molecule 2: Tungsten-containing formylmethanofuran dehydrogenase, subunit B

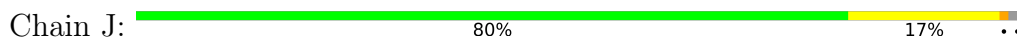


- Molecule 2: Tungsten-containing formylmethanofuran dehydrogenase, subunit B

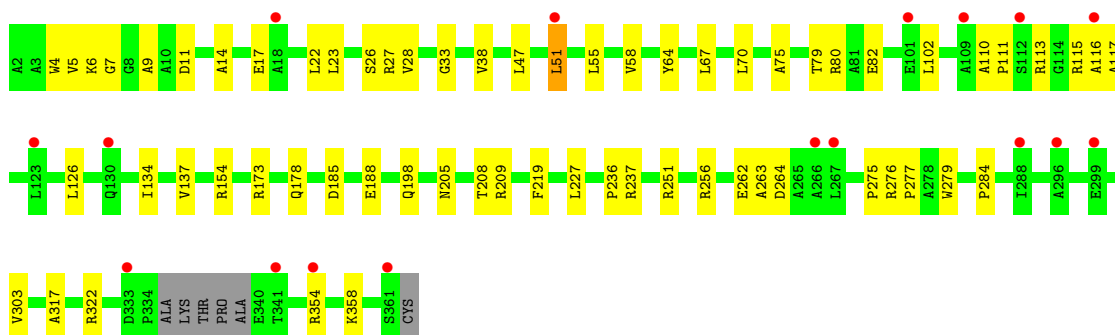
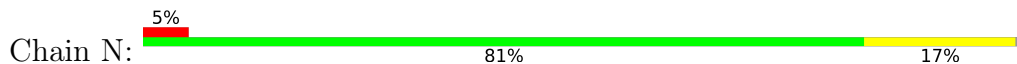




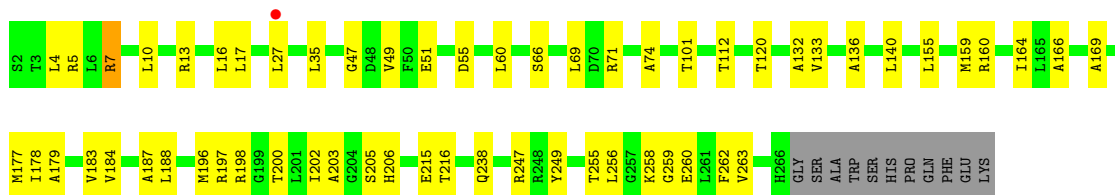
• Molecule 2: Tungsten-containing formylmethanofuran dehydrogenase, subunit B



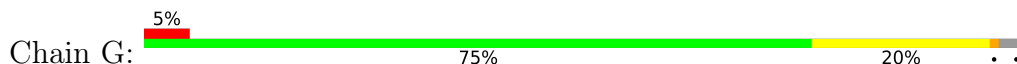
• Molecule 2: Tungsten-containing formylmethanofuran dehydrogenase, subunit B

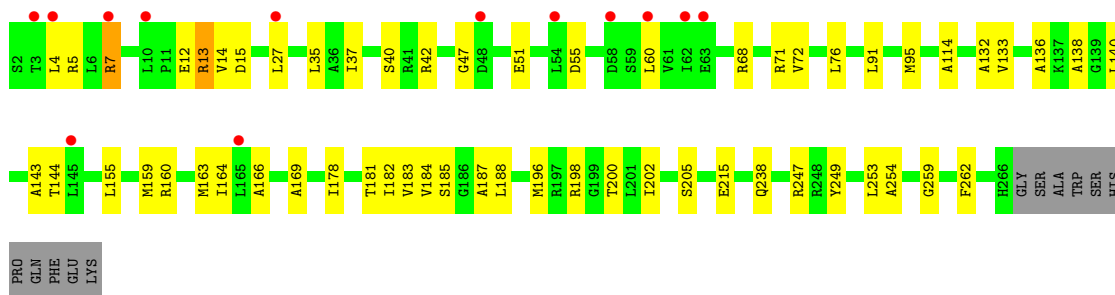


• Molecule 3: Formylmethanofuran dehydrogenase subunit C

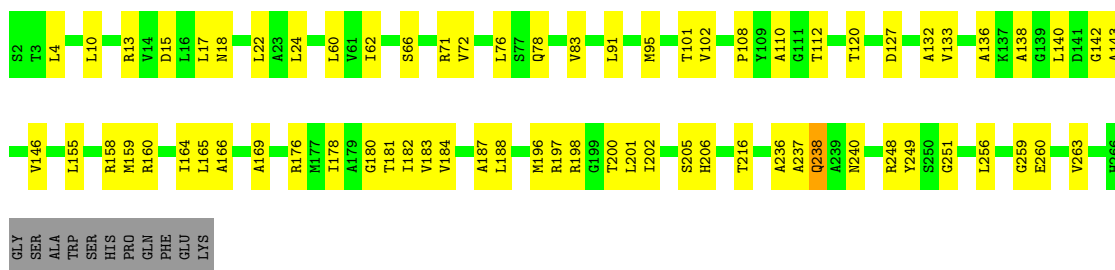


• Molecule 3: Formylmethanofuran dehydrogenase subunit C

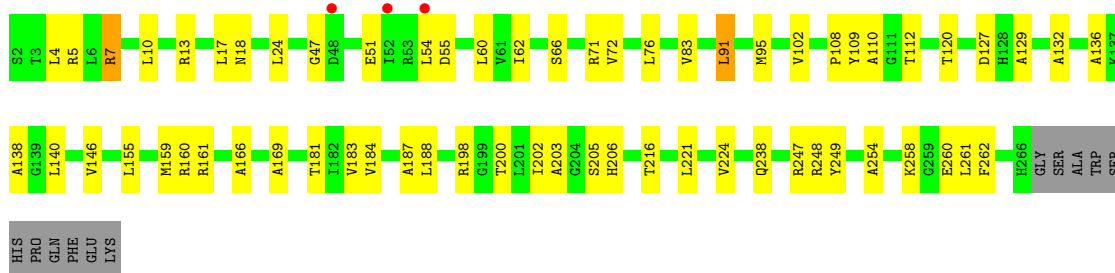
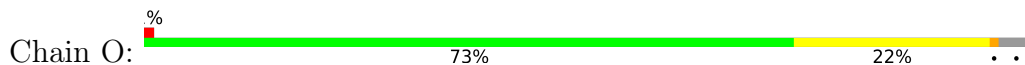




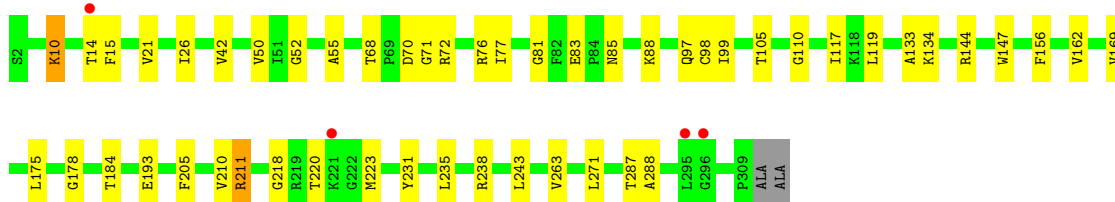
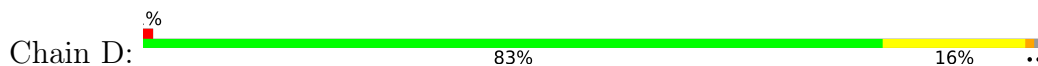
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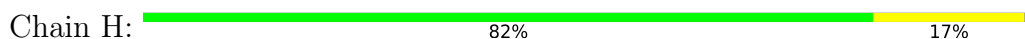
• Molecule 3: Formylmethanofuran dehydrogenase subunit C

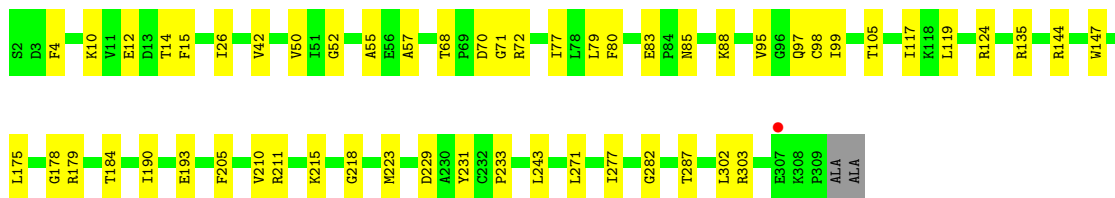


• Molecule 4: Formylmethanofuran--tetrahydromethanopterin formyltransferase



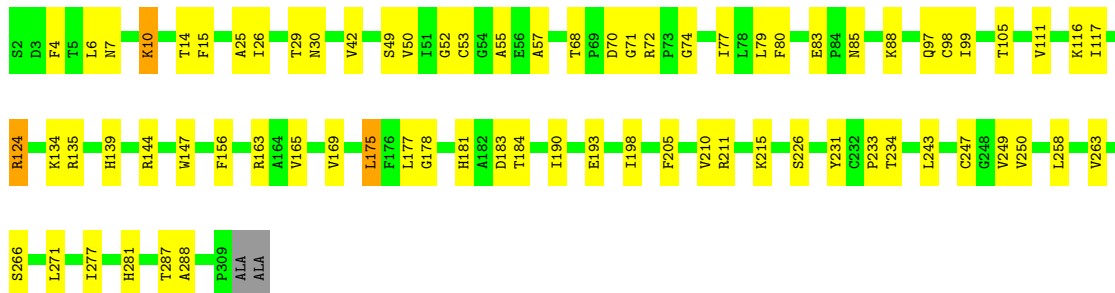
• Molecule 4: Formylmethanofuran--tetrahydromethanopterin formyltransferase





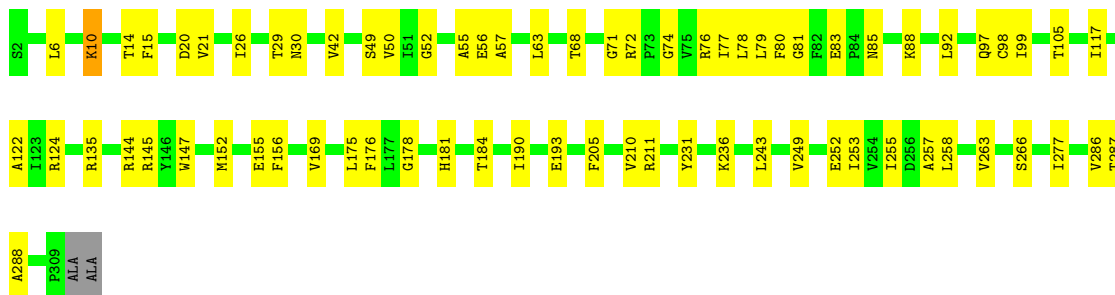
● Molecule 4: Formylmethanofuran--tetrahydromethanopterin formyltransferase

Chain L: 75% 23%



● Molecule 4: Formylmethanofuran--tetrahydromethanopterin formyltransferase

Chain P: 76% 23%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	84.97Å 130.32Å 172.69Å 84.97° 75.91° 82.09°	Depositor
Resolution (Å)	24.95 – 3.10 48.50 – 3.10	Depositor EDS
% Data completeness (in resolution range)	96.2 (24.95-3.10) 96.6 (48.50-3.10)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.30 (at 3.12Å)	Xtrriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.221 , 0.251 0.223 , 0.225	Depositor DCC
R_{free} test set	6518 reflections (5.24%)	wwPDB-VP
Wilson B-factor (Å ²)	75.8	Xtrriage
Anisotropy	0.298	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 70.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	43288	wwPDB-VP
Average B, all atoms (Å ²)	108.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.02% 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: NA, EDO, GOL, FMT, K, DGL, NH2, CL, MFN, CA, L6K, ZN, KCX, IAS

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	0.33	0/4175	0.53	0/5673
1	E	0.27	0/4132	0.46	0/5611
1	I	0.33	0/4156	0.54	0/5644
1	M	0.28	0/4154	0.47	0/5642
2	B	0.33	0/2599	0.54	0/3543
2	F	0.27	0/2598	0.48	0/3541
2	J	0.33	0/2605	0.54	0/3550
2	N	0.27	0/2601	0.48	0/3545
3	C	0.34	0/1885	0.60	0/2547
3	G	0.27	0/1885	0.54	0/2547
3	K	0.32	0/1885	0.60	0/2547
3	O	0.29	0/1885	0.54	0/2547
4	D	0.29	0/2295	0.52	0/3110
4	H	0.31	0/2295	0.53	0/3110
4	L	0.34	0/2295	0.55	0/3110
4	P	0.35	0/2295	0.58	0/3110
All	All	0.31	0/43740	0.52	0/59377

There are no bond length outliers.

There are no bond angle outliers.

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	4104	0	4039	66	0
1	E	4063	0	4005	56	0
1	I	4087	0	4025	74	0
1	M	4085	0	4021	51	0
2	B	2552	0	2519	36	0
2	F	2551	0	2518	40	0
2	J	2558	0	2527	40	0
2	N	2554	0	2522	39	0
3	C	1864	0	1890	38	0
3	G	1864	0	1890	35	0
3	K	1864	0	1890	48	0
3	O	1864	0	1890	38	0
4	D	2252	0	2265	40	0
4	H	2252	0	2265	40	0
4	L	2252	0	2265	51	0
4	P	2252	0	2265	51	0
5	A	3	0	1	0	0
5	I	3	0	1	0	0
5	J	3	0	1	0	0
6	A	21	0	15	3	0
7	A	6	0	8	1	0
7	H	6	0	8	0	0
8	A	2	0	0	0	0
8	E	2	0	0	0	0
8	I	2	0	0	0	0
8	M	2	0	0	0	0
9	A	3	0	0	0	0
9	B	1	0	0	0	0
9	L	2	0	0	0	0
10	A	2	0	0	0	0
10	D	1	0	0	0	0
10	H	1	0	0	0	0
10	I	1	0	0	0	0
10	J	1	0	0	0	0
10	L	1	0	0	0	0
10	P	2	0	0	0	0
11	A	2	0	0	1	0
11	C	1	0	0	2	0
11	I	1	0	0	1	0
11	J	1	0	0	1	0
12	B	9	0	5	0	0
12	C	8	0	5	0	0
12	D	9	0	7	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
12	I	19	0	12	1	0
12	K	8	0	6	1	0
12	L	20	0	11	3	0
12	O	8	0	5	3	0
12	P	9	0	7	6	0
13	B	1	0	0	0	0
14	C	18	0	11	2	0
14	I	9	0	5	0	0
14	J	9	0	5	0	0
14	K	8	0	6	1	0
14	L	9	0	5	1	0
14	O	15	0	7	0	0
15	D	7	0	5	0	0
15	P	7	0	5	1	0
16	I	22	0	0	2	0
17	I	4	0	6	1	0
18	J	1	0	0	0	0
All	All	43288	0	42943	698	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 8.

