



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jul 24, 2024 – 04:19 pm BST

PDB ID : 8QWB  
Title : Crystal structure of citrate synthase from *Methylophaga sulfidovorans*  
Authors : Mais, C.-N.; Bange, G.; Sendker, F.L.; Hochberg, G.  
Deposited on : 2023-10-19  
Resolution : 3.20 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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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 : 2.37.1  
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) : 2.37.1

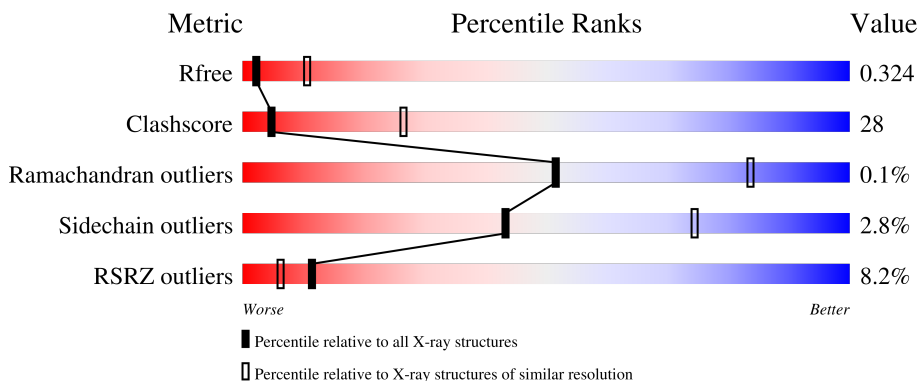
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.20 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	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

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  $\geq 3$ , 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	397	 4% 43% 37% 18%
1	B	397	 8% 43% 38% 18%
1	C	397	 7% 46% 32% 22%
1	D	397	 5% 48% 32% 18%
1	E	397	 5% 43% 36% 19%

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Mol	Chain	Length	Quality of chain
1	F	397	<p>5% 43% 36% 20%</p>
1	G	397	<p>9% 38% 39% 21%</p>
1	H	397	<p>8% 40% 38% 21%</p>
1	I	397	<p>6% 41% 35% 22%</p>
1	J	397	<p>4% 42% 37% 18%</p>
1	K	397	<p>9% 41% 36% 22%</p>
1	L	397	<p>9% 37% 40% 20%</p>

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 30057 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 Citrate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	324	Total 2555	C 1628	N 434	O 475	S 18	0	0	0
1	B	327	Total 2580	C 1642	N 437	O 482	S 19	0	0	0
1	C	311	Total 2441	C 1552	N 409	O 463	S 17	0	0	0
1	D	324	Total 2552	C 1623	N 434	O 477	S 18	0	0	0
1	E	321	Total 2533	C 1611	N 431	O 473	S 18	0	0	0
1	F	318	Total 2509	C 1597	N 427	O 468	S 17	0	0	0
1	G	313	Total 2457	C 1564	N 414	O 462	S 17	0	0	0
1	H	315	Total 2484	C 1581	N 421	O 465	S 17	0	0	0
1	I	311	Total 2446	C 1555	N 416	O 458	S 17	0	0	0
1	J	326	Total 2563	C 1632	N 433	O 480	S 18	0	0	0
1	K	309	Total 2433	C 1552	N 409	O 456	S 16	0	0	0
1	L	317	Total 2504	C 1594	N 423	O 469	S 18	0	0	0

There are 144 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	386	LEU	-	expression tag	UNP A0A1I4B681
A	387	VAL	-	expression tag	UNP A0A1I4B681
A	388	PRO	-	expression tag	UNP A0A1I4B681
A	389	ARG	-	expression tag	UNP A0A1I4B681
A	390	LEU	-	expression tag	UNP A0A1I4B681

