



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 30, 2023 – 01:01 pm GMT

PDB ID : 8AFF
Title : Wild type oxalyl-CoA synthetase Pcs60p
Authors : Burgi, J.; Chojnowski, G.; Giannopoulou, E.A.; Wilmanns, M.
Deposited on : 2022-07-17
Resolution : 2.87 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
Xtriage (Phenix) : 1.13
EDS : 2.31.3
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) : 2.31.3

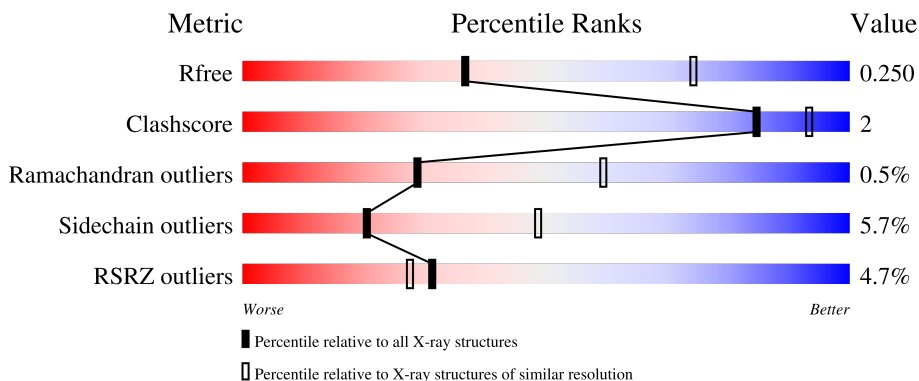
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.87 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.



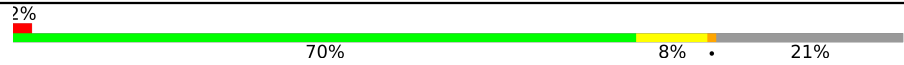
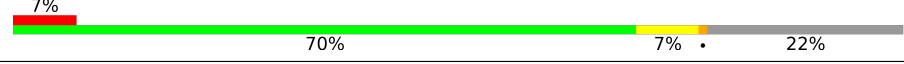
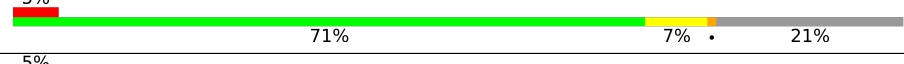
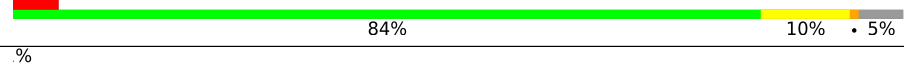

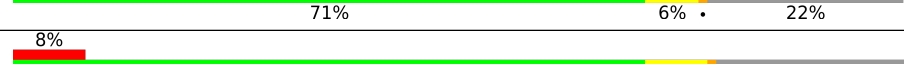
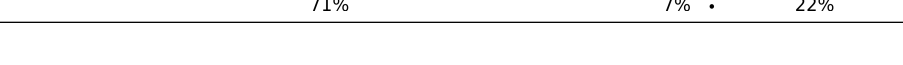
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2691 (2.90-2.86)
Clashscore	141614	2947 (2.90-2.86)
Ramachandran outliers	138981	2868 (2.90-2.86)
Sidechain outliers	138945	2871 (2.90-2.86)
RSRZ outliers	127900	2629 (2.90-2.86)

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	543	 5% (red), 85% (green), 11% (yellow), ... (grey)
1	B	543	 % (red), 70% (green), 7% (yellow), 21% (grey)
1	C	543	 % (red), 69% (green), 9% (yellow), 21% (grey)
1	D	543	 6% (red), 83% (green), 10% (yellow), 6% (grey)
1	E	543	 2% (red), 71% (green), 7% (yellow), 22% (grey)

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Mol	Chain	Length	Quality of chain
1	F	543	 <p>2% 70% 8% 21%</p>
1	G	543	 <p>7% 70% 7% 22%</p>
1	H	543	 <p>5% 71% 7% 21%</p>
1	I	543	 <p>5% 84% 10% 5%</p>
1	J	543	 <p>% 70% 7% 21%</p>
1	K	543	 <p>3% 71% 6% 22%</p>
1	L	543	 <p>8% 71% 7% 22%</p>

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 42783 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 Oxalate–CoA ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	525	Total 4134	C 2660	N 698	O 758	S 18	0	0	0
1	B	428	Total 3370	C 2163	N 571	O 621	S 15	0	0	0
1	C	430	Total 3386	C 2173	N 574	O 624	S 15	0	0	0
1	D	511	Total 4023	C 2590	N 676	O 739	S 18	0	0	0
1	E	426	Total 3353	C 2152	N 569	O 617	S 15	0	0	0
1	F	429	Total 3378	C 2169	N 572	O 622	S 15	0	0	0
1	G	423	Total 3325	C 2134	N 562	O 614	S 15	0	0	0
1	H	427	Total 3362	C 2157	N 570	O 620	S 15	0	0	0
1	I	518	Total 4076	C 2622	N 691	O 746	S 17	0	0	0
1	J	427	Total 3362	C 2157	N 570	O 620	S 15	0	0	0
1	K	425	Total 3344	C 2146	N 567	O 616	S 15	0	0	0
1	L	426	Total 3353	C 2152	N 569	O 617	S 15	0	0	0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	31	Total 31	O 31	0	0
2	B	36	Total 36	O 36	0	0

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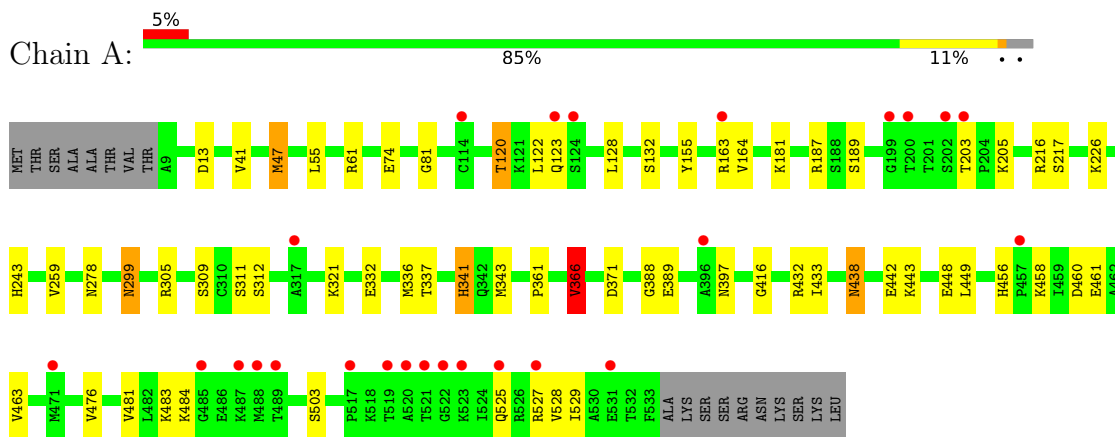
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	C	58	Total 58	O 58	0	0
2	D	58	Total 58	O 58	0	0
2	E	18	Total 18	O 18	0	0
2	F	33	Total 33	O 33	0	0
2	G	13	Total 13	O 13	0	0
2	H	14	Total 14	O 14	0	0
2	I	25	Total 25	O 25	0	0
2	J	20	Total 20	O 20	0	0
2	K	9	Total 9	O 9	0	0
2	L	2	Total 2	O 2	0	0

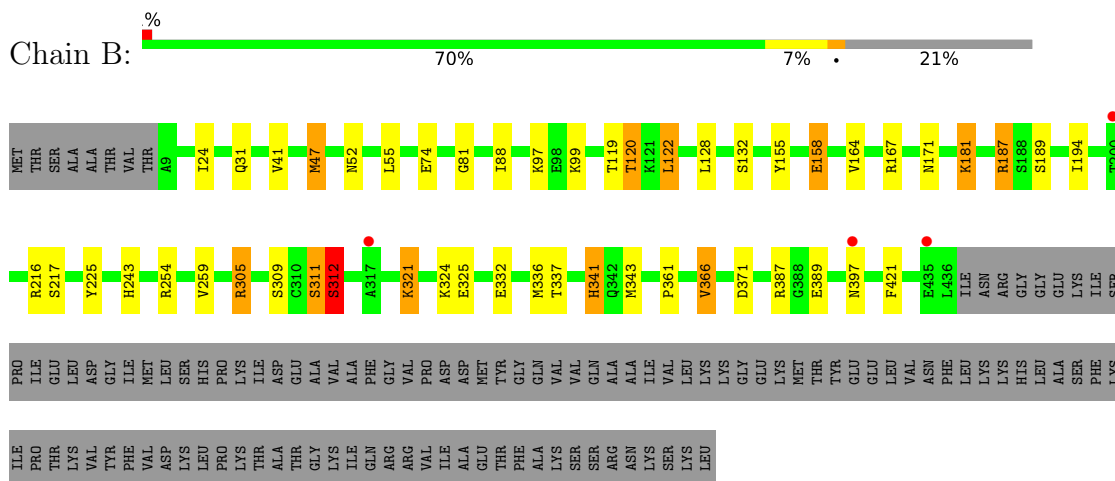
3 Residue-property plots i

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.