All (698) 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)
4:D:211:ARG:HH11	4:H:105:THR:HG22	1.14	1.09
3:K:72:VAL:HG13	3:K:91:LEU:CD2	1.99	0.91
3:K:72:VAL:HG13	3:K:91:LEU:HD23	1.56	0.85
1:A:371:ARG:NH2	11:A:611:CL:CL	2.49	0.82
1:E:178:ILE:HA	1:E:229:HIS:HB3	1.60	0.82
2:B:251:ARG:NH1	11:C:301:CL:CL	2.48	0.82
4:H:178:GLY:HA3	4:H:184:THR:HG21	1.62	0.82
4:H:14:THR:HG22	4:H:15:PHE:H	1.44	0.81
4:L:211:ARG:HH11	4:P:105:THR:HG22	1.45	0.80
4:D:105:THR:HG22	4:H:211:ARG:HH11	1.47	0.79
1:A:431:GLN:HA	1:A:435:SER:HB3	1.65	0.79
3:G:185:SER:HB3	3:G:238:GLN:HG3	1.63	0.79
3:K:183:VAL:HG12	3:K:202:ILE:HB	1.65	0.78
1:M:178:ILE:HA	1:M:229:HIS:HB3	1.66	0.78
1:A:176:KCX:HG3	1:A:227:HIS:HB3	1.66	0.77
4:H:83:GLU:HG3	4:H:85:ASN:H	1.50	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:178:ILE:HA	1:A:229:HIS:HB3	1.66	0.76
1:M:334:ASP:H	2:N:82:GLU:HG3	1.50	0.76
1:M:176:KCX:HG3	1:M:227:HIS:HB3	1.68	0.75
1:M:347:PRO:HB2	1:M:348:ARG:HH11	1.50	0.75
4:L:83:GLU:HG3	4:L:85:ASN:H	1.52	0.74
1:E:176:KCX:HG3	1:E:227:HIS:HB3	1.70	0.73
3:K:91:LEU:HD11	3:K:102:VAL:HG21	1.70	0.73
4:D:211:ARG:HH11	4:H:105:THR:CG2	1.99	0.73
2:J:23:LEU:HB3	2:J:51:LEU:HD11	1.69	0.73
4:P:83:GLU:HG3	4:P:85:ASN:H	1.53	0.73
2:B:147:THR:HG23	2:B:148:ILE:HD12	1.70	0.72
1:I:315:ARG:NH2	17:I:603:EDO:O2	2.22	0.72
2:B:242:ARG:NH1	2:B:246:GLU:OE2	2.23	0.72
1:A:536:GLU:O	1:A:540:THR:HG23	1.90	0.72
2:F:258:ILE:HD12	2:F:283:LEU:HD21	1.72	0.71
3:K:72:VAL:CG1	3:K:91:LEU:HD23	2.20	0.71
1:A:434:ARG:NH2	1:A:460:TYR:OH	2.21	0.71
1:I:178:ILE:HA	1:I:229:HIS:HB3	1.73	0.70
3:G:183:VAL:HG12	3:G:202:ILE:HB	1.73	0.70
1:I:434:ARG:NH1	1:I:460:TYR:OH	2.24	0.70
4:D:211:ARG:NH1	4:H:105:THR:HG22	1.99	0.70
4:P:205:PHE:CG	4:P:210:VAL:HG22	2.26	0.70
3:O:221:LEU:HB2	3:O:224:VAL:HG23	1.74	0.70
1:I:205:SER:H	1:I:208:LYS:HD3	1.56	0.69
4:L:14:THR:HG22	4:L:15:PHE:H	1.57	0.69
3:C:198:ARG:NH2	14:C:304:GLU:OXT	2.25	0.69
3:G:132:ALA:HB1	3:G:136:ALA:HB3	1.74	0.69
4:D:83:GLU:HG3	4:D:85:ASN:H	1.58	0.69
4:L:105:THR:HG22	4:P:211:ARG:HH11	1.56	0.69
4:P:147:TRP:HH2	12:P:403:DGL:HB3	1.56	0.69
1:E:302:VAL:HG11	1:E:386:GLU:HG3	1.75	0.68
3:K:237:ALA:O	3:K:240:ASN:ND2	2.26	0.68
3:C:255:THR:HG22	3:C:256:LEU:H	1.59	0.67
3:C:155:LEU:HD11	3:C:164:ILE:HG21	1.76	0.67
3:G:181:THR:HG23	3:G:200:THR:HB	1.74	0.67
3:O:183:VAL:HG12	3:O:202:ILE:HB	1.75	0.67
1:A:44:ALA:HB1	1:A:47:CYS:HB2	1.75	0.66
3:K:132:ALA:HB1	3:K:136:ALA:HB3	1.76	0.66
4:D:14:THR:HG22	4:D:15:PHE:H	1.59	0.66
3:O:187:ALA:HA	3:O:205:SER:HB2	1.77	0.66
4:P:14:THR:HG22	4:P:15:PHE:H	1.59	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:38:VAL:HG22	2:B:317:ALA:HB3	1.78	0.66
4:P:169:VAL:HB	4:P:263:VAL:HG21	1.77	0.66
1:E:220:ILE:HD11	1:E:502:VAL:HG21	1.79	0.65
2:J:251:ARG:NH1	11:J:404:CL:CL	2.64	0.65
4:H:215:LYS:NZ	4:H:229:ASP:OD1	2.29	0.65
2:B:80:ARG:HG3	2:B:102:LEU:HD12	1.78	0.65
4:P:42:VAL:HG13	4:P:98:CYS:HB3	1.79	0.65
1:E:112:PRO:HA	1:E:137:LEU:HD12	1.79	0.64
1:M:178:ILE:HD13	1:M:311:LEU:HB2	1.80	0.64
2:B:79:THR:HG23	2:B:82:GLU:H	1.62	0.64
4:D:178:GLY:HA3	4:D:184:THR:HG21	1.80	0.64
1:M:302:VAL:HG11	1:M:386:GLU:HG3	1.78	0.64
4:P:178:GLY:HA3	4:P:184:THR:HG21	1.79	0.64
4:H:190:ILE:HD13	4:H:277:ILE:HD12	1.79	0.64
2:J:267:LEU:HD21	2:J:288:ILE:HD12	1.79	0.64
1:A:214:LEU:HD21	1:A:254:ILE:HG23	1.79	0.64
1:I:176:KCX:HG3	1:I:227:HIS:HB3	1.80	0.64
3:K:72:VAL:CG1	3:K:91:LEU:CD2	2.74	0.64
1:E:536:GLU:HB2	1:E:540:THR:HG23	1.80	0.63
3:O:140:LEU:HB3	3:O:159:MET:HG3	1.80	0.63
2:F:160:HIS:HB3	3:G:253:LEU:HD13	1.81	0.63
1:I:193:LEU:HD21	1:I:199:ILE:HD11	1.80	0.63
3:K:140:LEU:HD21	3:K:143:ALA:O	1.99	0.63
1:A:60:ILE:HG22	1:A:97:ILE:HD11	1.80	0.63
2:N:26:SER:HB2	2:N:264:ASP:HB2	1.79	0.63
3:G:187:ALA:HA	3:G:205:SER:HB2	1.81	0.63
4:L:211:ARG:NH1	4:P:156:PHE:HD1	1.96	0.63
4:H:42:VAL:HG13	4:H:98:CYS:HB3	1.81	0.63
4:L:97:GLN:HE22	4:P:52:GLY:HA3	1.64	0.62
2:F:115:ARG:NH2	2:F:178:GLN:O	2.32	0.62
3:C:187:ALA:HA	3:C:205:SER:HB2	1.82	0.62
3:G:155:LEU:HD11	3:G:164:ILE:HG21	1.82	0.62
1:I:72:LEU:HD11	1:I:342:PRO:HG3	1.80	0.62
4:D:205:PHE:CG	4:D:210:VAL:HG22	2.35	0.62
2:J:254:SER:O	2:J:258:ILE:HG12	1.99	0.62
1:A:149:LEU:HG	1:A:154:GLU:HG3	1.82	0.61
4:D:97:GLN:HE22	4:H:52:GLY:HA3	1.64	0.61
4:P:231:TYR:HA	4:P:243:LEU:HD23	1.83	0.61
2:B:23:LEU:HB3	2:B:51:LEU:HD11	1.82	0.61
4:H:205:PHE:CG	4:H:210:VAL:HG22	2.35	0.61
2:B:26:SER:HB2	2:B:264:ASP:HB2	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:132:ALA:HB1	3:C:136:ALA:HB3	1.82	0.61
1:E:520:PHE:O	2:F:322:ARG:NH2	2.34	0.61
1:I:5:ILE:HG12	1:I:42:ILE:HD12	1.82	0.61
1:I:520:PHE:O	2:J:322:ARG:NH2	2.34	0.61
3:K:101:THR:HG23	3:K:120:THR:HB	1.82	0.61
2:N:256:ARG:NH1	2:N:262:GLU:OE1	2.26	0.61
4:D:119:LEU:HD12	4:D:162:VAL:HG21	1.83	0.61
12:O:301:DGL:HG2	12:P:403:DGL:HB2	1.83	0.61
1:M:112:PRO:HA	1:M:137:LEU:HD12	1.83	0.60
2:F:22:LEU:HD21	2:F:284:PRO:HB2	1.83	0.60
4:L:190:ILE:HD13	4:L:277:ILE:HD12	1.83	0.60
4:P:50:VAL:HG12	4:P:55:ALA:HA	1.84	0.60
4:P:257:ALA:HB3	4:P:263:VAL:HG22	1.83	0.60
1:I:433:THR:OG1	1:I:434:ARG:NH2	2.35	0.60
4:L:68:THR:HG21	4:L:72:ARG:O	2.02	0.60
1:A:520:PHE:O	2:B:322:ARG:NH2	2.34	0.60
1:I:214:LEU:HB3	1:I:252:ARG:HD2	1.84	0.60
4:L:211:ARG:NH1	4:P:105:THR:O	2.34	0.60
4:D:26:ILE:HG13	4:D:77:ILE:HG23	1.84	0.60
4:L:42:VAL:HG13	4:L:98:CYS:HB3	1.83	0.60
1:A:334:ASP:H	2:B:82:GLU:HG3	1.65	0.59
1:E:267:VAL:HG13	1:E:268:ASP:H	1.67	0.59
1:M:214:LEU:HB3	1:M:252:ARG:HD2	1.84	0.59
4:L:205:PHE:CG	4:L:210:VAL:HG22	2.37	0.59
1:M:60:ILE:HG22	1:M:97:ILE:HD11	1.83	0.59
3:O:91:LEU:HD11	3:O:102:VAL:HG21	1.84	0.59
2:N:4:TRP:HA	2:N:9:ALA:O	2.02	0.59
2:J:4:TRP:HE3	2:J:8:GLY:HA2	1.66	0.59
2:J:184:TYR:CE1	2:J:214:THR:HG22	2.38	0.59
4:L:156:PHE:HD1	4:P:211:ARG:NH1	2.00	0.59
1:E:178:ILE:HD13	1:E:311:LEU:HB2	1.84	0.59
1:M:72:LEU:HD11	1:M:342:PRO:HG3	1.82	0.59
1:I:420:ILE:HD11	1:I:422:ARG:HG2	1.84	0.59
3:G:140:LEU:HB3	3:G:159:MET:HG3	1.85	0.58
4:H:26:ILE:HG13	4:H:77:ILE:HG23	1.85	0.58
1:I:214:LEU:HD21	1:I:254:ILE:HG23	1.85	0.58
1:A:46:GLY:HA3	1:A:462:ASP:OD2	2.03	0.58
2:N:251:ARG:HA	2:N:256:ARG:HH21	1.68	0.58
2:J:29:PRO:HG2	2:J:51:LEU:HD22	1.85	0.58
3:G:215:GLU:HB3	3:G:249:TYR:CE1	2.38	0.58
4:L:234:THR:HG21	4:P:155:GLU:HG3	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:46:GLY:HA3	1:I:462:ASP:OD2	2.03	0.58
3:C:169:ALA:HB3	3:C:188:LEU:HD12	1.86	0.58
3:C:202:ILE:HG12	3:C:262:PHE:HB2	1.85	0.58
1:E:265:GLY:N	1:E:278:ARG:O	2.31	0.58
1:I:220:ILE:HD11	1:I:502:VAL:HG21	1.84	0.58
1:E:279:SER:HB3	1:E:415:SER:HA	1.86	0.58
2:N:38:VAL:HG22	2:N:317:ALA:HB3	1.85	0.58
2:B:27:ARG:N	2:B:264:ASP:OD2	2.37	0.57
2:J:80:ARG:HG3	2:J:102:LEU:HD12	1.85	0.57
1:I:69:ARG:NH1	1:I:92:GLY:O	2.37	0.57
2:J:251:ARG:HA	2:J:256:ARG:HH21	1.69	0.57
3:O:17:LEU:HD22	3:O:71:ARG:HH12	1.69	0.57
1:E:334:ASP:H	2:F:82:GLU:HG3	1.69	0.57
2:F:80:ARG:HG3	2:F:102:LEU:HD12	1.85	0.57
4:L:181:HIS:HB2	4:L:249:VAL:HG21	1.87	0.57
12:O:301:DGL:N	15:P:404:IAS:HA	2.20	0.57
1:A:534:PHE:HB3	1:A:540:THR:HG21	1.85	0.57
2:F:254:SER:O	2:F:258:ILE:HG12	2.05	0.56
4:P:57:ALA:HB2	4:P:79:LEU:HD12	1.88	0.56
4:H:68:THR:HG23	4:H:71:GLY:H	1.70	0.56
1:M:536:GLU:HB2	1:M:540:THR:HG23	1.87	0.56
3:O:132:ALA:HB1	3:O:136:ALA:HB3	1.86	0.56
3:C:140:LEU:HB3	3:C:159:MET:HG3	1.88	0.56
4:P:78:LEU:HD22	4:P:258:LEU:HD11	1.87	0.56
1:A:178:ILE:HD13	1:A:311:LEU:HB2	1.88	0.56
4:P:147:TRP:CH2	12:P:403:DGL:HB3	2.39	0.56
4:L:88:LYS:HG3	4:L:117:ILE:HG23	1.88	0.56
2:N:22:LEU:HD21	2:N:284:PRO:HB2	1.88	0.56
2:J:79:THR:HG23	2:J:82:GLU:H	1.71	0.55
1:A:47:CYS:HA	1:A:460:TYR:O	2.06	0.55
4:D:287:THR:HG22	4:D:288:ALA:H	1.71	0.55
2:J:258:ILE:HD12	2:J:283:LEU:HD21	1.87	0.55
3:O:216:THR:HB	3:O:248:ARG:HB3	1.88	0.55
2:F:267:LEU:HD21	2:F:288:ILE:HD12	1.88	0.55
1:I:178:ILE:HD13	1:I:311:LEU:HB2	1.89	0.55
3:K:62:ILE:HD12	3:K:83:VAL:HG22	1.87	0.55
4:D:235:LEU:HD12	4:D:238:ARG:NH2	2.22	0.55
1:I:278:ARG:HG3	1:I:279:SER:N	2.20	0.55
4:P:287:THR:HG22	4:P:288:ALA:H	1.71	0.55
3:C:206:HIS:HD2	3:C:263:VAL:HG11	1.72	0.55
4:H:68:THR:HG21	4:H:72:ARG:O	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:205:SER:H	1:M:208:LYS:HD3	1.72	0.55
4:P:181:HIS:HB2	4:P:249:VAL:HG21	1.89	0.55
3:C:183:VAL:HG12	3:C:202:ILE:HB	1.89	0.55
2:J:147:THR:HG23	2:J:148:ILE:HD12	1.88	0.55
1:A:47:CYS:HB3	1:A:459:ILE:CG2	2.37	0.54
1:A:112:PRO:HA	1:A:137:LEU:HD12	1.88	0.54
2:F:27:ARG:HG3	2:F:28:VAL:HG23	1.90	0.54
3:O:7:ARG:NH2	3:O:47:GLY:O	2.37	0.54
2:B:5:VAL:H	2:B:9:ALA:H	1.53	0.54
2:B:251:ARG:HA	2:B:256:ARG:HH21	1.71	0.54
1:E:214:LEU:HB3	1:E:252:ARG:HD2	1.89	0.54
3:K:187:ALA:HA	3:K:205:SER:HB2	1.88	0.54
1:I:308:THR:HB	16:I:602:L6K:C5	2.38	0.54
3:K:112:THR:HG21	3:K:133:VAL:HG22	1.89	0.54
2:N:80:ARG:HG3	2:N:102:LEU:HD12	1.90	0.54
4:L:26:ILE:HG13	4:L:77:ILE:HG23	1.88	0.54
4:L:50:VAL:HG12	4:L:55:ALA:HA	1.88	0.54
2:B:142:ASP:OD2	2:B:152:HIS:ND1	2.39	0.54
2:F:79:THR:HG23	2:F:82:GLU:H	1.73	0.54
4:H:70:ASP:OD2	4:H:72:ARG:NE	2.41	0.54
2:J:4:TRP:CE3	2:J:8:GLY:HA2	2.42	0.54
3:C:5:ARG:HB3	3:C:51:GLU:HB3	1.90	0.53
3:O:76:LEU:HB3	3:O:95:MET:HG3	1.89	0.53
1:E:227:HIS:CD2	1:E:257:ALA:HB2	2.42	0.53
1:M:431:GLN:HA	1:M:435:SER:HB3	1.90	0.53
2:N:23:LEU:HB3	2:N:51:LEU:HD11	1.90	0.53
4:D:68:THR:HG23	4:D:71:GLY:H	1.73	0.53
2:N:277:PRO:HB2	2:N:279:TRP:NE1	2.24	0.53
2:B:27:ARG:HG3	2:B:28:VAL:HG23	1.89	0.53
4:L:10:LYS:H	4:L:10:LYS:HD2	1.73	0.53
1:E:44:ALA:HB1	1:E:47:CYS:HB2	1.90	0.53
2:B:205:ASN:HA	2:B:208:THR:O	2.08	0.53
1:I:476:VAL:HB	1:I:484:VAL:HG22	1.91	0.53
3:C:197:ARG:HG2	3:C:255:THR:HG21	1.91	0.53
4:P:26:ILE:HG13	4:P:77:ILE:HG23	1.91	0.53
4:P:68:THR:HG23	4:P:71:GLY:H	1.74	0.53
2:N:277:PRO:HB2	2:N:279:TRP:CE2	2.44	0.53
4:D:105:THR:HG22	4:H:211:ARG:NH1	2.21	0.53
2:F:27:ARG:HB3	3:G:42:ARG:HH21	1.74	0.53
2:B:209:ARG:HA	2:B:209:ARG:HH11	1.73	0.53
4:L:97:GLN:NE2	4:P:52:GLY:HA3	2.24	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:52:GLY:HA3	4:H:97:GLN:HE22	1.73	0.52
12:L:405:DGL:HA	12:L:406:DGL:OXT	2.09	0.52
2:N:28:VAL:HB	2:N:263:ALA:HA	1.91	0.52
3:O:91:LEU:HB2	3:O:110:ALA:HB1	1.92	0.52
4:P:68:THR:HG21	4:P:72:ARG:O	2.09	0.52
1:E:126:LEU:HB3	1:E:134:ARG:HG3	1.91	0.52
1:A:3:THR:HG23	1:A:40:GLN:HG3	1.90	0.52
2:N:116:ALA:HB2	2:N:178:GLN:HB2	1.91	0.52
1:A:536:GLU:HB2	1:A:540:THR:HG23	1.90	0.52
4:D:231:TYR:HA	4:D:243:LEU:HD23	1.91	0.52
1:I:126:LEU:HB3	1:I:134:ARG:HG3	1.91	0.52
1:M:126:LEU:HB3	1:M:134:ARG:HG3	1.91	0.52
1:I:220:ILE:HG23	1:I:222:VAL:HG23	1.92	0.52
4:L:52:GLY:HA3	4:P:97:GLN:HE22	1.74	0.52
1:I:233:LEU:HD21	16:I:602:L6K:C3	2.39	0.52
3:K:216:THR:HB	3:K:248:ARG:HB3	1.91	0.52