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Chain	Residue	Modelled	Actual	Comment	Reference
A	391	GLU	-	expression tag	UNP A0A1I4B681
A	392	HIS	-	expression tag	UNP A0A1I4B681
A	393	HIS	-	expression tag	UNP A0A1I4B681
A	394	HIS	-	expression tag	UNP A0A1I4B681
A	395	HIS	-	expression tag	UNP A0A1I4B681
A	396	HIS	-	expression tag	UNP A0A1I4B681
A	397	HIS	-	expression tag	UNP A0A1I4B681
B	386	LEU	-	expression tag	UNP A0A1I4B681
B	387	VAL	-	expression tag	UNP A0A1I4B681
B	388	PRO	-	expression tag	UNP A0A1I4B681
B	389	ARG	-	expression tag	UNP A0A1I4B681
B	390	LEU	-	expression tag	UNP A0A1I4B681
B	391	GLU	-	expression tag	UNP A0A1I4B681
B	392	HIS	-	expression tag	UNP A0A1I4B681
B	393	HIS	-	expression tag	UNP A0A1I4B681
B	394	HIS	-	expression tag	UNP A0A1I4B681
B	395	HIS	-	expression tag	UNP A0A1I4B681
B	396	HIS	-	expression tag	UNP A0A1I4B681
B	397	HIS	-	expression tag	UNP A0A1I4B681
C	386	LEU	-	expression tag	UNP A0A1I4B681
C	387	VAL	-	expression tag	UNP A0A1I4B681
C	388	PRO	-	expression tag	UNP A0A1I4B681
C	389	ARG	-	expression tag	UNP A0A1I4B681
C	390	LEU	-	expression tag	UNP A0A1I4B681
C	391	GLU	-	expression tag	UNP A0A1I4B681
C	392	HIS	-	expression tag	UNP A0A1I4B681
C	393	HIS	-	expression tag	UNP A0A1I4B681
C	394	HIS	-	expression tag	UNP A0A1I4B681
C	395	HIS	-	expression tag	UNP A0A1I4B681
C	396	HIS	-	expression tag	UNP A0A1I4B681
C	397	HIS	-	expression tag	UNP A0A1I4B681
D	386	LEU	-	expression tag	UNP A0A1I4B681
D	387	VAL	-	expression tag	UNP A0A1I4B681
D	388	PRO	-	expression tag	UNP A0A1I4B681
D	389	ARG	-	expression tag	UNP A0A1I4B681
D	390	LEU	-	expression tag	UNP A0A1I4B681
D	391	GLU	-	expression tag	UNP A0A1I4B681
D	392	HIS	-	expression tag	UNP A0A1I4B681
D	393	HIS	-	expression tag	UNP A0A1I4B681
D	394	HIS	-	expression tag	UNP A0A1I4B681
D	395	HIS	-	expression tag	UNP A0A1I4B681
D	396	HIS	-	expression tag	UNP A0A1I4B681

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Chain	Residue	Modelled	Actual	Comment	Reference
D	397	HIS	-	expression tag	UNP A0A1I4B681
E	386	LEU	-	expression tag	UNP A0A1I4B681
E	387	VAL	-	expression tag	UNP A0A1I4B681
E	388	PRO	-	expression tag	UNP A0A1I4B681
E	389	ARG	-	expression tag	UNP A0A1I4B681
E	390	LEU	-	expression tag	UNP A0A1I4B681
E	391	GLU	-	expression tag	UNP A0A1I4B681
E	392	HIS	-	expression tag	UNP A0A1I4B681
E	393	HIS	-	expression tag	UNP A0A1I4B681
E	394	HIS	-	expression tag	UNP A0A1I4B681
E	395	HIS	-	expression tag	UNP A0A1I4B681
E	396	HIS	-	expression tag	UNP A0A1I4B681
E	397	HIS	-	expression tag	UNP A0A1I4B681
F	386	LEU	-	expression tag	UNP A0A1I4B681
F	387	VAL	-	expression tag	UNP A0A1I4B681
F	388	PRO	-	expression tag	UNP A0A1I4B681
F	389	ARG	-	expression tag	UNP A0A1I4B681
F	390	LEU	-	expression tag	UNP A0A1I4B681
F	391	GLU	-	expression tag	UNP A0A1I4B681
F	392	HIS	-	expression tag	UNP A0A1I4B681
F	393	HIS	-	expression tag	UNP A0A1I4B681
F	394	HIS	-	expression tag	UNP A0A1I4B681
F	395	HIS	-	expression tag	UNP A0A1I4B681
F	396	HIS	-	expression tag	UNP A0A1I4B681
F	397	HIS	-	expression tag	UNP A0A1I4B681
G	386	LEU	-	expression tag	UNP A0A1I4B681
G	387	VAL	-	expression tag	UNP A0A1I4B681
G	388	PRO	-	expression tag	UNP A0A1I4B681
G	389	ARG	-	expression tag	UNP A0A1I4B681
G	390	LEU	-	expression tag	UNP A0A1I4B681
G	391	GLU	-	expression tag	UNP A0A1I4B681
G	392	HIS	-	expression tag	UNP A0A1I4B681
G	393	HIS	-	expression tag	UNP A0A1I4B681
G	394	HIS	-	expression tag	UNP A0A1I4B681
G	395	HIS	-	expression tag	UNP A0A1I4B681
G	396	HIS	-	expression tag	UNP A0A1I4B681
G	397	HIS	-	expression tag	UNP A0A1I4B681
H	386	LEU	-	expression tag	UNP A0A1I4B681
H	387	VAL	-	expression tag	UNP A0A1I4B681
H	388	PRO	-	expression tag	UNP A0A1I4B681
H	389	ARG	-	expression tag	UNP A0A1I4B681
H	390	LEU	-	expression tag	UNP A0A1I4B681