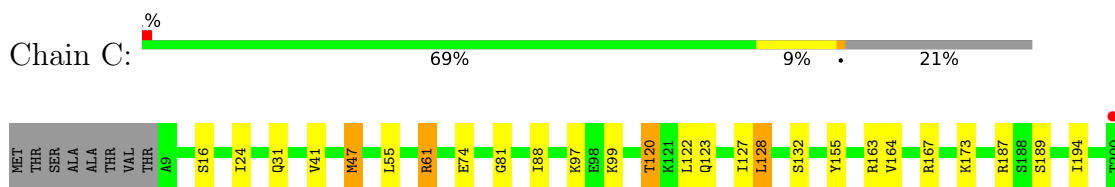
- Molecule 1: Oxalate–CoA ligase

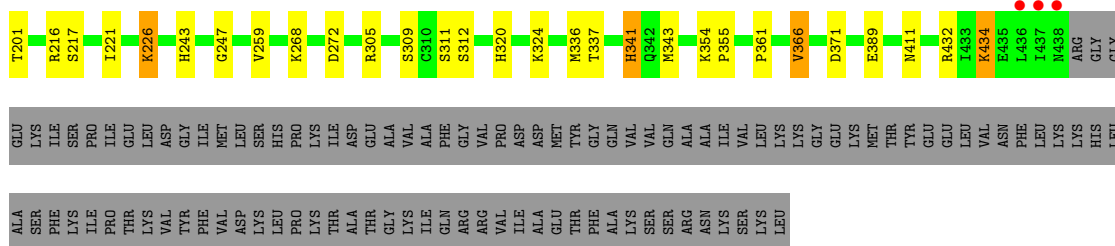


- Molecule 1: Oxalate–CoA ligase

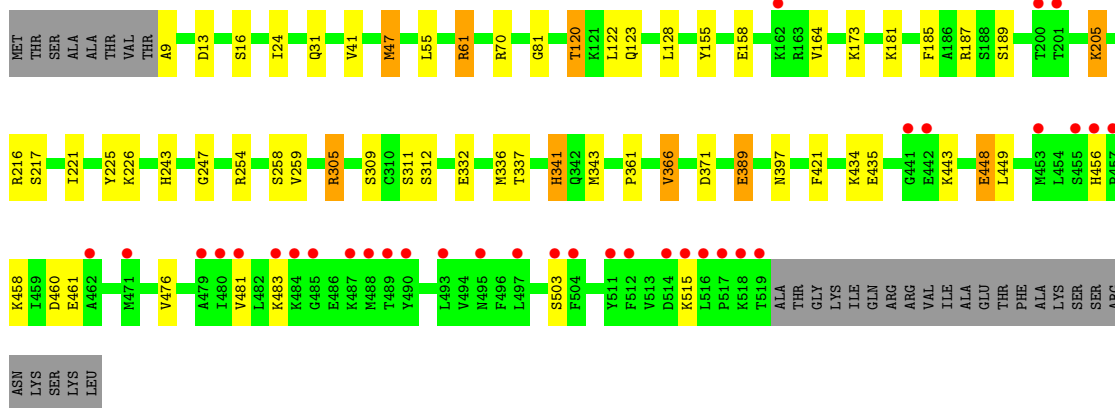
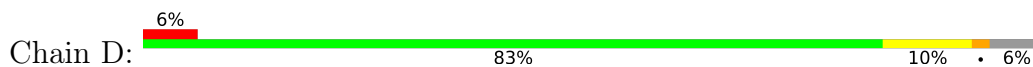