1:I:448:HIS:ND1	1:I:453:ALA:HB2	2.25	0.52
2:J:75:ALA:HA	2:J:198:GLN:HG2	1.91	0.52
4:L:177:LEU:HD22	4:L:250:VAL:HG22	1.92	0.52
1:E:205:SER:H	1:E:208:LYS:HD3	1.75	0.52
1:A:78:SER:OG	1:A:91:GLY:N	2.43	0.52
4:H:178:GLY:HA3	4:H:184:THR:CG2	2.37	0.52
3:K:22:LEU:HD13	3:K:78:GLN:OE1	2.10	0.52
1:E:72:LEU:HD11	1:E:342:PRO:HG3	1.92	0.51
1:E:420:ILE:HD11	1:E:422:ARG:HG2	1.93	0.51
1:E:448:HIS:ND1	1:E:453:ALA:HB2	2.26	0.51
3:K:206:HIS:HD2	3:K:263:VAL:HG11	1.76	0.51
2:N:33:GLY:HA2	2:N:58:VAL:HG13	1.92	0.51
1:I:205:SER:H	1:I:208:LYS:CD	2.24	0.51
1:M:347:PRO:HB2	1:M:348:ARG:NH1	2.21	0.51
2:N:154:ARG:HD3	3:O:254:ALA:HB1	1.93	0.51
4:P:30:ASN:O	4:P:72:ARG:HB3	2.10	0.51
4:D:70:ASP:OD2	4:D:72:ARG:NE	2.42	0.51
4:P:178:GLY:HA3	4:P:184:THR:CG2	2.40	0.51
1:A:233:LEU:HD11	6:A:602:MFN:H11A	1.91	0.51
1:A:443:LEU:HB3	1:A:446:ARG:HD2	1.93	0.51
1:E:240:ASP:OD1	1:E:283:ARG:NH2	2.42	0.51
4:H:88:LYS:HG3	4:H:117:ILE:HG23	1.93	0.51
2:N:134:ILE:H	2:N:134:ILE:HD12	1.76	0.51
2:J:22:LEU:HD21	2:J:284:PRO:HB2	1.93	0.51
1:A:261:PHE:CE2	6:A:602:MFN:H3	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:138:ALA:HB1	3:K:160:ARG:HB2	1.93	0.51
4:L:233:PRO:O	3:O:216:THR:HG23	2.11	0.51
1:M:8:GLY:HA2	1:M:46:GLY:O	2.11	0.51
2:F:3:ALA:O	2:F:10:ALA:HA	2.11	0.51
2:F:27:ARG:O	3:G:40:SER:OG	2.25	0.51
1:I:93:SER:O	1:I:97:ILE:HG22	2.11	0.51
3:K:164:ILE:HB	3:K:182:ILE:HG23	1.93	0.51
1:M:279:SER:HB3	1:M:415:SER:HA	1.92	0.51
3:O:166:ALA:HB3	3:O:184:VAL:HG12	1.93	0.51
2:J:184:TYR:CZ	2:J:214:THR:HG22	2.46	0.50
4:L:105:THR:O	4:P:211:ARG:NH1	2.43	0.50
4:L:287:THR:HG22	4:L:288:ALA:H	1.76	0.50
4:P:135:ARG:HG2	4:P:145:ARG:HG3	1.93	0.50
4:D:68:THR:HG21	4:D:72:ARG:O	2.12	0.50
1:A:10:VAL:HB	1:A:17:ARG:HD3	1.92	0.50
1:E:199:ILE:HD11	1:E:202:TYR:HB2	1.92	0.50
3:G:76:LEU:HB3	3:G:95:MET:HG3	1.94	0.50
4:P:88:LYS:HG3	4:P:117:ILE:HG23	1.93	0.50
4:L:29:THR:HG22	4:L:74:GLY:HA3	1.92	0.50
1:A:300:GLN:HE22	1:A:360:LEU:HG	1.77	0.50
2:F:317:ALA:HA	2:F:328:TYR:HA	1.93	0.50
1:I:484:VAL:HG12	1:I:489:VAL:HG22	1.94	0.50
1:M:443:LEU:HB3	1:M:446:ARG:HD2	1.93	0.50
1:A:69:ARG:NH2	1:A:125:GLU:OE2	2.43	0.50
4:D:99:ILE:O	4:D:105:THR:HG21	2.12	0.50
1:E:53:GLY:HA2	1:E:434:ARG:HD3	1.93	0.50
3:K:166:ALA:HB3	3:K:184:VAL:HG12	1.93	0.50
1:A:56:VAL:HG21	1:A:440:LEU:HD23	1.94	0.50
1:M:79:GLU:OE1	1:M:79:GLU:N	2.43	0.50
2:N:5:VAL:HG22	2:N:303:VAL:HG13	1.94	0.50
1:A:139:VAL:HG11	1:A:178:ILE:HD12	1.94	0.49
1:A:461:ARG:O	1:A:469:MET:HG3	2.12	0.49
3:C:206:HIS:CD2	3:C:263:VAL:HG11	2.47	0.49
1:A:377:ASP:OD2	6:A:602:MFN:H12A	2.11	0.49
1:E:476:VAL:HB	1:E:484:VAL:HG22	1.94	0.49
1:I:112:PRO:HA	1:I:137:LEU:HD12	1.92	0.49
3:K:10:LEU:HD12	3:K:66:SER:HB3	1.94	0.49
3:O:129:ALA:O	3:O:155:LEU:HD12	2.12	0.49
1:E:374:LEU:HB2	1:E:432:LEU:HD22	1.95	0.49
3:C:71:ARG:HD2	11:C:301:CL:CL	2.50	0.49
3:G:178:ILE:O	3:G:198:ARG:HB2	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:3:ALA:O	2:B:10:ALA:HA	2.11	0.49
2:B:110:ALA:HB1	2:B:111:PRO:HD2	1.94	0.49
1:E:120:LEU:HD23	2:F:326:ILE:HG22	1.95	0.49
1:E:431:GLN:HA	1:E:435:SER:HB3	1.94	0.49
4:D:97:GLN:NE2	4:H:52:GLY:HA3	2.28	0.49
3:O:62:ILE:HD12	3:O:83:VAL:HG22	1.95	0.49
4:D:105:THR:O	4:H:211:ARG:NH1	2.43	0.49
1:A:279:SER:HB3	1:A:415:SER:HA	1.95	0.49
3:C:101:THR:HG23	3:C:120:THR:HB	1.94	0.49
1:M:296:TYR:CZ	1:M:372:THR:HG23	2.48	0.49
2:F:23:LEU:HB3	2:F:51:LEU:HD11	1.95	0.48
3:G:7:ARG:NH2	3:G:47:GLY:O	2.46	0.48
1:I:60:ILE:HG22	1:I:97:ILE:HD11	1.95	0.48
3:C:133:VAL:HG23	3:C:136:ALA:HB2	1.94	0.48
1:E:139:VAL:HG11	1:E:178:ILE:HD12	1.93	0.48
1:E:448:HIS:CE1	1:E:453:ALA:HB2	2.48	0.48
1:I:56:VAL:HG21	1:I:440:LEU:HD23	1.96	0.48
4:L:134:LYS:HA	12:L:406:DGL:HG2	1.95	0.48
4:D:218:GLY:HA3	4:D:223:MET:CB	2.43	0.48
2:N:27:ARG:HG3	2:N:28:VAL:HG23	1.96	0.48
1:A:220:ILE:HD11	1:A:502:VAL:HG21	1.95	0.48
1:A:296:TYR:CZ	1:A:372:THR:HG23	2.48	0.48
4:L:231:TYR:HA	4:L:243:LEU:HD23	1.94	0.48
3:O:166:ALA:O	3:O:184:VAL:HA	2.13	0.48
1:E:81:ALA:HB2	1:E:89:HIS:HB2	1.95	0.48
1:A:220:ILE:HG23	1:A:222:VAL:HG23	1.94	0.48
1:A:267:VAL:HG23	1:A:277:PHE:CA	2.44	0.48
1:I:180:ALA:HB3	1:I:206:THR:HB	1.95	0.48
1:I:216:ALA:O	1:I:220:ILE:HG22	2.14	0.48
4:D:220:THR:O	4:D:223:MET:HG2	2.14	0.48
1:E:238:ALA:HB1	1:E:262:TYR:HD1	1.78	0.48
2:J:205:ASN:HA	2:J:208:THR:O	2.12	0.48
3:K:24:LEU:H	3:K:24:LEU:HD12	1.78	0.48
4:L:165:VAL:HG11	4:L:258:LEU:HB3	1.95	0.48
3:K:76:LEU:HB3	3:K:95:MET:HG3	1.94	0.48
1:M:120:LEU:HD12	1:M:529:VAL:HG13	1.96	0.48
2:N:55:LEU:O	2:N:237:ARG:HA	2.14	0.48
2:B:219:PHE:CE1	2:B:275:PRO:HD3	2.49	0.48
2:F:205:ASN:HA	2:F:208:THR:O	2.13	0.48
1:I:404:ILE:HD11	1:I:417:LEU:HD23	1.95	0.48
4:L:99:ILE:O	4:L:105:THR:HG21	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:320:ASN:HB3	2:F:323:ARG:HB2	1.96	0.48
3:G:72:VAL:HG13	3:G:91:LEU:HD23	1.95	0.48
2:J:92:ILE:HG12	2:J:103:ILE:HD11	1.94	0.48
4:L:30:ASN:O	4:L:72:ARG:HB3	2.14	0.48
3:O:24:LEU:HB3	3:O:54:LEU:HD21	1.96	0.48
3:C:112:THR:HG21	3:C:133:VAL:HG22	1.95	0.47
4:D:50:VAL:HG12	4:D:55:ALA:HA	1.96	0.47
1:E:149:LEU:HG	1:E:154:GLU:HG3	1.94	0.47
1:E:307:VAL:HA	1:E:342:PRO:HA	1.95	0.47
4:L:49:SER:O	4:L:53:CYS:HB2	2.13	0.47
1:A:484:VAL:HG12	1:A:489:VAL:HG22	1.96	0.47
3:C:196:MET:SD	3:C:259:GLY:HA3	2.54	0.47
1:E:60:ILE:HG22	1:E:97:ILE:HD11	1.95	0.47
4:D:156:PHE:HD1	4:H:211:ARG:NH1	2.12	0.47
4:D:178:GLY:HA3	4:D:184:THR:CG2	2.45	0.47
1:E:267:VAL:HG13	1:E:268:ASP:N	2.29	0.47
2:F:185:ASP:HB3	2:F:188:GLU:HG2	1.95	0.47
2:N:185:ASP:HB3	2:N:188:GLU:HG2	1.96	0.47
3:G:166:ALA:HB3	3:G:184:VAL:HG12	1.96	0.47
3:K:140:LEU:HB3	3:K:159:MET:HG3	1.96	0.47
1:I:448:HIS:CE1	1:I:453:ALA:HB2	2.49	0.47
1:I:505:ASP:HB3	1:I:508:MET:HB3	1.97	0.47
3:K:133:VAL:HG23	3:K:136:ALA:HB2	1.95	0.47
1:A:333:GLY:O	1:A:335:ALA:N	2.48	0.47
3:C:177:MET:HB3	3:C:196:MET:HG3	1.96	0.47
4:H:50:VAL:HG12	4:H:55:ALA:HA	1.96	0.47
1:I:534:PHE:HB3	1:I:540:THR:HG21	1.97	0.47
2:N:205:ASN:HA	2:N:208:THR:O	2.15	0.47
7:A:603:GOL:HO1	2:B:42:ARG:HH22	1.61	0.47
4:D:10:LYS:H	4:D:10:LYS:HD2	1.79	0.47
4:D:105:THR:CG2	4:H:211:ARG:HH11	2.23	0.47
2:F:251:ARG:HA	2:F:256:ARG:HH21	1.79	0.47
4:H:14:THR:CG2	4:H:15:PHE:H	2.23	0.47
1:I:308:THR:OG1	1:I:341:VAL:HG22	2.15	0.47
1:I:454:LYS:O	1:I:456:ASP:N	2.44	0.47
3:K:155:LEU:HD11	3:K:164:ILE:HG21	1.97	0.47
1:M:220:ILE:HG23	1:M:222:VAL:HG23	1.97	0.47
3:O:169:ALA:HB3	3:O:188:LEU:HD12	1.96	0.47
4:P:49:SER:HA	4:P:56:GLU:OE2	2.15	0.47
1:I:265:GLY:N	1:I:278:ARG:O	2.47	0.47
3:K:15:ASP:OD1	3:K:71:ARG:HD3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:10:LYS:HD2	4:P:10:LYS:H	1.78	0.47
4:D:134:LYS:HD2	4:D:134:LYS:HA	1.66	0.47
3:G:4:LEU:HD12	3:G:60:LEU:HD21	1.97	0.47
3:G:138:ALA:HB1	3:G:160:ARG:HB2	1.97	0.47
3:G:164:ILE:HB	3:G:182:ILE:HG23	1.97	0.47
1:I:47:CYS:HA	1:I:460:TYR:O	2.15	0.47
4:L:52:GLY:HA3	4:P:97:GLN:NE2	2.30	0.47
1:M:44:ALA:HB1	1:M:47:CYS:HB2	1.96	0.47
3:O:198:ARG:HD3	3:O:258:LYS:HE3	1.96	0.47
2:B:333:ASP:N	2:B:334:PRO:HD3	2.30	0.47
3:C:216:THR:HG23	4:H:233:PRO:O	2.15	0.47
3:O:5:ARG:HB3	3:O:51:GLU:HB3	1.97	0.47
4:L:57:ALA:HB2	4:L:79:LEU:HD12	1.97	0.46
4:L:250:VAL:HB	4:P:152:MET:HB3	1.97	0.46
3:O:202:ILE:HG12	3:O:262:PHE:HB2	1.96	0.46
2:B:331:ALA:HB3	2:B:334:PRO:HG3	1.97	0.46
1:I:444:THR:O	1:I:448:HIS:NE2	2.48	0.46
3:K:91:LEU:HB2	3:K:110:ALA:HB1	1.97	0.46
3:G:196:MET:SD	3:G:259:GLY:HA3	2.56	0.46
1:I:165:GLN:OE1	1:I:509:GLU:HG2	2.15	0.46
1:E:165:GLN:OE1	1:E:509:GLU:HG2	2.16	0.46
1:E:220:ILE:HG23	1:E:222:VAL:HG23	1.97	0.46
4:L:68:THR:HG23	4:L:71:GLY:H	1.80	0.46
1:M:227:HIS:CD2	1:M:257:ALA:HB2	2.50	0.46
1:M:476:VAL:HB	1:M:484:VAL:HG22	1.98	0.46
2:N:137:VAL:HG11	2:N:173:ARG:NH1	2.31	0.46
2:J:87:ALA:O	2:J:111:PRO:HG3	2.15	0.46
2:J:277:PRO:HG2	2:J:280:LEU:HG	1.96	0.46
3:K:178:ILE:O	3:K:198:ARG:HB2	2.15	0.46
1:M:333:GLY:HA3	2:N:79:THR:HG23	1.97	0.46
2:N:27:ARG:N	2:N:264:ASP:OD2	2.43	0.46
3:K:91:LEU:HD23	3:K:91:LEU:HA	1.81	0.46
1:M:448:HIS:CE1	1:M:453:ALA:HB2	2.50	0.46
3:C:17:LEU:HD22	3:C:71:ARG:HH12	1.81	0.46
3:C:202:ILE:CG1	3:C:262:PHE:HB2	2.45	0.46
1:M:214:LEU:HD21	1:M:254:ILE:HG23	1.97	0.46
4:P:21:VAL:HG13	4:P:81:GLY:O	2.16	0.46
1:I:214:LEU:HD13	1:I:252:ARG:HH11	1.80	0.46
3:K:140:LEU:HD23	3:K:142:GLY:H	1.81	0.46
3:K:181:THR:HG23	3:K:200:THR:HB	1.96	0.46
3:O:138:ALA:HB1	3:O:160:ARG:HB2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:92:LEU:HD11	4:P:122:ALA:HB3	1.97	0.46
3:C:4:LEU:HD12	3:C:60:LEU:HD21	1.98	0.46
1:E:237:GLY:HA2	1:E:266:VAL:HG22	1.96	0.46
3:G:169:ALA:HB3	3:G:188:LEU:HD12	1.98	0.46
3:O:184:VAL:O	3:O:203:ALA:HA	2.15	0.46
3:O:161:ARG:HD3	4:P:135:ARG:NH2	2.31	0.45
4:P:190:ILE:CD1	4:P:277:ILE:HD13	2.45	0.45
3:C:178:ILE:O	3:C:198:ARG:HB2	2.16	0.45
2:F:64:TYR:OH	2:F:236:PRO:O	2.34	0.45
1:I:73:PRO:HB3	2:J:234:GLN:OE1	2.17	0.45
2:J:38:VAL:HG22	2:J:317:ALA:HB3	1.97	0.45
4:L:183:ASP:HB3	4:L:281:HIS:HB3	1.98	0.45
3:C:7:ARG:NH2	3:C:47:GLY:O	2.49	0.45
3:C:215:GLU:HB3	3:C:249:TYR:CE2	2.51	0.45
1:E:46:GLY:HA3	1:E:462:ASP:OD2	2.16	0.45
1:I:461:ARG:O	1:I:469:MET:HG3	2.16	0.45
1:M:79:GLU:CD	1:M:79:GLU:H	2.17	0.45
1:M:81:ALA:HB2	1:M:89:HIS:HB2	1.99	0.45
1:M:238:ALA:HB1	1:M:262:TYR:HD1	1.82	0.45
2:F:27:ARG:NE	3:G:12:GLU:OE1	2.47	0.45
2:F:38:VAL:HG22	2:F:317:ALA:HB3	1.97	0.45
2:J:277:PRO:HB2	2:J:279:TRP:CE2	2.51	0.45
3:K:166:ALA:O	3:K:184:VAL:HA	2.16	0.45
1:I:52:GLY:HA3	1:I:456:ASP:HB3	1.98	0.45
1:I:254:ILE:HD12	1:I:294:ALA:HA	1.99	0.45
2:J:242:ARG:C	2:J:244:GLN:H	2.19	0.45
1:A:307:VAL:HA	1:A:342:PRO:HA	1.99	0.45
2:B:94:GLY:HA2	2:B:146:LEU:HD21	1.98	0.45
1:E:57:HIS:CE1	1:E:257:ALA:HB1	2.52	0.45
1:E:484:VAL:HG12	1:E:489:VAL:HG22	1.99	0.45
3:G:27:LEU:HD12	3:G:35:LEU:HD11	1.98	0.45
1:I:351:VAL:HB	11:I:607:CL:CL	2.53	0.45
4:L:215:LYS:HE2	4:L:226:SER:OG	2.16	0.45
1:M:139:VAL:HG11	1:M:178:ILE:HD12	1.99	0.45
3:O:4:LEU:HD12	3:O:60:LEU:HD21	1.98	0.45
3:O:72:VAL:HG13	3:O:91:LEU:HD23	1.99	0.45
3:O:249:TYR:HB2	3:O:261:LEU:HB3	1.99	0.45
2:F:5:VAL:HB	2:F:9:ALA:HB3	1.98	0.45
1:I:328:TRP:HE1	12:I:610:DGL:C	2.29	0.45
4:L:55:ALA:HB1	4:L:80:PHE:O	2.17	0.45
1:I:424:TYR:HB3	1:I:429:ILE:CD1	2.47	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:27:ARG:HG3	2:J:28:VAL:HG23	1.99	0.45
2:F:196:MET:SD	3:G:254:ALA:HB1	2.57	0.45
3:G:5:ARG:HB3	3:G:51:GLU:HB3	1.99	0.45
4:H:179:ARG:HG3	4:H:282:GLY:O	2.17	0.45
2:N:64:TYR:OH	2:N:237:ARG:HB2	2.17	0.45
1:A:378:HIS:HA	1:A:379:PRO:HA	1.60	0.44
2:B:277:PRO:HB2	2:B:279:TRP:NE1	2.32	0.44
3:O:181:THR:HG23	3:O:200:THR:HB	1.98	0.44
3:C:255:THR:HG22	3:C:256:LEU:N	2.28	0.44
1:I:44:ALA:HB1	1:I:47:CYS:HB2	1.98	0.44