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Chain	Residue	Modelled	Actual	Comment	Reference
H	391	GLU	-	expression tag	UNP A0A1I4B681
H	392	HIS	-	expression tag	UNP A0A1I4B681
H	393	HIS	-	expression tag	UNP A0A1I4B681
H	394	HIS	-	expression tag	UNP A0A1I4B681
H	395	HIS	-	expression tag	UNP A0A1I4B681
H	396	HIS	-	expression tag	UNP A0A1I4B681
H	397	HIS	-	expression tag	UNP A0A1I4B681
I	386	LEU	-	expression tag	UNP A0A1I4B681
I	387	VAL	-	expression tag	UNP A0A1I4B681
I	388	PRO	-	expression tag	UNP A0A1I4B681
I	389	ARG	-	expression tag	UNP A0A1I4B681
I	390	LEU	-	expression tag	UNP A0A1I4B681
I	391	GLU	-	expression tag	UNP A0A1I4B681
I	392	HIS	-	expression tag	UNP A0A1I4B681
I	393	HIS	-	expression tag	UNP A0A1I4B681
I	394	HIS	-	expression tag	UNP A0A1I4B681
I	395	HIS	-	expression tag	UNP A0A1I4B681
I	396	HIS	-	expression tag	UNP A0A1I4B681
I	397	HIS	-	expression tag	UNP A0A1I4B681
J	386	LEU	-	expression tag	UNP A0A1I4B681
J	387	VAL	-	expression tag	UNP A0A1I4B681
J	388	PRO	-	expression tag	UNP A0A1I4B681
J	389	ARG	-	expression tag	UNP A0A1I4B681
J	390	LEU	-	expression tag	UNP A0A1I4B681
J	391	GLU	-	expression tag	UNP A0A1I4B681
J	392	HIS	-	expression tag	UNP A0A1I4B681
J	393	HIS	-	expression tag	UNP A0A1I4B681
J	394	HIS	-	expression tag	UNP A0A1I4B681
J	395	HIS	-	expression tag	UNP A0A1I4B681
J	396	HIS	-	expression tag	UNP A0A1I4B681
J	397	HIS	-	expression tag	UNP A0A1I4B681
K	386	LEU	-	expression tag	UNP A0A1I4B681
K	387	VAL	-	expression tag	UNP A0A1I4B681
K	388	PRO	-	expression tag	UNP A0A1I4B681
K	389	ARG	-	expression tag	UNP A0A1I4B681
K	390	LEU	-	expression tag	UNP A0A1I4B681
K	391	GLU	-	expression tag	UNP A0A1I4B681
K	392	HIS	-	expression tag	UNP A0A1I4B681
K	393	HIS	-	expression tag	UNP A0A1I4B681
K	394	HIS	-	expression tag	UNP A0A1I4B681
K	395	HIS	-	expression tag	UNP A0A1I4B681
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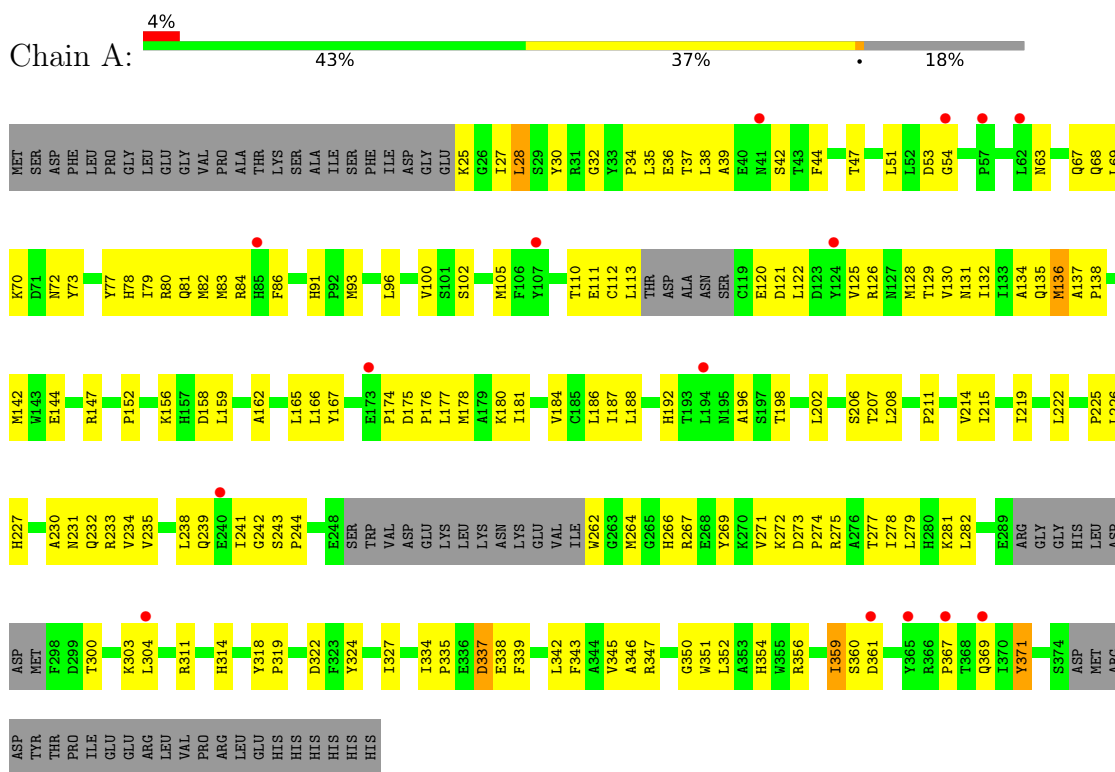
Chain	Residue	Modelled	Actual	Comment	Reference
K	397	HIS	-	expression tag	UNP A0A1I4B681
L	386	LEU	-	expression tag	UNP A0A1I4B681
L	387	VAL	-	expression tag	UNP A0A1I4B681
L	388	PRO	-	expression tag	UNP A0A1I4B681
L	389	ARG	-	expression tag	UNP A0A1I4B681
L	390	LEU	-	expression tag	UNP A0A1I4B681
L	391	GLU	-	expression tag	UNP A0A1I4B681
L	392	HIS	-	expression tag	UNP A0A1I4B681
L	393	HIS	-	expression tag	UNP A0A1I4B681
L	394	HIS	-	expression tag	UNP A0A1I4B681
L	395	HIS	-	expression tag	UNP A0A1I4B681
L	396	HIS	-	expression tag	UNP A0A1I4B681
L	397	HIS	-	expression tag	UNP A0A1I4B681