- Molecule 1: Oxalate–CoA ligase

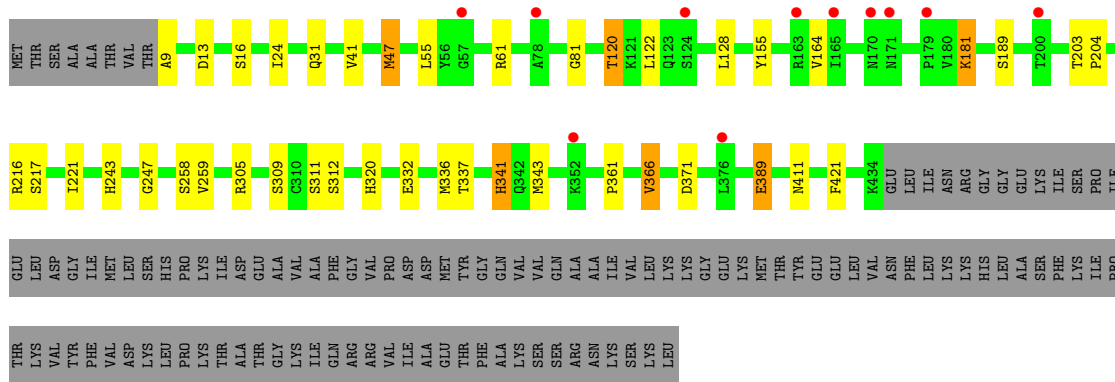




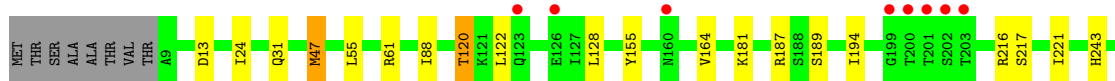
● Molecule 1: Oxalate-CoA ligase

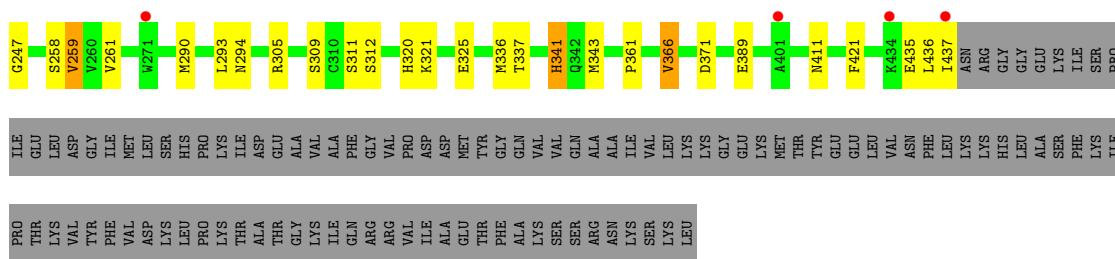


● Molecule 1: Oxalate-CoA ligase

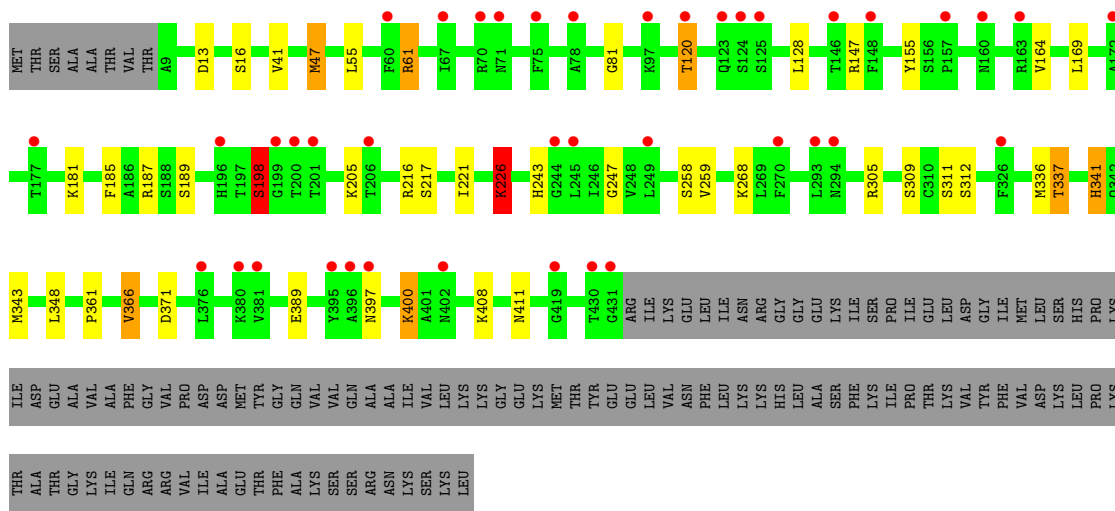


● Molecule 1: Oxalate-CoA ligase

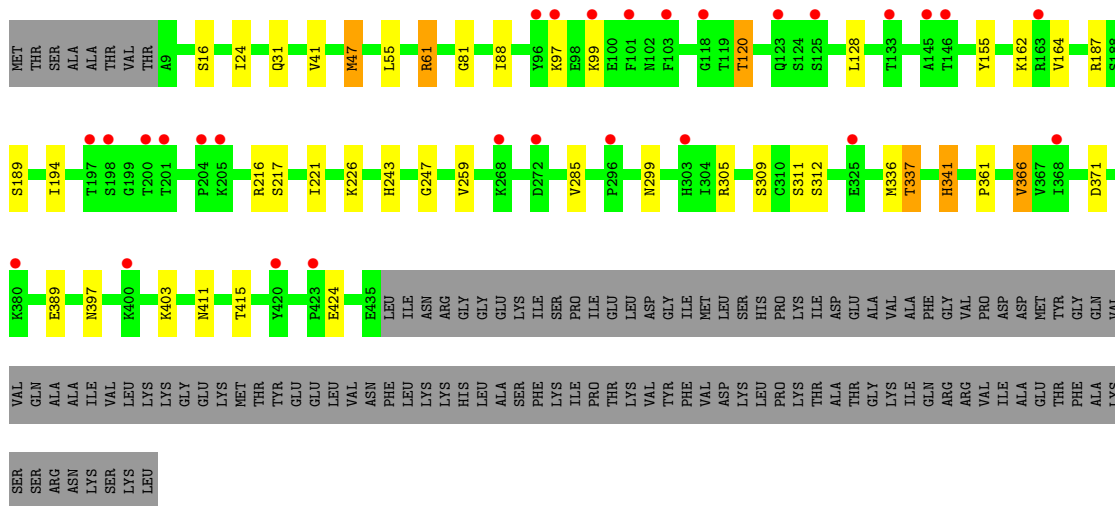




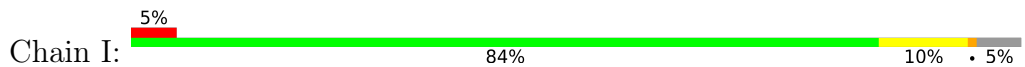
● Molecule 1: Oxalate-CoA ligase

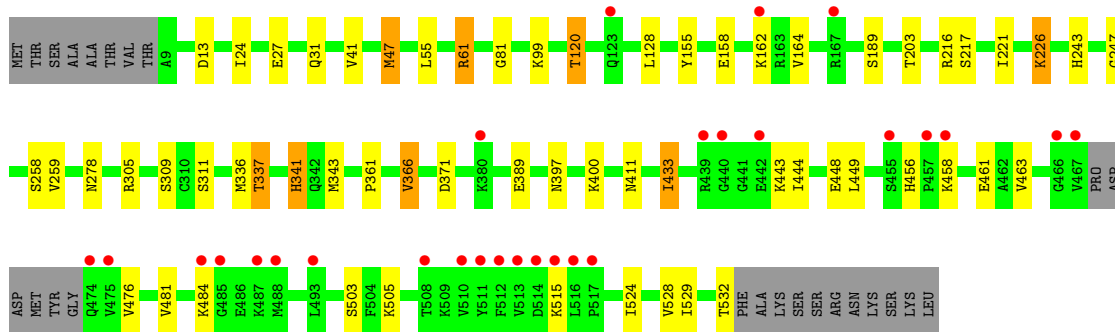


● Molecule 1: Oxalate-CoA ligase

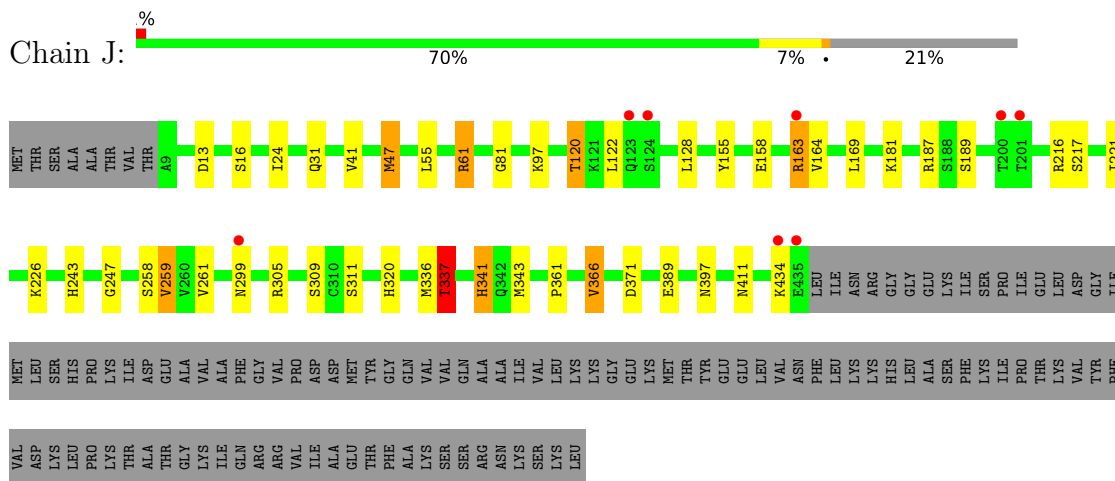


● Molecule 1: Oxalate-CoA ligase

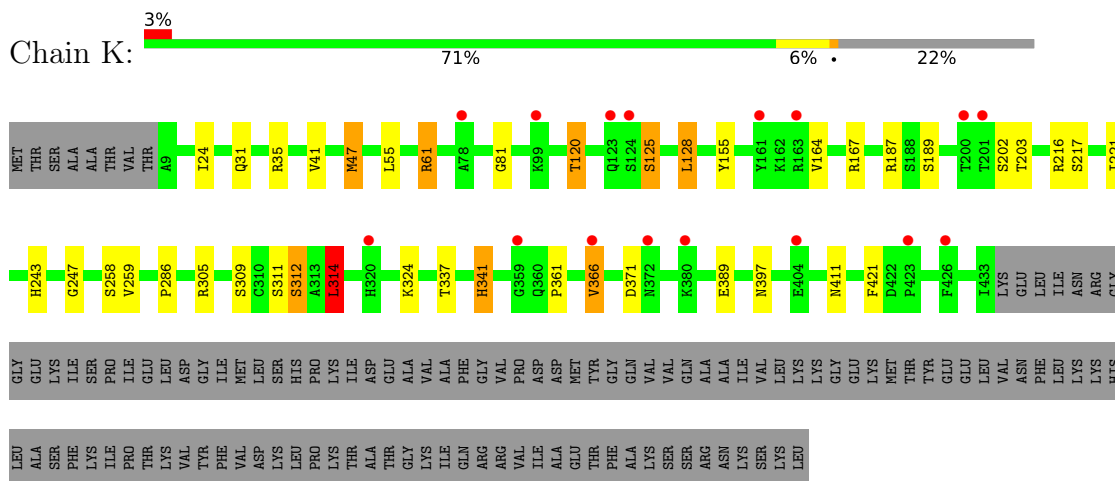




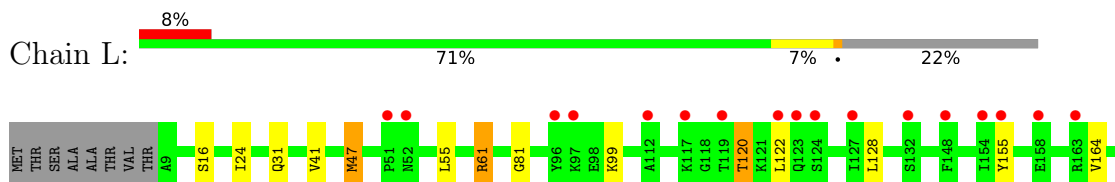
• Molecule 1: Oxalate-CoA ligase

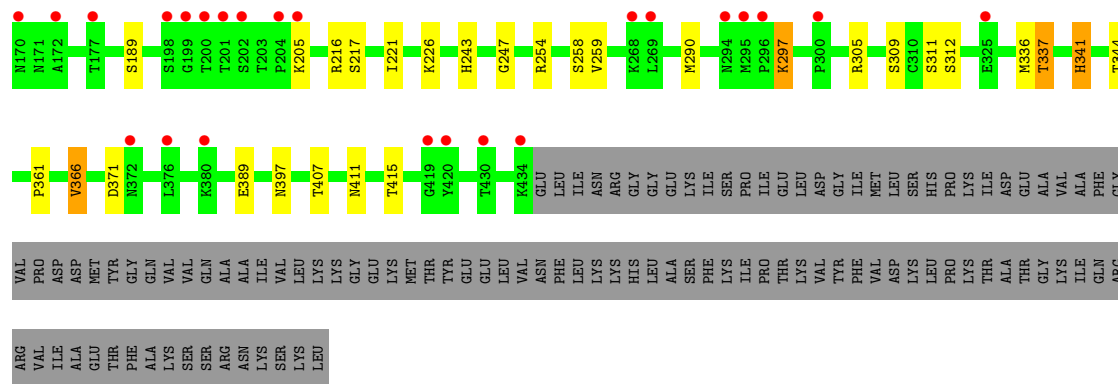


• Molecule 1: Oxalate-CoA ligase



• Molecule 1: Oxalate-CoA ligase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	109.03Å 93.72Å 356.49Å 90.00° 93.81° 90.00°	Depositor
Resolution (Å)	29.98 – 2.87 29.97 – 2.87	Depositor EDS
% Data completeness (in resolution range)	99.0 (29.98-2.87) 99.1 (29.97-2.87)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.67 (at 2.85Å)	Xtrriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.227 , 0.250 0.228 , 0.250	Depositor DCC
R_{free} test set	8186 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	60.1	Xtrriage
Anisotropy	0.531	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 46.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	42783	wwPDB-VP
Average B, all atoms (Å ²)	80.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.93% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