1:I:431:GLN:HA	1:I:435:SER:HB3	1.98	0.44
4:L:178:GLY:HA3	4:L:184:THR:CG2	2.47	0.44
1:A:216:ALA:O	1:A:220:ILE:HG22	2.17	0.44
1:A:230:CYS:HB2	1:A:262:TYR:CZ	2.52	0.44
4:D:42:VAL:HG13	4:D:98:CYS:HB3	1.98	0.44
2:F:154:ARG:HD3	3:G:254:ALA:HB1	1.99	0.44
1:A:72:LEU:HD11	1:A:342:PRO:HG3	1.98	0.44
1:A:269:PRO:HG2	1:A:271:ASN:ND2	2.32	0.44
2:F:110:ALA:HB1	2:F:111:PRO:HD2	1.98	0.44
1:A:271:ASN:N	1:A:272:PRO:CD	2.80	0.44
1:E:296:TYR:CZ	1:E:372:THR:HG23	2.52	0.44
2:N:67:LEU:HD23	2:N:70:LEU:HD21	2.00	0.44
2:F:87:ALA:HA	2:F:179:TYR:HB3	1.98	0.44
12:K:301:DGL:HG2	14:L:404:GLU:O	2.17	0.44
4:P:147:TRP:HH2	12:P:403:DGL:CB	2.26	0.44
1:A:230:CYS:HB2	1:A:262:TYR:CE1	2.52	0.44
4:D:169:VAL:HB	4:D:263:VAL:HG21	2.00	0.44
1:E:60:ILE:HG12	1:E:111:GLU:HG2	1.99	0.44
3:G:15:ASP:OD1	3:G:71:ARG:HD3	2.17	0.44
3:G:202:ILE:HG12	3:G:262:PHE:HB2	2.00	0.44
4:H:231:TYR:HA	4:H:243:LEU:HD23	1.97	0.44
3:K:236:ALA:HB1	3:K:238:GLN:HG2	2.00	0.44
1:I:130:PRO:O	1:I:132:LEU:N	2.47	0.44
1:I:410:ILE:HG13	1:I:414:ARG:HD2	2.00	0.44
1:M:520:PHE:O	2:N:322:ARG:NH2	2.51	0.44
2:N:113:ARG:C	2:N:117:ALA:HB2	2.38	0.44
1:A:2:LEU:HG	1:A:26:GLU:HG3	2.00	0.44
1:A:60:ILE:HG12	1:A:111:GLU:HG2	1.99	0.44
14:C:303:GLU:HB3	14:C:304:GLU:H	1.51	0.44
3:G:14:VAL:HG13	3:G:37:ILE:HG13	2.00	0.44
1:I:536:GLU:HB2	1:I:540:THR:HG23	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:55:LEU:O	2:J:237:ARG:HA	2.18	0.44
4:L:70:ASP:OD2	4:L:72:ARG:NE	2.45	0.44
4:P:99:ILE:O	4:P:105:THR:HG21	2.18	0.44
4:D:287:THR:HG22	4:D:288:ALA:N	2.32	0.43
2:F:5:VAL:HG21	2:F:15:ALA:HA	2.00	0.43
4:H:14:THR:HG22	4:H:15:PHE:N	2.22	0.43
2:J:317:ALA:HA	2:J:328:TYR:HA	1.99	0.43
1:A:476:VAL:HB	1:A:484:VAL:HG22	2.00	0.43
1:I:378:HIS:HA	1:I:379:PRO:HA	1.71	0.43
2:J:64:TYR:OH	2:J:236:PRO:O	2.35	0.43
4:L:177:LEU:HB3	4:L:247:CYS:SG	2.57	0.43
3:O:17:LEU:HG	3:O:18:ASN:N	2.33	0.43
2:F:160:HIS:CB	3:G:253:LEU:HB3	2.48	0.43
3:K:197:ARG:HB3	3:K:256:LEU:HD21	2.00	0.43
1:M:424:TYR:HB3	1:M:429:ILE:CD1	2.49	0.43
3:O:10:LEU:HD12	3:O:66:SER:HB3	1.99	0.43
3:C:184:VAL:O	3:C:203:ALA:HA	2.19	0.43
1:E:223:PRO:HB2	1:E:442:GLY:HA3	2.01	0.43
2:F:256:ARG:NH1	2:F:262:GLU:OE1	2.49	0.43
1:I:142:ASN:HB2	1:I:336:GLU:OE1	2.19	0.43
3:K:169:ALA:HB3	3:K:188:LEU:HD12	1.99	0.43
1:M:188:ASP:HB3	2:N:115:ARG:HB2	2.00	0.43
1:I:86:PRO:HB3	2:J:49:GLU:OE2	2.19	0.43
2:J:111:PRO:HG3	2:J:121:ARG:HH11	1.82	0.43
1:M:378:HIS:HA	1:M:379:PRO:HA	1.76	0.43
3:O:188:LEU:HB3	3:O:206:HIS:HA	2.00	0.43
4:P:55:ALA:HB1	4:P:80:PHE:O	2.18	0.43
2:B:184:TYR:CE1	2:B:214:THR:HG22	2.53	0.43
1:I:47:CYS:HB3	1:I:459:ILE:CG2	2.48	0.43
3:K:158:ARG:HA	3:K:176:ARG:O	2.18	0.43
1:M:484:VAL:HG12	1:M:489:VAL:HG22	1.99	0.43
2:B:354:ARG:O	2:B:358:LYS:HD2	2.18	0.43
4:P:287:THR:HG22	4:P:288:ALA:N	2.34	0.43
1:A:205:SER:H	1:A:208:LYS:HD3	1.83	0.43
1:A:448:HIS:ND1	1:A:453:ALA:HB2	2.33	0.43
1:E:378:HIS:HA	1:E:379:PRO:HA	1.78	0.43
1:E:443:LEU:HB3	1:E:446:ARG:HD2	2.01	0.43
1:I:348:ARG:HH11	1:I:348:ARG:HG2	1.84	0.43
4:L:124:ARG:HD2	4:L:147:TRP:CH2	2.54	0.43
1:A:86:PRO:HB3	2:B:49:GLU:OE2	2.18	0.43
4:D:21:VAL:HG22	4:D:81:GLY:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:139:VAL:HG11	1:I:178:ILE:HD12	2.01	0.43
4:L:25:ALA:HB3	4:L:111:VAL:HB	2.01	0.43
1:M:265:GLY:N	1:M:278:ARG:O	2.45	0.43
1:M:333:GLY:O	1:M:335:ALA:N	2.52	0.43
1:M:373:ILE:HD13	1:M:440:LEU:HD22	2.01	0.43
12:O:301:DGL:CG	12:P:403:DGL:HB2	2.49	0.43
1:A:14:THR:HB	1:A:450:ARG:HH22	1.84	0.42
1:A:206:THR:HA	1:A:209:ILE:HD12	2.01	0.42
3:C:17:LEU:HD12	3:C:74:ALA:HB3	2.00	0.42
3:C:66:SER:H	3:C:69:LEU:HD12	1.84	0.42
1:A:267:VAL:HG23	1:A:277:PHE:HA	2.01	0.42
1:E:199:ILE:HA	1:E:200:PRO:HD3	1.94	0.42
1:I:254:ILE:HD13	1:I:256:PHE:CE2	2.54	0.42
3:K:251:GLY:N	3:K:259:GLY:O	2.52	0.42
4:L:175:LEU:HD23	4:L:175:LEU:H	1.84	0.42
4:D:133:ALA:HB2	4:D:147:TRP:CZ3	2.54	0.42
1:I:52:GLY:N	1:I:456:ASP:O	2.52	0.42
2:J:38:VAL:HA	2:J:41:LEU:HD12	2.01	0.42
2:J:64:TYR:OH	2:J:237:ARG:HB2	2.19	0.42
3:K:4:LEU:HD12	3:K:60:LEU:HD21	2.01	0.42
4:L:116:LYS:HB2	4:L:163:ARG:NH1	2.34	0.42
1:M:195:LEU:HA	1:M:206:THR:OG1	2.20	0.42
1:E:195:LEU:HA	1:E:206:THR:OG1	2.20	0.42
1:I:3:THR:HB	1:I:25:ILE:CG1	2.49	0.42
1:I:296:TYR:CZ	1:I:372:THR:HG23	2.53	0.42
2:J:204:LEU:HD23	2:J:210:PHE:CG	2.55	0.42
1:M:147:LEU:HB3	1:M:202:TYR:CD1	2.55	0.42
2:N:209:ARG:HA	2:N:209:ARG:HH11	1.84	0.42
3:O:198:ARG:NH1	12:P:403:DGL:HG3	2.34	0.42
3:O:249:TYR:O	3:O:260:GLU:HA	2.19	0.42
1:E:47:CYS:HA	1:E:460:TYR:O	2.19	0.42
2:F:55:LEU:O	2:F:237:ARG:HA	2.20	0.42
2:F:113:ARG:C	2:F:117:ALA:HB2	2.40	0.42
1:E:302:VAL:CG1	1:E:386:GLU:HG3	2.46	0.42
1:I:380:ASN:OD1	1:I:380:ASN:N	2.52	0.42
4:L:6:LEU:HD12	4:L:7:ASN:N	2.35	0.42
1:M:278:ARG:HG3	1:M:279:SER:N	2.35	0.42
1:M:534:PHE:HB3	1:M:540:THR:HG21	2.01	0.42
2:B:161:LEU:HA	2:B:161:LEU:HD23	1.79	0.42
3:K:180:GLY:O	4:L:134:LYS:NZ	2.53	0.42
2:N:111:PRO:HB2	2:N:117:ALA:HA	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:255:ILE:HG21	4:P:266:SER:HB3	2.02	0.42
1:A:149:LEU:HD22	1:A:162:LEU:HD22	2.02	0.42
3:C:10:LEU:HD12	3:C:66:SER:HB3	2.01	0.42
3:C:160:ARG:O	3:C:179:ALA:HB3	2.19	0.42
4:L:169:VAL:HB	4:L:263:VAL:HG21	2.02	0.42
1:A:246:LEU:HD13	1:A:256:PHE:HE2	1.85	0.42
1:E:301:VAL:HG21	1:E:355:GLN:HB3	2.02	0.42
3:G:13:ARG:NH1	3:G:68:ARG:HG2	2.35	0.42
1:I:130:PRO:HG2	1:I:492:TRP:CH2	2.54	0.42
1:A:214:LEU:HD13	1:A:252:ARG:HH11	1.84	0.42
2:F:75:ALA:HA	2:F:198:GLN:HG2	2.01	0.42
1:I:195:LEU:HA	1:I:206:THR:OG1	2.20	0.42
1:I:230:CYS:HB2	1:I:262:TYR:CE2	2.55	0.42
3:K:146:VAL:HG22	3:K:165:LEU:HB2	2.01	0.42
1:M:220:ILE:HD11	1:M:502:VAL:HG21	2.01	0.42
1:A:126:LEU:HB3	1:A:134:ARG:HG3	2.02	0.41
2:F:56:ASP:HB3	2:F:254:SER:HB3	2.02	0.41
2:F:92:ILE:HG12	2:F:103:ILE:HD11	2.01	0.41
1:I:296:TYR:CE1	1:I:372:THR:HG23	2.55	0.41
2:N:11:ASP:HB3	2:N:14:ALA:HB3	2.01	0.41
4:P:176:PHE:HD1	4:P:286:VAL:HG22	1.85	0.41
1:A:537:ASN:O	1:A:538:THR:OG1	2.32	0.41
2:B:148:ILE:HD12	2:B:148:ILE:H	1.86	0.41
2:B:177:ALA:HB3	2:B:208:THR:HG21	2.02	0.41
3:G:114:ALA:HB1	3:G:143:ALA:HB3	2.01	0.41
3:G:164:ILE:HD12	3:G:182:ILE:HG12	2.02	0.41
4:D:88:LYS:HG3	4:D:117:ILE:HG23	2.01	0.41
4:D:211:ARG:NH1	4:H:105:THR:O	2.52	0.41
4:H:12:GLU:HB3	4:H:287:THR:HB	2.01	0.41
1:I:302:VAL:HG11	1:I:386:GLU:HG3	2.01	0.41
1:I:305:GLN:HB2	1:I:344:LEU:HD12	2.01	0.41
1:M:149:LEU:HG	1:M:154:GLU:HG3	2.02	0.41
1:A:93:SER:O	1:A:97:ILE:HG22	2.20	0.41
2:B:201:ILE:HD13	2:B:212:ALA:HB2	2.03	0.41
3:C:27:LEU:CD1	3:C:35:LEU:HD11	2.50	0.41
2:F:154:ARG:HA	2:F:200:LEU:HD13	2.02	0.41
4:H:124:ARG:HD2	4:H:147:TRP:CH2	2.56	0.41
4:H:218:GLY:HA3	4:H:223:MET:HB2	2.02	0.41
3:K:108:PRO:HA	3:K:127:ASP:O	2.20	0.41
3:K:196:MET:SD	3:K:259:GLY:HA3	2.60	0.41
3:K:249:TYR:O	3:K:260:GLU:HA	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:6:LYS:HB3	2:N:7:GLY:H	1.49	0.41
2:N:75:ALA:HA	2:N:198:GLN:CG	2.51	0.41
4:H:4:PHE:CE2	4:H:303:ARG:HB3	2.56	0.41
1:M:191:LEU:HD21	2:N:209:ARG:HH21	1.85	0.41
2:N:110:ALA:HB1	2:N:111:PRO:HD2	2.02	0.41
2:N:219:PHE:CE1	2:N:275:PRO:HD3	2.56	0.41
3:O:120:THR:HG23	3:O:146:VAL:HB	2.02	0.41
2:B:92:ILE:HG12	2:B:103:ILE:HD11	2.03	0.41
4:D:76:ARG:NH1	4:D:110:GLY:O	2.54	0.41
2:F:235:ALA:HB3	2:F:247:HIS:NE2	2.34	0.41
4:H:57:ALA:HB2	4:H:79:LEU:HD12	2.03	0.41
1:M:130:PRO:HG2	1:M:492:TRP:CZ2	2.55	0.41
3:O:109:TYR:O	3:O:112:THR:OG1	2.38	0.41
2:B:17:GLU:OE2	2:B:358:LYS:NZ	2.36	0.41
4:H:12:GLU:O	4:H:302:LEU:HD12	2.20	0.41
3:K:206:HIS:CD2	3:K:263:VAL:HG11	2.54	0.41
4:P:29:THR:HG22	4:P:74:GLY:HA3	2.03	0.41
1:A:459:ILE:O	1:A:474:LYS:N	2.53	0.41
4:D:119:LEU:HD12	4:D:162:VAL:CG2	2.49	0.41
1:E:254:ILE:HD13	1:E:256:PHE:CE2	2.55	0.41
4:H:99:ILE:O	4:H:105:THR:HG21	2.21	0.41
2:J:26:SER:HB2	2:J:264:ASP:HB2	2.03	0.41
3:K:17:LEU:HG	3:K:18:ASN:N	2.36	0.41
4:L:198:ILE:HD13	4:L:266:SER:HA	2.03	0.41
2:N:5:VAL:H	2:N:9:ALA:HB3	1.86	0.41
3:O:140:LEU:HD12	3:O:140:LEU:HA	1.84	0.41
3:C:16:LEU:HA	3:C:16:LEU:HD12	1.87	0.41
4:D:133:ALA:HB2	4:D:147:TRP:CH2	2.56	0.41
1:E:8:GLY:HA2	1:E:46:GLY:O	2.21	0.41
1:E:56:VAL:HG21	1:E:440:LEU:HD23	2.03	0.41
1:E:191:LEU:HD21	2:F:209:ARG:HH21	1.86	0.41
2:J:33:GLY:HA2	2:J:58:VAL:HG13	2.03	0.41
4:L:181:HIS:CB	4:L:249:VAL:HG21	2.50	0.41
3:O:108:PRO:HA	3:O:127:ASP:O	2.20	0.41
3:C:200:THR:HA	3:C:260:GLU:HG2	2.02	0.41
1:I:301:VAL:HG21	1:I:355:GLN:HB3	2.02	0.41
1:M:53:GLY:HA2	1:M:434:ARG:HD3	2.02	0.41
4:H:55:ALA:HB1	4:H:80:PHE:O	2.20	0.40
4:L:178:GLY:HA3	4:L:184:THR:HG21	2.02	0.40
4:P:63:LEU:HD11	4:P:76:ARG:HB2	2.03	0.40
1:A:52:GLY:N	1:A:456:ASP:O	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:130:PRO:HG2	1:A:492:TRP:CZ2	2.56	0.40
1:A:223:PRO:O	1:A:253:ARG:NH2	2.54	0.40
3:C:10:LEU:HD21	3:C:49:VAL:HG13	2.03	0.40
3:G:144:THR:HG23	3:G:163:MET:HB3	2.03	0.40
2:B:314:VAL:C	2:B:331:ALA:HB2	2.42	0.40
3:G:133:VAL:HG23	3:G:136:ALA:HB2	2.02	0.40
2:J:277:PRO:HB2	2:J:279:TRP:NE1	2.36	0.40
14:K:302:GLU:HG3	12:L:405:DGL:N	2.36	0.40
1:M:370:GLU:HG3	1:M:431:GLN:HG2	2.03	0.40
1:A:34:SER:OG	1:A:36:ARG:HG2	2.21	0.40
2:B:75:ALA:HA	2:B:198:GLN:HG2	2.03	0.40
3:C:166:ALA:HB3	3:C:184:VAL:HG12	2.03	0.40
4:H:95:VAL:HG11	4:H:119:LEU:HD11	2.02	0.40
2:J:209:ARG:HA	2:J:209:ARG:HH11	1.86	0.40
2:J:265:ALA:HA	2:J:283:LEU:HD13	2.03	0.40
3:K:71:ARG:HD3	3:K:71:ARG:HH11	1.73	0.40
4:P:124:ARG:HD2	4:P:147:TRP:CH2	2.57	0.40
3:C:198:ARG:HD3	3:C:258:LYS:HE3	2.04	0.40
1:E:424:TYR:HB3	1:E:429:ILE:CD1	2.52	0.40
1:I:374:LEU:HB2	1:I:432:LEU:HD22	2.04	0.40
2:J:220:GLN:HE22	2:J:319:TRP:H	1.68	0.40
3:K:188:LEU:HD21	3:K:201:LEU:HD21	2.04	0.40
3:K:216:THR:O	4:P:236:LYS:NZ	2.34	0.40
1:M:3:THR:HG23	1:M:40:GLN:HG3	2.03	0.40
2:N:75:ALA:HA	2:N:198:GLN:HG2	2.03	0.40
4:P:252:GLU:O	4:P:253:ILE:HD13	2.22	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	545/548 (100%)	518 (95%)	26 (5%)	1 (0%)	47	79
1	E	537/548 (98%)	512 (95%)	23 (4%)	2 (0%)	34	69
1	I	540/548 (98%)	515 (95%)	24 (4%)	1 (0%)	47	79
1	M	541/548 (99%)	513 (95%)	26 (5%)	2 (0%)	34	69
2	B	352/361 (98%)	334 (95%)	16 (4%)	2 (1%)	25	59
2	F	351/361 (97%)	334 (95%)	16 (5%)	1 (0%)	41	73
2	J	351/361 (97%)	333 (95%)	16 (5%)	2 (1%)	25	59
2	N	351/361 (97%)	335 (95%)	15 (4%)	1 (0%)	41	73
3	C	263/276 (95%)	258 (98%)	5 (2%)	0	100	100
3	G	263/276 (95%)	257 (98%)	6 (2%)	0	100	100
3	K	263/276 (95%)	256 (97%)	7 (3%)	0	100	100
3	O	263/276 (95%)	258 (98%)	5 (2%)	0	100	100
4	D	306/310 (99%)	294 (96%)	12 (4%)	0	100	100
4	H	306/310 (99%)	294 (96%)	12 (4%)	0	100	100
4	L	306/310 (99%)	295 (96%)	11 (4%)	0	100	100
4	P	306/310 (99%)	295 (96%)	11 (4%)	0	100	100
All	All	5844/5980 (98%)	5601 (96%)	231 (4%)	12 (0%)	47	79

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	M	268	ASP
1	I	334	ASP
1	A	334	ASP
2	B	236	PRO
1	E	267	VAL
2	J	236	PRO
2	N	236	PRO
1	E	334	ASP
2	J	243	HIS
2	B	334	PRO
2	F	236	PRO
1	M	334	ASP

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	421/424 (99%)	404 (96%)	17 (4%)	31	65
1	E	417/424 (98%)	400 (96%)	17 (4%)	30	64
1	I	420/424 (99%)	401 (96%)	19 (4%)	27	60
1	M	418/424 (99%)	401 (96%)	17 (4%)	30	64
2	B	235/245 (96%)	227 (97%)	8 (3%)	37	69
2	F	236/245 (96%)	227 (96%)	9 (4%)	33	66
2	J	238/245 (97%)	231 (97%)	7 (3%)	42	72
2	N	237/245 (97%)	229 (97%)	8 (3%)	37	69
3	C	182/192 (95%)	177 (97%)	5 (3%)	44	74
3	G	182/192 (95%)	178 (98%)	4 (2%)	52	78
3	K	182/192 (95%)	180 (99%)	2 (1%)	73	89
3	O	182/192 (95%)	176 (97%)	6 (3%)	38	69
4	D	227/227 (100%)	221 (97%)	6 (3%)	46	74
4	H	227/227 (100%)	221 (97%)	6 (3%)	46	74
4	L	227/227 (100%)	218 (96%)	9 (4%)	31	65
4	P	227/227 (100%)	221 (97%)	6 (3%)	46	74
All	All	4258/4352 (98%)	4112 (97%)	146 (3%)	36	69