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	0.53	2/4237 (0.0%)	0.96	6/5753 (0.1%)
1	B	0.56	4/3458 (0.1%)	0.96	6/4704 (0.1%)
1	C	0.54	1/3474 (0.0%)	0.97	9/4726 (0.2%)
1	D	0.57	3/4125 (0.1%)	0.97	7/5603 (0.1%)
1	E	0.51	3/3441 (0.1%)	0.92	3/4681 (0.1%)
1	F	0.50	1/3466 (0.0%)	0.93	4/4715 (0.1%)
1	G	0.43	0/3413	0.93	6/4645 (0.1%)
1	H	0.43	0/3450	0.90	6/4693 (0.1%)
1	I	0.49	1/4175 (0.0%)	0.94	6/5667 (0.1%)
1	J	0.50	0/3450	0.93	7/4693 (0.1%)
1	K	0.46	0/3432	0.92	5/4670 (0.1%)
1	L	0.42	0/3441	0.91	3/4681 (0.1%)
All	All	0.50	15/43562 (0.0%)	0.94	68/59231 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	H	0	1

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	435	GLU	CD-OE1	7.31	1.33	1.25
1	A	442	GLU	CD-OE1	6.47	1.32	1.25
1	F	325	GLU	CD-OE2	6.27	1.32	1.25
1	C	74	GLU	CD-OE2	6.17	1.32	1.25
1	B	158	GLU	CD-OE1	6.14	1.32	1.25
1	D	332	GLU	CD-OE2	6.00	1.32	1.25
1	E	9	ALA	N-CA	5.80	1.57	1.46
1	B	74	GLU	CD-OE2	5.74	1.31	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	389	GLU	CD-OE1	5.54	1.31	1.25
1	E	332	GLU	CD-OE2	5.43	1.31	1.25
1	I	27	GLU	CD-OE1	5.37	1.31	1.25
1	A	74	GLU	CD-OE2	5.22	1.31	1.25
1	B	332	GLU	CD-OE2	5.21	1.31	1.25
1	D	389	GLU	CD-OE1	5.19	1.31	1.25
1	B	325	GLU	CD-OE2	5.04	1.31	1.25

All (68) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	167	ARG	CG-CD-NE	10.27	133.37	111.80
1	C	187	ARG	NE-CZ-NH2	-9.40	115.60	120.30
1	D	187	ARG	CB-CG-CD	-8.36	89.86	111.60
1	B	187	ARG	CB-CG-CD	-7.86	91.17	111.60
1	K	314	LEU	CB-CG-CD1	-7.49	98.27	111.00
1	K	305	ARG	NE-CZ-NH1	7.24	123.92	120.30
1	C	305	ARG	NE-CZ-NH1	7.17	123.88	120.30
1	J	187	ARG	CB-CG-CD	-7.06	93.25	111.60
1	G	226	LYS	CB-CG-CD	6.97	129.72	111.60
1	A	305	ARG	NE-CZ-NH2	-6.83	116.88	120.30
1	F	305	ARG	NE-CZ-NH2	-6.76	116.92	120.30
1	L	305	ARG	NE-CZ-NH2	-6.66	116.97	120.30
1	C	167	ARG	CB-CG-CD	6.62	128.82	111.60
1	D	305	ARG	NE-CZ-NH1	6.60	123.60	120.30
1	F	187	ARG	CB-CG-CD	-6.54	94.60	111.60
1	G	305	ARG	NE-CZ-NH2	-6.51	117.04	120.30
1	H	285	VAL	CA-CB-CG2	6.38	120.47	110.90
1	E	305	ARG	NE-CZ-NH1	6.33	123.47	120.30
1	C	163	ARG	CG-CD-NE	6.28	124.99	111.80
1	A	187	ARG	CB-CG-CD	-6.21	95.46	111.60
1	D	173	LYS	CG-CD-CE	6.12	130.25	111.90
1	J	181	LYS	CB-CG-CD	6.08	127.42	111.60
1	E	181	LYS	CB-CG-CD	6.07	127.38	111.60
1	D	187	ARG	CG-CD-NE	5.96	124.32	111.80
1	J	163	ARG	CB-CG-CD	5.93	127.03	111.60
1	J	187	ARG	NE-CZ-NH1	5.90	123.25	120.30
1	G	181	LYS	CB-CG-CD	5.84	126.77	111.60
1	K	305	ARG	NE-CZ-NH2	-5.83	117.38	120.30
1	C	163	ARG	CB-CG-CD	5.83	126.75	111.60
1	D	254	ARG	NE-CZ-NH2	-5.81	117.40	120.30
1	K	187	ARG	NE-CZ-NH2	-5.79	117.41	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	181	LYS	CB-CG-CD	5.77	126.59	111.60
1	B	305	ARG	NE-CZ-NH1	5.75	123.18	120.30
1	I	305	ARG	NE-CZ-NH1	5.74	123.17	120.30
1	C	226	LYS	CB-CG-CD	5.61	126.19	111.60
1	H	305	ARG	NE-CZ-NH2	-5.61	117.49	120.30
1	H	305	ARG	NE-CZ-NH1	5.60	123.10	120.30
1	E	305	ARG	NE-CZ-NH2	-5.60	117.50	120.30
1	H	187	ARG	CB-CG-CD	-5.57	97.12	111.60
1	J	305	ARG	NE-CZ-NH1	5.57	123.08	120.30
1	D	181	LYS	CB-CG-CD	5.40	125.64	111.60
1	L	254	ARG	NE-CZ-NH2	-5.32	117.64	120.30
1	A	366	VAL	CG1-CB-CG2	-5.28	102.45	110.90
1	I	337	THR	CB-CA-C	5.27	125.82	111.60
1	B	321	LYS	CB-CG-CD	5.24	125.22	111.60
1	D	9	ALA	CB-CA-C	5.22	117.94	110.10
1	C	61	ARG	NE-CZ-NH2	-5.22	117.69	120.30
1	G	400	LYS	CA-CB-CG	5.21	124.87	113.40
1	G	198	SER	N-CA-C	5.21	125.06	111.00
1	A	305	ARG	NE-CZ-NH1	5.20	122.90	120.30
1	J	337	THR	CB-CA-C	5.20	125.65	111.60
1	C	167	ARG	CG-CD-NE	5.19	122.69	111.80
1	I	226	LYS	CB-CG-CD	5.18	125.06	111.60
1	I	433	ILE	CA-CB-CG1	5.18	120.84	111.00
1	J	305	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	G	337	THR	CB-CA-C	5.09	125.35	111.60
1	F	305	ARG	NE-CZ-NH1	5.08	122.84	120.30
1	B	312	SER	N-CA-CB	5.07	118.10	110.50
1	C	123	GLN	CB-CA-C	5.07	120.54	110.40
1	H	337	THR	CB-CA-C	5.07	125.28	111.60
1	A	181	LYS	CB-CG-CD	5.05	124.73	111.60
1	I	162	LYS	CB-CA-C	5.02	120.45	110.40
1	L	337	THR	CB-CA-C	5.01	125.14	111.60
1	A	278	ASN	CB-CA-C	-5.01	100.38	110.40
1	I	278	ASN	CB-CA-C	-5.00	100.39	110.40
1	B	254	ARG	NE-CZ-NH2	-5.00	117.80	120.30
1	H	162	LYS	CB-CA-C	5.00	120.40	110.40
1	K	35	ARG	CG-CD-NE	-5.00	101.30	111.80

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	H	299	ASN	Peptide

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	4134	0	4152	18	0
1	B	3370	0	3348	18	0
1	C	3386	0	3365	21	0
1	D	4023	0	4032	19	0
1	E	3353	0	3331	16	0
1	F	3378	0	3359	18	0
1	G	3325	0	3294	15	0
1	H	3362	0	3337	16	0
1	I	4076	0	4106	17	0
1	J	3362	0	3337	14	0
1	K	3344	0	3318	15	0
1	L	3353	0	3331	16	0
2	A	31	0	0	0	0
2	B	36	0	0	2	0
2	C	58	0	0	6	0
2	D	58	0	0	3	0
2	E	18	0	0	2	0
2	F	33	0	0	3	0
2	G	13	0	0	2	0
2	H	14	0	0	1	0
2	I	25	0	0	0	0
2	J	20	0	0	2	0
2	K	9	0	0	0	0
2	L	2	0	0	1	0
All	All	42783	0	42310	192	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (192) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:125:SER:OG	1:K:128:LEU:HB2	1.73	0.89
1:D:205:LYS:HE2	2:D:655:HOH:O	1.77	0.84
1:A:438:ASN:HD21	1:A:443:LYS:HE2	1.45	0.81
1:G:147:ARG:HB2	2:G:601:HOH:O	1.84	0.77
1:E:13:ASP:OD1	1:E:181:LYS:NZ	2.17	0.74
1:F:336:MET:HE1	1:F:343:MET:SD	2.30	0.71
1:J:336:MET:HE1	1:J:343:MET:SD	2.31	0.71
1:E:320:HIS:HD2	2:E:604:HOH:O	1.73	0.69
1:H:424:GLU:HG2	2:H:604:HOH:O	1.92	0.69
1:E:336:MET:HE1	1:E:343:MET:SD	2.33	0.69
1:J:320:HIS:HE1	2:J:620:HOH:O	1.75	0.69
1:B:336:MET:HE1	1:B:343:MET:SD	2.33	0.68
1:A:336:MET:HE1	1:A:343:MET:SD	2.34	0.67
1:C:320:HIS:HD2	2:C:608:HOH:O	1.78	0.66
1:D:336:MET:HE1	1:D:343:MET:SD	2.36	0.65
1:G:336:MET:HE1	1:G:343:MET:SD	2.37	0.64
1:C:336:MET:HE1	1:C:343:MET:SD	2.36	0.64
1:C:127:ILE:HG22	2:C:642:HOH:O	1.98	0.63
1:I:336:MET:HE1	1:I:343:MET:SD	2.37	0.62
1:A:299:ASN:C	1:A:299:ASN:HD22	2.02	0.62
1:B:52:ASN:HD21	1:B:171:ASN:HD21	1.48	0.62
1:A:361:PRO:HG3	1:A:366:VAL:HG22	1.83	0.60
1:A:309:SER:OG	1:A:332:GLU:HG2	2.02	0.60
1:E:411:ASN:HB2	1:F:61:ARG:HD3	1.84	0.59
1:A:463:VAL:HG11	1:A:529:ILE:HD13	1.85	0.57
1:D:448:GLU:HG3	2:D:645:HOH:O	2.04	0.57
1:I:463:VAL:HG11	1:I:529:ILE:HD13	1.86	0.57
1:F:320:HIS:HD2	2:F:627:HOH:O	1.87	0.57
1:L:407:THR:HA	2:L:601:HOH:O	2.05	0.56
1:A:416:GLY:C	1:A:433:ILE:HD12	2.26	0.56
1:E:320:HIS:CD2	2:E:604:HOH:O	2.53	0.56
1:B:311:SER:O	1:B:312:SER:HB3	2.06	0.55
1:B:158:GLU:HA	2:B:634:HOH:O	2.07	0.53
1:J:361:PRO:HG3	1:J:366:VAL:HG13	1.91	0.53
1:K:411:ASN:HB2	1:L:61:ARG:HD3	1.91	0.53
1:D:216:ARG:HG2	1:D:389:GLU:HB2	1.90	0.53
1:I:24:ILE:HG12	1:I:31:GLN:HG2	1.90	0.53
1:B:24:ILE:HG12	1:B:31:GLN:HG2	1.91	0.52
1:C:201:THR:OG1	1:C:434:LYS:HD2	2.09	0.52
1:F:361:PRO:HG3	1:F:366:VAL:HG13	1.91	0.52
1:G:226:LYS:HG2	1:G:348:LEU:HD23	1.91	0.51
1:I:411:ASN:HB2	1:J:61:ARG:HD3	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:336:MET:CE	1:L:415:THR:HB	2.40	0.51
1:F:294:ASN:HB2	2:F:618:HOH:O	2.10	0.51
1:J:337:THR:HB	2:J:612:HOH:O	2.09	0.51
1:D:361:PRO:HG3	1:D:366:VAL:HG13	1.94	0.50
1:G:361:PRO:HG3	1:G:366:VAL:HG13	1.93	0.50
1:G:411:ASN:HB2	1:H:61:ARG:HD3	1.93	0.50
1:C:361:PRO:HG3	1:C:366:VAL:HG13	1.93	0.50
1:H:24:ILE:HG12	1:H:31:GLN:HG2	1.93	0.50
1:D:24:ILE:HG12	1:D:31:GLN:HG2	1.92	0.50
1:H:336:MET:CE	1:H:415:THR:HB	2.42	0.49
1:L:336:MET:HE1	1:L:415:THR:HB	1.94	0.49
1:G:185:PHE:HB2	2:G:610:HOH:O	2.11	0.49
1:H:361:PRO:HG3	1:H:366:VAL:HG13	1.94	0.49
1:B:387:ARG:HA	2:B:629:HOH:O	2.11	0.49
1:E:216:ARG:HG2	1:E:389:GLU:HB2	1.94	0.49
1:E:243:HIS:HA	1:E:341:HIS:CE1	2.48	0.49
1:E:361:PRO:HG3	1:E:366:VAL:HG13	1.95	0.49
1:I:361:PRO:HG3	1:I:366:VAL:HG13	1.94	0.49
1:A:388:GLY:O	1:B:187:ARG:NH2	2.46	0.48
1:L:216:ARG:HG2	1:L:389:GLU:HB2	1.95	0.48
1:I:449:LEU:HD11	1:I:476:VAL:HG11	1.95	0.48
1:H:243:HIS:HA	1:H:341:HIS:CE1	2.49	0.48
1:J:216:ARG:HG2	1:J:389:GLU:HB2	1.96	0.48
1:A:243:HIS:HA	1:A:341:HIS:CE1	2.49	0.48
1:B:243:HIS:HA	1:B:341:HIS:CE1	2.49	0.48
1:F:243:HIS:HA	1:F:341:HIS:CE1	2.49	0.48
1:G:243:HIS:HA	1:G:341:HIS:CE1	2.48	0.48
1:K:24:ILE:HG12	1:K:31:GLN:HG2	1.95	0.48
1:K:243:HIS:HA	1:K:341:HIS:CE1	2.48	0.48
1:C:24:ILE:HG12	1:C:31:GLN:HG2	1.96	0.47
1:I:216:ARG:HG2	1:I:389:GLU:HB2	1.95	0.47
1:K:61:ARG:HD3	1:L:411:ASN:HB2	1.95	0.47
1:C:216:ARG:HG2	1:C:389:GLU:HB2	1.95	0.47
1:J:24:ILE:HG12	1:J:31:GLN:HG2	1.95	0.47
1:A:456:HIS:HE1	1:A:458:LYS:HE3	1.79	0.47
1:K:47:MET:HG2	1:K:55:LEU:HD12	1.96	0.47
1:E:24:ILE:HG12	1:E:31:GLN:HG2	1.96	0.47
1:I:61:ARG:HD3	1:J:411:ASN:HB2	1.96	0.47
1:C:226:LYS:HE2	2:C:656:HOH:O	2.14	0.47
1:I:243:HIS:HA	1:I:341:HIS:CE1	2.50	0.47
1:C:411:ASN:HB2	1:D:61:ARG:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:243:HIS:HA	1:D:341:HIS:CE1	2.50	0.47
1:L:47:MET:HG2	1:L:55:LEU:HD12	1.97	0.47
1:G:61:ARG:HD3	1:H:411:ASN:HB2	1.97	0.47
1:K:216:ARG:HG2	1:K:389:GLU:HB2	1.97	0.46
1:L:243:HIS:HA	1:L:341:HIS:CE1	2.50	0.46
1:J:243:HIS:HA	1:J:341:HIS:CE1	2.51	0.46
1:A:47:MET:HG2	1:A:55:LEU:HD12	1.98	0.46
1:A:216:ARG:HG2	1:A:389:GLU:HB2	1.97	0.46
1:G:187:ARG:HH11	1:H:389:GLU:HA	1.80	0.46
1:B:47:MET:HG2	1:B:55:LEU:HD12	1.98	0.46
1:H:216:ARG:HG2	1:H:389:GLU:HB2	1.97	0.46
1:C:432:ARG:HH21	1:C:434:LYS:HZ3	1.64	0.46
1:A:449:LEU:HD11	1:A:476:VAL:HG11	1.98	0.46
1:B:119:THR:HA	1:B:122:LEU:HD12	1.96	0.46