All (146) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	ARG
1	A	17	ARG
1	A	22	ASP
1	A	72	LEU
1	A	134	ARG
1	A	145	HIS
1	A	165	GLN
1	A	207	ARG

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Mol	Chain	Res	Type
1	A	241	SER
1	A	314	LEU
1	A	320	ARG
1	A	344	LEU
1	A	389	ARG
1	A	424	TYR
1	A	510	LYS
1	A	525	ASP
1	A	537	ASN
2	B	17	GLU
2	B	47	LEU
2	B	126	LEU
2	B	269	LEU
2	B	294	GLN
2	B	321	ASP
2	B	354	ARG
2	B	358	LYS
3	C	7	ARG
3	C	13	ARG
3	C	55	ASP
3	C	238	GLN
3	C	247	ARG
4	D	10	LYS
4	D	144	ARG
4	D	175	LEU
4	D	193	GLU
4	D	211	ARG
4	D	271	LEU
1	E	9	ARG
1	E	22	ASP
1	E	72	LEU
1	E	75	LEU
1	E	128	ASP
1	E	134	ARG
1	E	145	HIS
1	E	165	GLN
1	E	207	ARG
1	E	314	LEU
1	E	320	ARG
1	E	326	LYS
1	E	344	LEU
1	E	389	ARG

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Mol	Chain	Res	Type
1	E	424	TYR
1	E	510	LYS
1	E	525	ASP
2	F	17	GLU
2	F	47	LEU
2	F	126	LEU
2	F	210	PHE
2	F	227	LEU
2	F	230	TRP
2	F	294	GLN
2	F	354	ARG
2	F	358	LYS
3	G	7	ARG
3	G	13	ARG
3	G	55	ASP
3	G	247	ARG
4	H	10	LYS
4	H	135	ARG
4	H	144	ARG
4	H	175	LEU
4	H	193	GLU
4	H	271	LEU
1	I	6	HIS
1	I	9	ARG
1	I	17	ARG
1	I	22	ASP
1	I	75	LEU
1	I	134	ARG
1	I	145	HIS
1	I	165	GLN
1	I	207	ARG
1	I	241	SER
1	I	278	ARG
1	I	314	LEU
1	I	320	ARG
1	I	344	LEU
1	I	348	ARG
1	I	389	ARG
1	I	424	TYR
1	I	510	LYS
1	I	525	ASP
2	J	17	GLU

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Mol	Chain	Res	Type
2	J	47	LEU
2	J	210	PHE
2	J	227	LEU
2	J	251	ARG
2	J	354	ARG
2	J	358	LYS
3	K	13	ARG
3	K	238	GLN
4	L	4	PHE
4	L	10	LYS
4	L	124	ARG
4	L	135	ARG
4	L	139	HIS
4	L	144	ARG
4	L	175	LEU
4	L	193	GLU
4	L	271	LEU
1	M	9	ARG
1	M	22	ASP
1	M	75	LEU
1	M	134	ARG
1	M	145	HIS
1	M	184	SER
1	M	204	LEU
1	M	207	ARG
1	M	314	LEU
1	M	320	ARG
1	M	326	LYS
1	M	344	LEU
1	M	348	ARG
1	M	389	ARG
1	M	424	TYR
1	M	510	LYS
1	M	525	ASP
2	N	17	GLU
2	N	47	LEU
2	N	51	LEU
2	N	126	LEU
2	N	227	LEU
2	N	276	ARG
2	N	354	ARG
2	N	358	LYS

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Mol	Chain	Res	Type
3	O	7	ARG
3	O	13	ARG
3	O	55	ASP
3	O	91	LEU
3	O	238	GLN
3	O	247	ARG
4	P	6	LEU
4	P	10	LYS
4	P	20	ASP
4	P	144	ARG
4	P	175	LEU
4	P	193	GLU

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

Mol	Chain	Res	Type
1	E	285	ASN
2	J	226	GLN
3	K	240	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](#)

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
1	KCX	E	176	8,1	9,11,12	0.63	0	5,12,14	0.79	0
1	KCX	I	176	8,1	9,11,12	2.11	1 (11%)	5,12,14	1.84	1 (20%)
1	KCX	M	176	8,1	9,11,12	0.72	0	5,12,14	1.04	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	KCX	A	176	8,1	9,11,12	2.31	1 (11%)	5,12,14	1.39	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
1	KCX	E	176	8,1	-	4/9/10/12	-
1	KCX	I	176	8,1	-	4/9/10/12	-
1	KCX	M	176	8,1	-	4/9/10/12	-
1	KCX	A	176	8,1	-	4/9/10/12	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	176	KCX	OQ1-CX	6.74	1.34	1.21
1	I	176	KCX	OQ1-CX	6.14	1.33	1.21

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	I	176	KCX	OQ1-CX-NZ	-3.89	118.94	124.96
1	A	176	KCX	OQ1-CX-NZ	-2.72	120.74	124.96

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	176	KCX	N-CA-CB-CG
1	A	176	KCX	C-CA-CB-CG
1	E	176	KCX	N-CA-CB-CG
1	E	176	KCX	C-CA-CB-CG
1	I	176	KCX	N-CA-CB-CG
1	I	176	KCX	C-CA-CB-CG
1	M	176	KCX	N-CA-CB-CG
1	M	176	KCX	C-CA-CB-CG
1	A	176	KCX	CG-CD-CE-NZ
1	E	176	KCX	CG-CD-CE-NZ
1	I	176	KCX	CG-CD-CE-NZ

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Mol	Chain	Res	Type	Atoms
1	M	176	KCX	CG-CD-CE-NZ
1	I	176	KCX	CA-CB-CG-CD
1	A	176	KCX	CA-CB-CG-CD
1	E	176	KCX	CA-CB-CG-CD
1	M	176	KCX	CA-CB-CG-CD

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	E	176	KCX	1	0
1	I	176	KCX	1	0
1	M	176	KCX	1	0
1	A	176	KCX	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 58 ligands modelled in this entry, 29 are monoatomic and 1 is modelled with single atom - leaving 28 for Mogul analysis.

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	$\# Z > 2$
14	GLU	C	303	12	7,8,9	0.91	0	4,9,11	1.34	0
12	DGL	I	610	14	8,9,9	0.93	0	10,11,11	1.11	0
14	GLU	J	405	12	7,8,9	0.95	0	4,9,11	1.08	0
14	GLU	O	302	12	7,8,9	0.89	0	4,9,11	0.99	0
14	GLU	O	303	-	5,5,9	1.36	1 (20%)	6,6,11	1.15	0
12	DGL	O	301	15,14,12	6,7,9	0.67	0	2,7,11	1.40	0
16	L6K	I	602	8	19,23,23	1.29	1 (5%)	22,30,30	1.48	3 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
12	DGL	K	301	14	6,7,9	0.53	0	2,7,11	0.73	0
12	DGL	P	403	12	7,8,9	0.83	0	7,9,11	0.79	0
14	GLU	K	302	12	6,7,9	0.43	0	2,7,11	1.48	0
12	DGL	L	406	14	8,9,9	1.06	0	10,11,11	1.32	1 (10%)
7	GOL	A	603	-	5,5,5	1.00	0	5,5,5	0.89	0
12	DGL	B	402	14,13	7,8,9	0.81	0	4,9,11	1.01	0
5	FMT	I	601	-	2,2,2	0.62	0	1,1,1	0.05	0
15	IAS	P	404	12	5,6,8	0.84	0	4,7,10	1.16	0
5	FMT	J	401	-	2,2,2	0.61	0	1,1,1	0.07	0
7	GOL	H	401	-	5,5,5	0.77	0	5,5,5	1.11	1 (20%)
5	FMT	A	601	-	2,2,2	0.63	0	1,1,1	0.06	0
12	DGL	C	302	15,14,12	6,7,9	0.53	0	2,7,11	0.99	0
12	DGL	L	405	14	8,9,9	0.93	0	10,11,11	1.44	2 (20%)
12	DGL	I	608	14	7,8,9	0.83	0	7,9,11	0.99	0
14	GLU	L	404	12	7,8,9	0.86	0	4,9,11	1.11	0
14	GLU	C	304	12	7,8,9	0.80	0	7,9,11	1.00	0
14	GLU	I	609	12	7,8,9	0.77	0	7,9,11	1.12	0
15	IAS	D	403	12	5,6,8	0.92	0	4,7,10	0.92	0
17	EDO	I	603	-	3,3,3	0.74	0	2,2,2	0.33	0
6	MFN	A	602	8	18,22,56	0.44	0	22,28,73	1.11	2 (9%)
12	DGL	D	402	12	7,8,9	0.81	0	7,9,11	1.59	2 (28%)