1:F:216:ARG:HG2	1:F:389:GLU:HB2	1.98	0.46
1:L:361:PRO:HG3	1:L:366:VAL:HG13	1.96	0.46
1:C:243:HIS:HA	1:C:341:HIS:CE1	2.51	0.45
1:G:47:MET:HG2	1:G:55:LEU:HD12	1.98	0.45
1:H:47:MET:HG2	1:H:55:LEU:HD12	1.97	0.45
1:H:336:MET:HB2	1:H:336:MET:HE2	1.80	0.45
1:B:216:ARG:HG2	1:B:389:GLU:HB2	1.98	0.45
1:B:361:PRO:HG3	1:B:366:VAL:HG13	1.97	0.45
1:K:361:PRO:HG3	1:K:366:VAL:HG13	1.96	0.45
1:E:47:MET:HG2	1:E:55:LEU:HD12	1.99	0.45
1:A:461:GLU:HB2	1:A:481:VAL:HB	1.99	0.45
1:G:216:ARG:HG2	1:G:389:GLU:HB2	1.97	0.45
1:I:444:ILE:CG1	1:I:505:LYS:HG2	2.46	0.45
1:I:461:GLU:HB2	1:I:481:VAL:HB	1.99	0.45
1:D:460:ASP:HB2	1:D:483:LYS:HG3	1.99	0.45
1:D:461:GLU:HB2	1:D:481:VAL:HB	1.99	0.44
1:F:47:MET:HG2	1:F:55:LEU:HD12	1.99	0.44
1:I:444:ILE:HG12	1:I:505:LYS:HG2	1.98	0.44
1:C:47:MET:HG2	1:C:55:LEU:HD12	2.00	0.44
1:C:226:LYS:CE	2:C:656:HOH:O	2.66	0.43
1:D:47:MET:HG2	1:D:55:LEU:HD12	1.99	0.43
1:D:185:PHE:HB2	2:D:644:HOH:O	2.17	0.43
1:K:286:PRO:HG3	1:K:314:LEU:HD23	2.00	0.43
1:F:436:LEU:O	1:F:437:ILE:HG13	2.19	0.43
1:D:120:THR:HG21	1:D:155:TYR:CZ	2.54	0.43
1:J:120:THR:HG21	1:J:155:TYR:CZ	2.54	0.43
1:L:297:LYS:HE2	1:L:297:LYS:HB3	1.76	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:THR:HG21	1:A:155:TYR:CZ	2.54	0.43
1:C:434:LYS:HD3	2:C:625:HOH:O	2.18	0.43
1:E:41:VAL:HG13	1:E:81:GLY:HA2	2.00	0.43
1:E:120:THR:HG21	1:E:155:TYR:CZ	2.54	0.43
1:J:47:MET:HG2	1:J:55:LEU:HD12	2.01	0.43
1:L:221:ILE:HD13	1:L:247:GLY:HA2	2.01	0.43
1:F:290:MET:HB2	2:F:608:HOH:O	2.19	0.43
1:C:41:VAL:HG13	1:C:81:GLY:HA2	2.01	0.42
1:K:286:PRO:HG2	1:K:312:SER:OG	2.19	0.42
1:E:366:VAL:HG22	1:E:421:PHE:HZ	1.84	0.42
1:K:41:VAL:HG13	1:K:81:GLY:HA2	2.00	0.42
1:L:336:MET:HB2	1:L:336:MET:HE2	1.82	0.42
1:F:120:THR:HG21	1:F:155:TYR:CZ	2.54	0.42
1:J:221:ILE:HD13	1:J:247:GLY:HA2	2.02	0.42
1:G:41:VAL:HG13	1:G:81:GLY:HA2	2.02	0.42
1:G:226:LYS:HG2	1:G:348:LEU:CD2	2.49	0.42
1:I:47:MET:HG2	1:I:55:LEU:HD12	2.00	0.42
1:C:120:THR:HG21	1:C:155:TYR:CZ	2.55	0.42
1:C:221:ILE:HD13	1:C:247:GLY:HA2	2.01	0.42
1:G:120:THR:HG21	1:G:155:TYR:CZ	2.54	0.42
1:I:41:VAL:HG13	1:I:81:GLY:HA2	2.02	0.42
1:L:24:ILE:HG12	1:L:31:GLN:HG2	2.01	0.42
1:E:61:ARG:HD3	1:F:411:ASN:HB2	2.01	0.42
1:K:120:THR:HG21	1:K:155:TYR:CZ	2.54	0.42
1:K:221:ILE:HD13	1:K:247:GLY:HA2	2.01	0.42
1:B:88:ILE:HG21	1:B:194:ILE:HD12	2.02	0.42
1:B:120:THR:HG21	1:B:155:TYR:CZ	2.55	0.42
1:C:354:LYS:HA	1:C:355:PRO:HD3	1.96	0.42
1:D:456:HIS:HE1	1:D:458:LYS:HE3	1.84	0.42
1:F:293:LEU:HD22	1:F:321:LYS:HE2	2.02	0.42
1:H:221:ILE:HD13	1:H:247:GLY:HA2	2.02	0.42
1:B:225:TYR:O	1:B:305:ARG:NH2	2.39	0.42
1:F:88:ILE:HG21	1:F:194:ILE:HD12	2.02	0.42
1:H:120:THR:HG21	1:H:155:TYR:CZ	2.55	0.41
1:J:41:VAL:HG13	1:J:81:GLY:HA2	2.01	0.41
1:A:449:LEU:CD1	1:A:476:VAL:HG11	2.50	0.41
1:F:221:ILE:HD13	1:F:247:GLY:HA2	2.02	0.41
1:D:221:ILE:HD13	1:D:247:GLY:HA2	2.03	0.41
1:G:221:ILE:HD13	1:G:247:GLY:HA2	2.02	0.41
1:D:225:TYR:O	1:D:305:ARG:NH2	2.39	0.41
1:D:449:LEU:HD11	1:D:476:VAL:HG11	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:259:VAL:HG13	1:F:261:VAL:HG22	2.02	0.41
1:I:221:ILE:HD13	1:I:247:GLY:HA2	2.02	0.41
1:H:41:VAL:HG13	1:H:81:GLY:HA2	2.01	0.41
1:H:336:MET:HE1	1:H:415:THR:HB	2.02	0.41
1:I:456:HIS:HE1	1:I:458:LYS:HE3	1.85	0.41
1:L:120:THR:HG21	1:L:155:TYR:CZ	2.55	0.41
1:I:120:THR:HG21	1:I:155:TYR:CZ	2.55	0.41
1:L:41:VAL:HG13	1:L:81:GLY:HA2	2.02	0.41
1:A:460:ASP:HB2	1:A:483:LYS:HG3	2.02	0.41
1:C:268:LYS:HB2	2:C:658:HOH:O	2.20	0.41
1:D:41:VAL:HG13	1:D:81:GLY:HA2	2.02	0.41
1:E:221:ILE:HD13	1:E:247:GLY:HA2	2.03	0.41
1:F:24:ILE:HG12	1:F:31:GLN:HG2	2.03	0.41
1:H:88:ILE:HG21	1:H:194:ILE:HD12	2.03	0.41
1:C:88:ILE:HG21	1:C:194:ILE:HD12	2.03	0.40
1:E:203:THR:HA	1:E:204:PRO:HD3	1.99	0.40
1:L:344:THR:HG22	1:L:361:PRO:HA	2.03	0.40
1:B:181:LYS:HE3	1:B:181:LYS:HB3	1.77	0.40
1:J:259:VAL:HG13	1:J:261:VAL:HG22	2.03	0.40
1:B:41:VAL:HG13	1:B:81:GLY:HA2	2.02	0.40
1:F:366:VAL:HG22	1:F:421:PHE:HZ	1.87	0.40
1:A:41:VAL:HG13	1:A:81:GLY:HA2	2.02	0.40
1:B:366:VAL:HG22	1:B:421:PHE:HZ	1.86	0.40
1:D:366:VAL:HG22	1:D:421:PHE:HZ	1.86	0.40
1:K:128:LEU:HD22	1:K:128:LEU:HA	1.96	0.40
1:C:128:LEU:HD22	1:C:128:LEU:HA	1.96	0.40
1:K:366:VAL:HG22	1:K:421:PHE:HZ	1.86	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	523/543 (96%)	505 (97%)	16 (3%)	2 (0%)	34	64
1	B	426/543 (78%)	414 (97%)	10 (2%)	2 (0%)	29	59
1	C	428/543 (79%)	418 (98%)	8 (2%)	2 (0%)	29	59
1	D	509/543 (94%)	493 (97%)	14 (3%)	2 (0%)	34	64
1	E	424/543 (78%)	412 (97%)	10 (2%)	2 (0%)	29	59
1	F	427/543 (79%)	415 (97%)	10 (2%)	2 (0%)	29	59
1	G	421/543 (78%)	407 (97%)	11 (3%)	3 (1%)	22	52
1	H	425/543 (78%)	412 (97%)	11 (3%)	2 (0%)	29	59
1	I	514/543 (95%)	496 (96%)	16 (3%)	2 (0%)	34	64
1	J	425/543 (78%)	413 (97%)	10 (2%)	2 (0%)	29	59
1	K	423/543 (78%)	410 (97%)	11 (3%)	2 (0%)	29	59
1	L	424/543 (78%)	413 (97%)	9 (2%)	2 (0%)	29	59
All	All	5369/6516 (82%)	5208 (97%)	136 (2%)	25 (0%)	29	59

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	312	SER
1	A	341	HIS
1	B	341	HIS
1	C	311	SER
1	C	341	HIS
1	D	341	HIS
1	E	341	HIS
1	F	311	SER
1	F	341	HIS
1	G	341	HIS
1	H	341	HIS
1	I	341	HIS
1	J	341	HIS
1	K	341	HIS
1	L	341	HIS
1	A	311	SER
1	D	311	SER
1	E	311	SER
1	G	311	SER
1	H	311	SER
1	I	311	SER
1	J	311	SER

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Mol	Chain	Res	Type
1	K	311	SER
1	L	311	SER
1	G	198	SER

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	461/476 (97%)	430 (93%)	31 (7%)	16	41
1	B	378/476 (79%)	357 (94%)	21 (6%)	21	49
1	C	380/476 (80%)	358 (94%)	22 (6%)	20	48
1	D	450/476 (94%)	422 (94%)	28 (6%)	18	45
1	E	376/476 (79%)	361 (96%)	15 (4%)	31	63
1	F	379/476 (80%)	363 (96%)	16 (4%)	30	61
1	G	373/476 (78%)	349 (94%)	24 (6%)	17	43
1	H	377/476 (79%)	358 (95%)	19 (5%)	24	54
1	I	455/476 (96%)	426 (94%)	29 (6%)	17	43
1	J	377/476 (79%)	353 (94%)	24 (6%)	17	43
1	K	375/476 (79%)	354 (94%)	21 (6%)	21	49
1	L	376/476 (79%)	354 (94%)	22 (6%)	19	47
All	All	4757/5712 (83%)	4485 (94%)	272 (6%)	20	49

All (272) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	ASP
1	A	47	MET
1	A	61	ARG
1	A	120	THR
1	A	122	LEU
1	A	123	GLN
1	A	128	LEU

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Mol	Chain	Res	Type
1	A	132	SER
1	A	163	ARG
1	A	164	VAL
1	A	189	SER
1	A	203	THR
1	A	205	LYS
1	A	217	SER
1	A	226	LYS
1	A	259	VAL
1	A	299	ASN
1	A	312	SER
1	A	321	LYS
1	A	337	THR
1	A	366	VAL
1	A	371	ASP
1	A	397	ASN
1	A	432	ARG
1	A	438	ASN
1	A	448	GLU
1	A	484	LYS
1	A	503	SER
1	A	525	GLN
1	A	527	ARG
1	A	528	VAL
1	B	47	MET
1	B	97	LYS
1	B	99	LYS
1	B	120	THR
1	B	122	LEU
1	B	128	LEU
1	B	132	SER
1	B	164	VAL
1	B	181	LYS
1	B	189	SER
1	B	217	SER
1	B	259	VAL
1	B	309	SER
1	B	311	SER
1	B	312	SER
1	B	321	LYS
1	B	324	LYS
1	B	337	THR

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Mol	Chain	Res	Type
1	B	366	VAL
1	B	371	ASP
1	B	397	ASN
1	C	16	SER
1	C	47	MET
1	C	61	ARG
1	C	97	LYS
1	C	99	LYS
1	C	120	THR
1	C	122	LEU
1	C	128	LEU
1	C	132	SER
1	C	164	VAL
1	C	173	LYS
1	C	189	SER
1	C	217	SER
1	C	259	VAL
1	C	272	ASP
1	C	309	SER
1	C	312	SER
1	C	324	LYS
1	C	337	THR
1	C	366	VAL
1	C	371	ASP
1	C	434	LYS
1	D	13	ASP
1	D	16	SER
1	D	47	MET
1	D	61	ARG
1	D	70	ARG
1	D	120	THR
1	D	122	LEU
1	D	123	GLN
1	D	128	LEU
1	D	158	GLU
1	D	164	VAL
1	D	189	SER
1	D	205	LYS
1	D	217	SER
1	D	226	LYS
1	D	258	SER
1	D	259	VAL

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Mol	Chain	Res	Type
1	D	309	SER
1	D	312	SER
1	D	337	THR
1	D	366	VAL
1	D	371	ASP
1	D	397	ASN
1	D	434	LYS
1	D	443	LYS
1	D	448	GLU
1	D	503	SER
1	D	515	LYS
1	E	16	SER
1	E	47	MET
1	E	120	THR
1	E	122	LEU
1	E	128	LEU
1	E	164	VAL
1	E	189	SER
1	E	217	SER
1	E	258	SER
1	E	259	VAL
1	E	309	SER
1	E	312	SER
1	E	337	THR
1	E	366	VAL
1	E	371	ASP
1	F	13	ASP
1	F	47	MET
1	F	120	THR
1	F	122	LEU
1	F	128	LEU
1	F	164	VAL
1	F	189	SER
1	F	217	SER
1	F	258	SER
1	F	259	VAL
1	F	309	SER
1	F	312	SER
1	F	337	THR
1	F	366	VAL
1	F	371	ASP
1	F	435	GLU

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Mol	Chain	Res	Type
1	G	13	ASP
1	G	16	SER
1	G	47	MET
1	G	61	ARG
1	G	120	THR
1	G	128	LEU
1	G	164	VAL
1	G	169	LEU
1	G	189	SER
1	G	198	SER
1	G	205	LYS
1	G	217	SER
1	G	226	LYS
1	G	258	SER
1	G	259	VAL
1	G	268	LYS
1	G	309	SER
1	G	312	SER
1	G	337	THR
1	G	366	VAL
1	G	371	ASP
1	G	397	ASN
1	G	400	LYS
1	G	408	LYS
1	H	16	SER
1	H	47	MET
1	H	61	ARG
1	H	97	LYS
1	H	99	LYS
1	H	120	THR
1	H	128	LEU
1	H	164	VAL
1	H	189	SER
1	H	217	SER
1	H	226	LYS
1	H	259	VAL
1	H	309	SER
1	H	312	SER
1	H	337	THR
1	H	366	VAL
1	H	371	ASP
1	H	397	ASN

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Mol	Chain	Res	Type
1	H	403	LYS
1	I	13	ASP
1	I	47	MET
1	I	61	ARG
1	I	99	LYS
1	I	120	THR
1	I	128	LEU
1	I	158	GLU
1	I	164	VAL
1	I	189	SER
1	I	203	THR
1	I	217	SER
1	I	226	LYS
1	I	258	SER
1	I	259	VAL
1	I	309	SER
1	I	337	THR
1	I	366	VAL
1	I	371	ASP
1	I	397	ASN
1	I	400	LYS
1	I	433	ILE
1	I	443	LYS
1	I	448	GLU
1	I	484	LYS
1	I	503	SER
1	I	515	LYS
1	I	524	ILE
1	I	528	VAL
1	I	532	THR
1	J	13	ASP
1	J	16	SER
1	J	47	MET
1	J	61	ARG
1	J	97	LYS
1	J	120	THR
1	J	122	LEU
1	J	128	LEU
1	J	158	GLU
1	J	163	ARG
1	J	164	VAL
1	J	169	LEU

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Mol	Chain	Res	Type
1	J	189	SER
1	J	217	SER
1	J	226	LYS
1	J	258	SER
1	J	259	VAL
1	J	299	ASN
1	J	309	SER
1	J	337	THR
1	J	366	VAL
1	J	371	ASP
1	J	397	ASN
1	J	434	LYS
1	K	47	MET
1	K	61	ARG
1	K	120	THR
1	K	125	SER
1	K	128	LEU
1	K	164	VAL
1	K	167	ARG
1	K	189	SER
1	K	202	SER
1	K	203	THR
1	K	217	SER
1	K	258	SER
1	K	259	VAL
1	K	309	SER
1	K	312	SER
1	K	314	LEU
1	K	324	LYS
1	K	337	THR
1	K	366	VAL
1	K	371	ASP
1	K	397	ASN
1	L	16	SER
1	L	47	MET
1	L	61	ARG
1	L	99	LYS
1	L	120	THR
1	L	122	LEU
1	L	128	LEU
1	L	164	VAL
1	L	189	SER

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Mol	Chain	Res	Type
1	L	205	LYS
1	L	217	SER
1	L	226	LYS
1	L	258	SER
1	L	259	VAL
1	L	290	MET
1	L	297	LYS
1	L	309	SER
1	L	312	SER
1	L	337	THR
1	L	366	VAL
1	L	371	ASP
1	L	397	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	171	ASN
1	A	299	ASN
1	A	438	ASN
1	B	171	ASN
1	C	320	HIS
1	D	171	ASN
1	E	171	ASN
1	F	171	ASN
1	G	171	ASN
1	G	299	ASN
1	H	171	ASN
1	I	171	ASN
1	K	171	ASN
1	L	171	ASN
1	L	299	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [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	525/543 (96%)	0.16	25 (4%) 30 26	52, 63, 114, 174	0
1	B	428/543 (78%)	-0.00	4 (0%) 84 84	50, 58, 81, 109	0
1	C	430/543 (79%)	0.03	4 (0%) 84 84	49, 56, 66, 115	0
1	D	511/543 (94%)	0.21	34 (6%) 17 13	48, 57, 149, 206	0
1	E	426/543 (78%)	0.11	11 (2%) 56 53	53, 66, 113, 136	0
1	F	429/543 (79%)	0.06	12 (2%) 53 50	53, 79, 118, 151	0
1	G	423/543 (77%)	0.62	40 (9%) 8 5	66, 105, 143, 174	0
1	H	427/543 (78%)	0.41	28 (6%) 18 14	62, 103, 133, 143	0
1	I	518/543 (95%)	0.22	28 (5%) 25 22	51, 64, 145, 174	0
1	J	427/543 (78%)	-0.00	8 (1%) 66 65	52, 62, 92, 131	0
1	K	425/543 (78%)	0.25	16 (3%) 40 36	54, 91, 121, 156	0
1	L	426/543 (78%)	0.55	41 (9%) 8 5	65, 106, 151, 188	0
All	All	5395/6516 (82%)	0.21	251 (4%) 31 27	48, 72, 132, 206	0