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
14	GLU	C	303	12	-	4/6/7/9	-
12	DGL	I	610	14	-	5/9/9/9	-
14	GLU	J	405	12	-	6/6/7/9	-
14	GLU	O	302	12	-	2/6/7/9	-
14	GLU	O	303	-	-	0/4/4/9	-
12	DGL	O	301	15,14,12	-	1/4/6/9	-
16	L6K	I	602	8	-	6/13/17/17	0/2/2/2
12	DGL	K	301	14	-	1/4/6/9	-
12	DGL	P	403	12	-	2/7/8/9	-
14	GLU	K	302	12	-	1/4/6/9	-
12	DGL	L	406	14	-	7/9/9/9	-
12	DGL	B	402	14,13	-	1/6/7/9	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	GOL	A	603	-	-	2/4/4/4	-
15	IAS	P	404	12	-	5/6/6/8	-
12	DGL	L	405	14	-	6/9/9/9	-
7	GOL	H	401	-	-	0/4/4/4	-
12	DGL	C	302	15,14,12	-	0/4/6/9	-
12	DGL	I	608	14	-	1/7/8/9	-
14	GLU	L	404	12	-	2/6/7/9	-
14	GLU	C	304	12	-	2/7/8/9	-
14	GLU	I	609	12	-	1/7/8/9	-
15	IAS	D	403	12	-	2/6/6/8	-
17	EDO	I	603	-	-	0/1/1/1	-
6	MFN	A	602	8	-	6/9/13/63	0/2/2/2
12	DGL	D	402	12	-	2/7/8/9	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	I	602	L6K	C16-N2	-4.84	1.33	1.46
14	O	303	GLU	CA-C	-2.41	1.51	1.54

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	I	602	L6K	C16-N2-C15	3.57	124.76	113.64
16	I	602	L6K	C13-O2-C9	2.93	124.88	117.65
16	I	602	L6K	C13-C4-C5	-2.60	124.05	127.92
6	A	602	MFN	C15-C12-C6	-2.45	107.19	112.87
12	L	405	DGL	OXT-C-CA	2.43	121.66	113.38
12	D	402	DGL	CB-CG-CD	-2.37	105.53	112.29
6	A	602	MFN	C1-C2-C3	-2.31	126.39	129.54
12	D	402	DGL	CB-CA-C	-2.29	104.85	110.30
12	L	405	DGL	CB-CG-CD	-2.17	106.76	112.51
12	L	406	DGL	CB-CA-N	-2.15	104.55	110.17
7	H	401	GOL	C3-C2-C1	-2.00	103.91	111.70

There are no chirality outliers.

All (65) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
12	I	608	DGL	CA-CB-CG-CD
12	I	610	DGL	N-CA-CB-CG
12	I	610	DGL	C-CA-CB-CG
12	L	406	DGL	O-C-CA-N
12	L	406	DGL	N-CA-CB-CG
12	P	403	DGL	N-CA-CB-CG
12	P	403	DGL	C-CA-CB-CG
14	C	303	GLU	O-C-CA-CB
14	C	304	GLU	C-CA-CB-CG
14	J	405	GLU	O-C-CA-CB
14	J	405	GLU	C-CA-CB-CG
14	L	404	GLU	C-CA-CB-CG
15	D	403	IAS	C-CA-CB-CG
16	I	602	L6K	C35-C15-N2-C16
6	A	602	MFN	C17-C16-N2-C15
12	L	405	DGL	OXT-C-CA-N
12	L	406	DGL	OXT-C-CA-N
15	P	404	IAS	OXT-C-CA-N
6	A	602	MFN	C10-C9-O2-C13
6	A	602	MFN	C8-C9-O2-C13
14	K	302	GLU	CA-CB-CG-CD
15	P	404	IAS	O-C-CA-CB
14	C	304	GLU	CA-CB-CG-CD
7	A	603	GOL	O1-C1-C2-C3
6	A	602	MFN	O3-C16-N2-C15
12	L	405	DGL	O-C-CA-CB
12	L	405	DGL	OXT-C-CA-CB
15	P	404	IAS	OXT-C-CA-CB
12	O	301	DGL	CA-CB-CG-CD
12	I	610	DGL	CA-CB-CG-CD
14	C	303	GLU	C-CA-CB-CG
16	I	602	L6K	N2-C15-C35-O37
12	L	405	DGL	O-C-CA-N
15	P	404	IAS	O-C-CA-N
16	I	602	L6K	N2-C15-C35-O36
15	D	403	IAS	N-CA-CB-CG
12	L	406	DGL	CA-CB-CG-CD
16	I	602	L6K	C12-C15-N2-C16
12	L	406	DGL	C-CA-CB-CG
12	L	406	DGL	OXT-C-CA-CB
12	B	402	DGL	N-CA-CB-CG
14	L	404	GLU	N-CA-CB-CG
12	D	402	DGL	OXT-C-CA-CB

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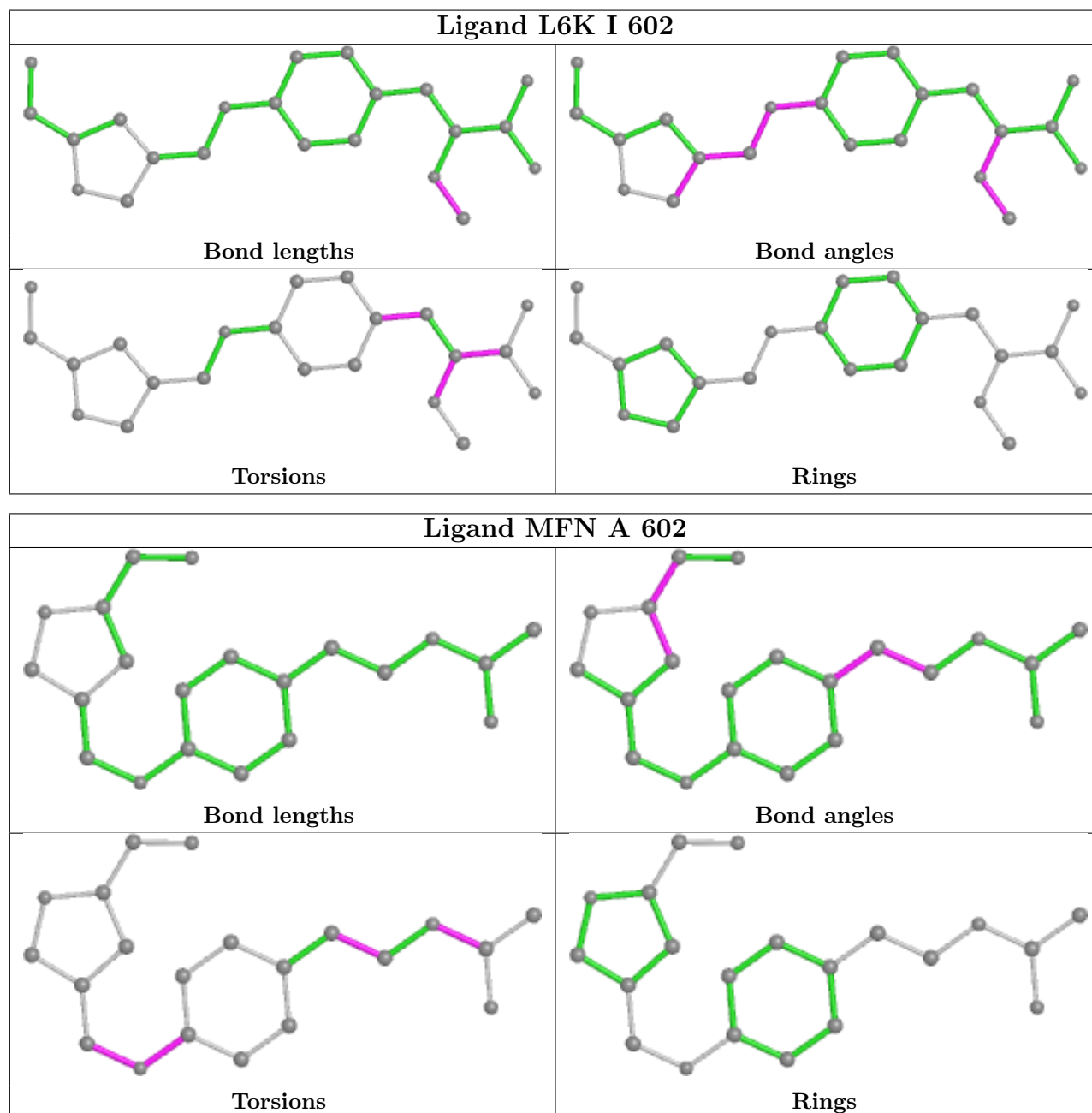
Mol	Chain	Res	Type	Atoms
12	L	406	DGL	O-C-CA-CB
12	K	301	DGL	CA-CB-CG-CD
16	I	602	L6K	C15-C12-C6-C7
12	D	402	DGL	O-C-CA-CB
6	A	602	MFN	C4-C13-O2-C9
16	I	602	L6K	C15-C12-C6-C11
14	J	405	GLU	OE2-CD-CG-CB
14	J	405	GLU	CA-CB-CG-CD
14	J	405	GLU	OE1-CD-CG-CB
14	C	303	GLU	OE1-CD-CG-CB
6	A	602	MFN	C6-C12-C15-N2
14	C	303	GLU	OE2-CD-CG-CB
12	L	405	DGL	OE2-CD-CG-CB
14	O	302	GLU	OE1-CD-CG-CB
15	P	404	IAS	C-CA-CB-CG
12	I	610	DGL	OE2-CD-CG-CB
14	I	609	GLU	OXT-C-CA-N
14	O	302	GLU	OE2-CD-CG-CB
12	I	610	DGL	OE1-CD-CG-CB
7	A	603	GOL	O1-C1-C2-O2
12	L	405	DGL	OE1-CD-CG-CB
14	J	405	GLU	N-CA-CB-CG

There are no ring outliers.

15 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
14	C	303	GLU	1	0
12	I	610	DGL	1	0
12	O	301	DGL	3	0
16	I	602	L6K	2	0
12	K	301	DGL	1	0
12	P	403	DGL	6	0
14	K	302	GLU	1	0
12	L	406	DGL	2	0
7	A	603	GOL	1	0
15	P	404	IAS	1	0
12	L	405	DGL	2	0
14	L	404	GLU	1	0
14	C	304	GLU	2	0
17	I	603	EDO	1	0
6	A	602	MFN	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	547/548 (99%)	-0.18	0 100 100	43, 80, 126, 198	0
1	E	541/548 (98%)	0.44	31 (5%) 23 11	84, 147, 203, 316	0
1	I	544/548 (99%)	-0.19	2 (0%) 92 84	42, 79, 134, 206	0
1	M	545/548 (99%)	0.34	32 (5%) 22 10	99, 146, 197, 258	0
2	B	356/361 (98%)	-0.37	0 100 100	44, 75, 132, 193	0
2	F	355/361 (98%)	0.47	27 (7%) 13 5	89, 139, 199, 246	0
2	J	355/361 (98%)	-0.25	1 (0%) 94 88	48, 85, 146, 218	0
2	N	355/361 (98%)	0.30	17 (4%) 30 14	97, 139, 192, 258	0
3	C	265/276 (96%)	-0.43	1 (0%) 92 84	48, 72, 112, 152	0
3	G	265/276 (96%)	0.17	13 (4%) 29 14	86, 126, 173, 210	0
3	K	265/276 (96%)	-0.37	0 100 100	44, 72, 116, 145	0
3	O	265/276 (96%)	-0.25	3 (1%) 80 64	69, 112, 151, 197	0
4	D	308/310 (99%)	-0.17	4 (1%) 77 59	54, 100, 150, 238	0
4	H	308/310 (99%)	-0.29	1 (0%) 94 88	62, 96, 135, 175	0
4	L	308/310 (99%)	-0.30	0 100 100	37, 85, 141, 196	0
4	P	308/310 (99%)	-0.43	0 100 100	32, 73, 114, 177	0
All	All	5890/5980 (98%)	-0.06	132 (2%) 62 41	32, 103, 176, 316	0

All (132) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	N	361	SER	7.7
2	F	361	SER	6.7
1	E	453	ALA	6.2
2	N	267	LEU	6.2
2	J	361	SER	6.1

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Mol	Chain	Res	Type	RSRZ
1	E	505	ASP	4.8
1	M	105	GLY	4.7
4	D	221	LYS	4.7
1	E	296	TYR	4.4
2	N	266	ALA	4.4
2	F	124	LEU	4.4
1	M	45	THR	4.3
1	E	511	ARG	4.2
1	M	281	ALA	4.1
2	F	305	ILE	4.0
1	E	63	GLY	4.0
2	N	101	GLU	3.9
1	E	513	GLU	3.9
3	G	145	LEU	3.8
2	N	333	ASP	3.7
2	F	102	LEU	3.7
1	E	64	ASN	3.7
1	M	449	LEU	3.7
1	E	33	PRO	3.6
1	M	424	TYR	3.6
3	G	54	LEU	3.5
1	E	354	LEU	3.4
1	M	63	GLY	3.4
1	M	1	MET	3.4
1	E	451	GLU	3.4
2	F	120	GLU	3.4
1	E	512	ALA	3.3
2	N	109	ALA	3.3
1	E	156	LYS	3.3
2	N	51	LEU	3.3
1	M	5	ILE	3.3
1	M	411	VAL	3.3
1	E	247	GLU	3.2
1	M	415	SER	3.2
1	E	507	GLY	3.1
1	M	470	PHE	3.1
2	N	116	ALA	2.9
2	N	296	ALA	2.9
3	G	10	LEU	2.9
3	G	48	ASP	2.8
1	E	288	MET	2.8
1	E	500	LEU	2.8