All (251) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	199	GLY	8.2
1	I	475	VAL	7.3
1	I	512	PHE	5.7
1	L	200	THR	5.7
1	I	485	GLY	5.5
1	G	431	GLY	5.3
1	A	521	THR	5.0
1	A	522	GLY	5.0
1	G	199	GLY	4.9
1	D	490	TYR	4.6
1	G	206	THR	4.6

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Mol	Chain	Res	Type	RSRZ
1	L	201	THR	4.4
1	L	124	SER	4.4
1	I	467	VAL	4.3
1	G	201	THR	4.3
1	G	200	THR	4.3
1	C	438	ASN	4.1
1	C	436	LEU	4.1
1	F	199	GLY	4.0
1	L	123	GLN	4.0
1	D	485	GLY	4.0
1	D	516	LEU	4.0
1	D	489	THR	4.0
1	K	201	THR	4.0
1	D	519	THR	3.9
1	A	520	ALA	3.9
1	L	97	LYS	3.9
1	D	453	MET	3.9
1	I	515	LYS	3.8
1	A	202	SER	3.8
1	C	437	ILE	3.8
1	D	503	SER	3.7
1	K	372	ASN	3.7
1	A	527	ARG	3.7
1	F	203	THR	3.6
1	K	200	THR	3.6
1	G	120	THR	3.6
1	J	434	LYS	3.6
1	E	165	ILE	3.6
1	K	163	ARG	3.6
1	A	519	THR	3.5
1	F	434	LYS	3.5
1	K	426	PHE	3.5
1	D	488	MET	3.4
1	A	523	LYS	3.4
1	F	202	SER	3.4
1	D	481	VAL	3.4
1	A	200	THR	3.4
1	D	483	LYS	3.4
1	K	99	LYS	3.4
1	I	442	GLU	3.3
1	H	198	SER	3.3
1	D	511	TYR	3.3

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Mol	Chain	Res	Type	RSRZ
1	H	133	THR	3.3
1	D	487	LYS	3.3
1	D	479	ALA	3.3
1	K	380	LYS	3.3
1	H	268	LYS	3.3
1	L	434	LYS	3.2
1	G	123	GLN	3.2
1	D	484	LYS	3.2
1	L	204	PRO	3.2
1	J	201	THR	3.2
1	H	125	SER	3.2
1	A	471	MET	3.2
1	G	148	PHE	3.1
1	L	158	GLU	3.1
1	G	380	LYS	3.1
1	A	487	LYS	3.1
1	I	513	VAL	3.1
1	D	518	LYS	3.1
1	H	205	LYS	3.1
1	H	201	THR	3.0
1	L	51	PRO	3.0
1	L	177	THR	3.0
1	J	163	ARG	3.0
1	K	423	PRO	3.0
1	E	163	ARG	3.0
1	F	123	GLN	3.0
1	F	437	ILE	3.0
1	G	326	PHE	2.9
1	H	272	ASP	2.9
1	L	154	ILE	2.9
1	A	489	THR	2.9
1	H	197	THR	2.9
1	D	514	ASP	2.9
1	D	517	PRO	2.9
1	D	480	ILE	2.9
1	L	372	ASN	2.9
1	I	458	LYS	2.8
1	H	145	ALA	2.8
1	L	198	SER	2.8
1	J	200	THR	2.8
1	D	512	PHE	2.8
1	G	60	PHE	2.8

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Mol	Chain	Res	Type	RSRZ
1	I	511	TYR	2.8
1	K	366	VAL	2.8
1	I	457	PRO	2.8
1	D	462	ALA	2.8
1	G	402	ASN	2.8
1	L	96	TYR	2.8
1	A	396	ALA	2.8
1	L	117	LYS	2.7
1	K	124	SER	2.7
1	I	487	LYS	2.7
1	F	160	ASN	2.7
1	I	439	ARG	2.7
1	I	474	GLN	2.7
1	I	484	LYS	2.7
1	G	124	SER	2.6
1	G	376	LEU	2.6
1	I	510	VAL	2.6
1	I	516	LEU	2.6
1	H	296	PRO	2.6
1	L	172	ALA	2.6
1	G	381	VAL	2.6
1	A	457	PRO	2.6
1	H	118	GLY	2.6
1	L	155	TYR	2.6
1	I	466	GLY	2.6
1	L	122	LEU	2.6
1	J	435	GLU	2.6
1	C	200	THR	2.6
1	E	376	LEU	2.6
1	L	419	GLY	2.6
1	G	395	TYR	2.6
1	K	123	GLN	2.5
1	G	419	GLY	2.5
1	H	146	THR	2.5
1	H	97	LYS	2.5
1	H	163	ARG	2.5
1	I	123	GLN	2.5
1	D	471	MET	2.5
1	D	504	PHE	2.5
1	A	488	MET	2.5
1	H	303	HIS	2.5
1	G	244	GLY	2.5

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Mol	Chain	Res	Type	RSRZ
1	E	179	PRO	2.5
1	D	200	THR	2.5
1	G	172	ALA	2.5
1	K	161	TYR	2.5
1	I	493	LEU	2.5
1	J	123	GLN	2.5
1	D	495	ASN	2.5
1	I	167	ARG	2.5
1	A	525	GLN	2.5
1	E	352	LYS	2.5
1	L	202	SER	2.5
1	L	296	PRO	2.5
1	B	397	ASN	2.5
1	L	268	LYS	2.5
1	H	96	TYR	2.5
1	H	325	GLU	2.4
1	L	269	LEU	2.4
1	F	126	GLU	2.4
1	G	293	LEU	2.4
1	H	368	ILE	2.4
1	H	101	PHE	2.4
1	I	514	ASP	2.4
1	L	127	ILE	2.4
1	G	163	ARG	2.4
1	L	148	PHE	2.4
1	G	160	ASN	2.4
1	I	517	PRO	2.4
1	L	294	ASN	2.4
1	K	404	GLU	2.3
1	I	440	GLY	2.3
1	D	162	LYS	2.3
1	F	200	THR	2.3
1	L	380	LYS	2.3
1	L	112	ALA	2.3
1	I	380	LYS	2.3
1	L	430	THR	2.3
1	E	57	GLY	2.3
1	L	119	THR	2.3
1	K	78	ALA	2.3
1	A	123	GLN	2.3
1	E	200	THR	2.3
1	I	162	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	317	ALA	2.3
1	E	170	ASN	2.3
1	E	124	SER	2.3
1	H	200	THR	2.3
1	G	157	PRO	2.3
1	A	485	GLY	2.3
1	A	114	CYS	2.2
1	G	146	THR	2.2
1	F	271	TRP	2.2
1	A	163	ARG	2.2
1	G	249	LEU	2.2
1	G	67	ILE	2.2
1	F	201	THR	2.2
1	E	171	ASN	2.2
1	D	201	THR	2.2
1	J	299	ASN	2.2
1	G	75	PHE	2.2
1	I	455	SER	2.2
1	L	205	LYS	2.2
1	L	295	MET	2.2
1	L	420	TYR	2.2
1	D	442	GLU	2.2
1	D	493	LEU	2.2
1	B	200	THR	2.2
1	L	132	SER	2.2
1	H	423	PRO	2.2
1	A	531	GLU	2.2
1	I	488	MET	2.2
1	I	508	THR	2.2
1	A	317	ALA	2.2
1	G	125	SER	2.2
1	G	430	THR	2.2
1	D	515	LYS	2.2
1	H	103	PHE	2.1
1	D	455	SER	2.1
1	H	204	PRO	2.1
1	L	52	ASN	2.1
1	D	457	PRO	2.1
1	L	300	PRO	2.1
1	G	396	ALA	2.1
1	G	397	ASN	2.1
1	K	359	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	G	245	LEU	2.1
1	E	78	ALA	2.1
1	F	401	ALA	2.1
1	K	320	HIS	2.1
1	L	170	ASN	2.1
1	D	497	LEU	2.1
1	G	97	LYS	2.1
1	H	400	LYS	2.1
1	G	70	ARG	2.1
1	G	71	ASN	2.1
1	L	325	GLU	2.1
1	D	456	HIS	2.1
1	A	124	SER	2.1
1	G	270	PHE	2.1
1	H	380	LYS	2.1
1	A	203	THR	2.1
1	H	420	TYR	2.1
1	L	163	ARG	2.1
1	A	517	PRO	2.1
1	D	441	GLY	2.0
1	G	294	ASN	2.0
1	G	78	ALA	2.0
1	L	376	LEU	2.0
1	G	196	HIS	2.0
1	J	124	SER	2.0
1	G	177	THR	2.0
1	H	123	GLN	2.0
1	A	199	GLY	2.0
1	B	435	GLU	2.0
1	H	99	LYS	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 monosaccharides in this entry.

6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.