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Mol	Chain	Res	Type	RSRZ
1	M	391	ILE	2.8
2	F	119	ALA	2.8
3	G	27	LEU	2.8
4	D	295	LEU	2.8
2	F	123	LEU	2.8
1	M	485	GLU	2.8
3	G	58	ASP	2.8
2	N	112	SER	2.8
2	F	267	LEU	2.7
1	M	451	GLU	2.7
1	E	357	ALA	2.7
3	G	63	GLU	2.7
2	F	2	ALA	2.7
2	N	354	ARG	2.7
3	O	54	LEU	2.7
1	E	62	GLY	2.7
1	M	457	VAL	2.7
2	F	359	GLY	2.7
3	G	4	LEU	2.7
1	E	358	ILE	2.6
2	F	288	ILE	2.6
1	M	36	ARG	2.5
1	M	364	LEU	2.5
3	G	62	ILE	2.5
1	E	31	VAL	2.5
1	M	395	MET	2.5
1	M	481	GLN	2.5
1	E	22	ASP	2.5
2	F	7	GLY	2.4
1	M	42	ILE	2.4
2	N	288	ILE	2.4
1	M	427	SER	2.4
1	E	225	PRO	2.4
1	E	235	LEU	2.4
1	M	400	ARG	2.4
2	N	130	GLN	2.4
1	I	548	ALA	2.4
2	F	345	ALA	2.4
3	G	3	THR	2.3
1	M	460	TYR	2.3
1	M	459	ILE	2.3
2	F	233	GLY	2.3

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Mol	Chain	Res	Type	RSRZ
1	M	462	ASP	2.3
2	F	174	LEU	2.3
1	E	24	TRP	2.2
1	E	448	HIS	2.3
1	E	234	GLY	2.2
2	F	265	ALA	2.2
2	F	93	VAL	2.2
1	M	15	ALA	2.2
1	M	363	MET	2.2
2	N	299	GLU	2.2
1	M	389	ARG	2.2
3	G	165	LEU	2.2
2	F	308	GLY	2.2
4	D	14	THR	2.2
4	D	296	GLY	2.2
2	F	269	LEU	2.2
3	G	60	LEU	2.2
3	O	52	ILE	2.1
3	O	48	ASP	2.1
3	G	7	ARG	2.1
1	M	62	GLY	2.1
1	E	546	CYS	2.1
2	F	106	ILE	2.1
2	N	341	THR	2.1
2	F	271	SER	2.1
1	E	37	ALA	2.1
1	M	3	THR	2.1
1	E	350	PRO	2.1
1	I	268	ASP	2.1
2	F	344	ALA	2.1
1	E	35	GLU	2.1
2	F	4	TRP	2.1
1	M	35	GLU	2.1
2	F	90	ILE	2.1
3	C	27	LEU	2.1
1	M	40	GLN	2.0
2	F	210	PHE	2.0
4	H	307	GLU	2.0
1	E	93	SER	2.0
2	N	18	ALA	2.0
2	F	167	PHE	2.0
2	F	268	TRP	2.0

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Mol	Chain	Res	Type	RSRZ
2	N	123	LEU	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
1	KCX	E	176	12/13	0.83	0.33	135,140,174,180	0
1	KCX	M	176	12/13	0.90	0.35	108,116,146,150	0
1	KCX	I	176	12/13	0.93	0.28	54,64,113,138	0
1	KCX	A	176	12/13	0.97	0.32	56,68,86,92	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
13	NH2	B	403	1/1	0.53	0.63	98,98,98,98	0
16	L6K	I	602	22/22	0.72	0.47	70,70,70,70	22
6	MFN	A	602	21/55	0.74	0.41	38,47,57,59	21
12	DGL	P	403	9/10	0.75	0.43	82,86,92,93	0
12	DGL	D	402	9/10	0.76	0.37	82,86,92,93	0
12	DGL	B	402	9/10	0.76	0.39	107,112,125,129	0
12	DGL	I	610	10/10	0.77	0.36	70,70,70,70	10
14	GLU	J	405	9/10	0.78	0.30	70,70,70,70	9
12	DGL	I	608	9/10	0.81	0.31	70,70,70,70	9
14	GLU	C	304	9/10	0.81	0.41	89,111,131,143	0
10	K	H	402	1/1	0.82	0.11	80,80,80,80	0
9	CA	A	606	1/1	0.83	0.12	90,90,90,90	0
14	GLU	I	609	9/10	0.83	0.26	70,70,70,70	9

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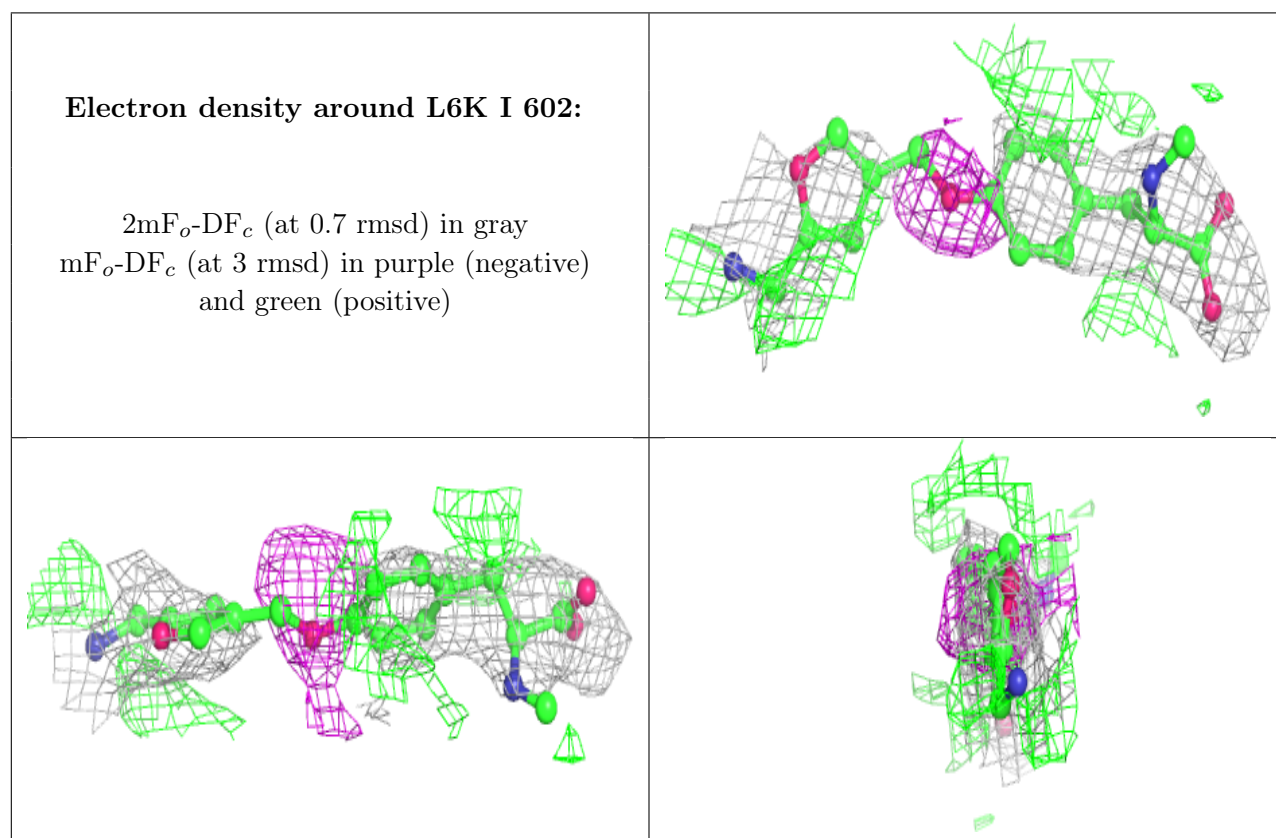
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	FMT	A	601	3/3	0.84	0.39	50,50,50,50	0
12	DGL	K	301	8/10	0.84	0.19	70,70,70,70	8
8	ZN	M	601	1/1	0.85	0.09	85,85,85,85	0
14	GLU	K	302	8/10	0.86	0.21	70,70,70,70	8
14	GLU	L	404	9/10	0.87	0.15	70,70,70,70	9
12	DGL	O	301	8/10	0.88	0.16	73,83,84,85	0
12	DGL	C	302	8/10	0.88	0.14	73,83,84,85	0
12	DGL	L	406	10/10	0.88	0.29	70,70,70,70	10
12	DGL	L	405	10/10	0.89	0.27	70,70,70,70	10
14	GLU	O	302	9/10	0.89	0.24	67,82,94,99	0
14	GLU	O	303	6/10	0.89	0.53	89,98,113,120	0
14	GLU	C	303	9/10	0.89	0.14	67,82,94,99	0
10	K	J	403	1/1	0.90	0.28	70,70,70,70	0
10	K	P	402	1/1	0.90	0.12	70,70,70,70	0
5	FMT	I	601	3/3	0.91	0.34	50,50,50,50	0
11	CL	I	607	1/1	0.91	0.20	65,65,65,65	0
17	EDO	I	603	4/4	0.91	0.22	20,20,20,20	0
10	K	I	606	1/1	0.92	0.06	70,70,70,70	0
7	GOL	A	603	6/6	0.92	0.20	60,60,60,60	0
15	IAS	D	403	7/9	0.92	0.26	55,65,73,74	0
11	CL	J	404	1/1	0.92	0.19	60,60,60,60	0
10	K	P	401	1/1	0.92	0.16	70,70,70,70	0
9	CA	L	401	1/1	0.93	0.08	65,65,65,65	0
11	CL	C	301	1/1	0.94	0.19	65,65,65,65	0
10	K	D	401	1/1	0.94	0.22	70,70,70,70	0
10	K	L	403	1/1	0.94	0.13	70,70,70,70	0
8	ZN	E	601	1/1	0.94	0.23	122,122,122,122	0
7	GOL	H	401	6/6	0.94	0.25	60,60,60,60	0
9	CA	L	402	1/1	0.95	0.09	70,70,70,70	0
8	ZN	I	605	1/1	0.95	0.27	75,75,75,75	0
9	CA	A	608	1/1	0.95	0.15	70,70,70,70	0
15	IAS	P	404	7/9	0.95	0.20	55,65,73,74	0
5	FMT	J	401	3/3	0.95	0.21	50,50,50,50	0
11	CL	A	612	1/1	0.95	0.18	65,65,65,65	0
9	CA	A	607	1/1	0.96	0.12	70,70,70,70	0
8	ZN	E	602	1/1	0.96	0.31	155,155,155,155	0
8	ZN	A	604	1/1	0.97	0.15	67,67,67,67	0
10	K	A	610	1/1	0.97	0.18	70,70,70,70	0
9	CA	B	401	1/1	0.97	0.14	70,70,70,70	0
8	ZN	M	602	1/1	0.97	0.10	80,80,80,80	0
8	ZN	I	604	1/1	0.98	0.21	65,65,65,65	0
10	K	A	609	1/1	0.98	0.22	70,70,70,70	0

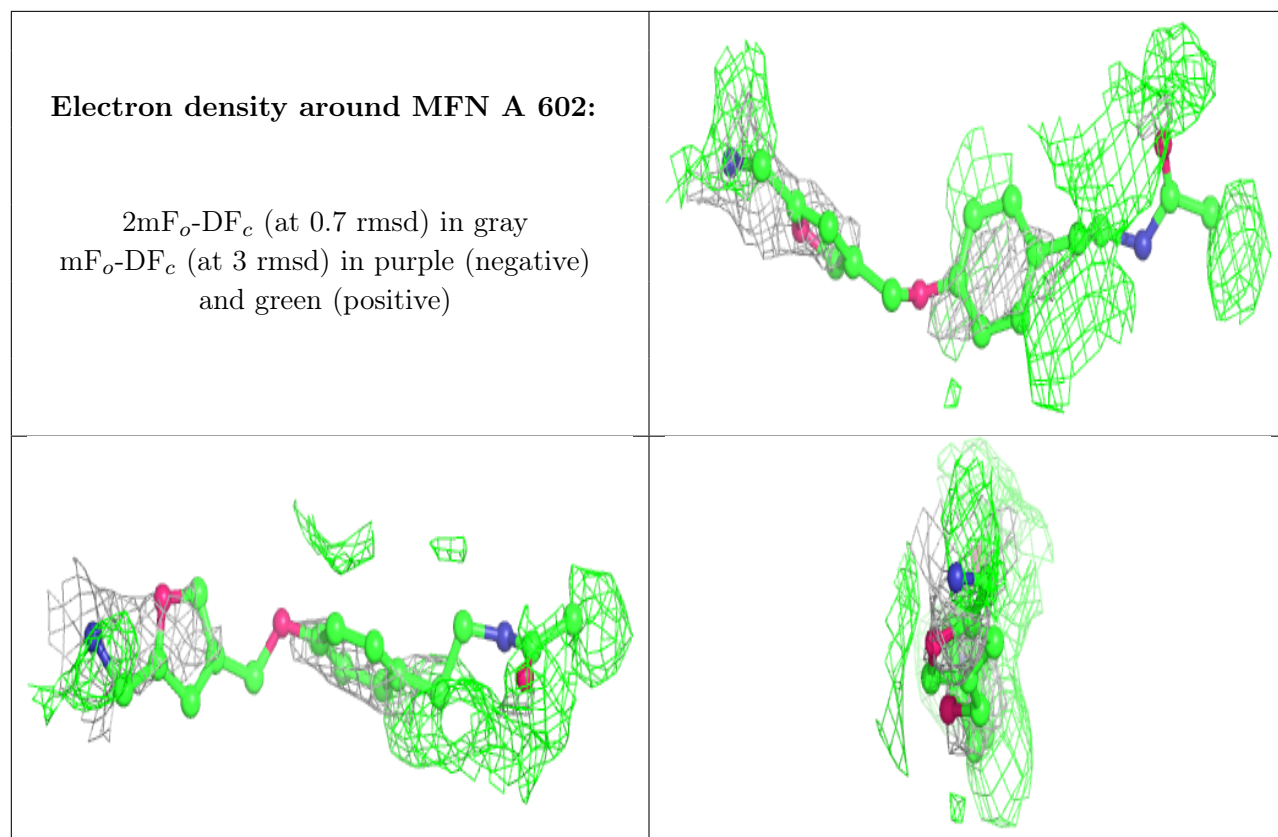
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
11	CL	A	611	1/1	0.98	0.16	65,65,65,65	0
8	ZN	A	605	1/1	0.99	0.26	70,70,70,70	0
18	NA	J	402	1/1	0.99	0.09	60,60,60,60	0

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





6.5 Other polymers [i](#)

There are no such residues in this entry.