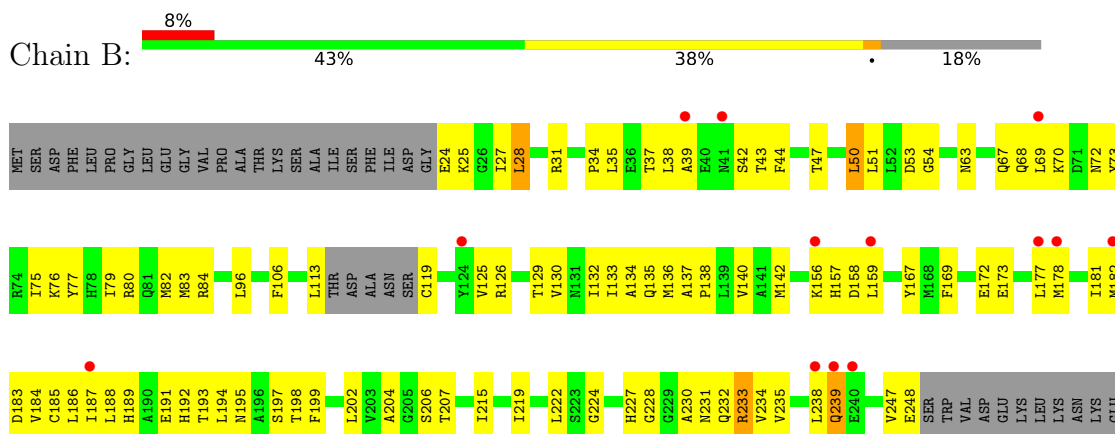
### 3 Residue-property plots i

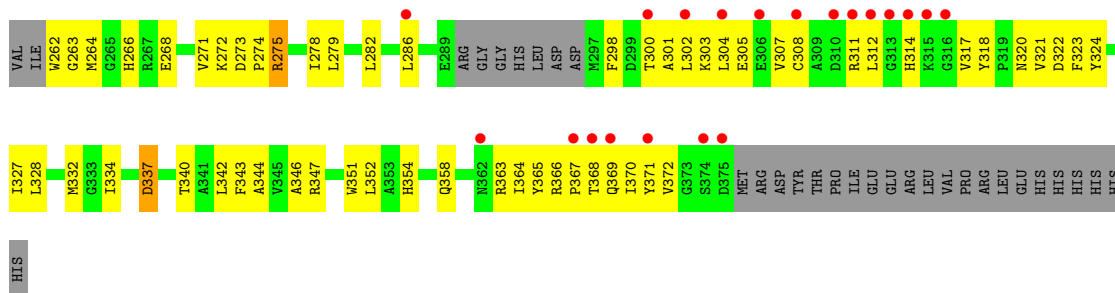
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Citrate synthase

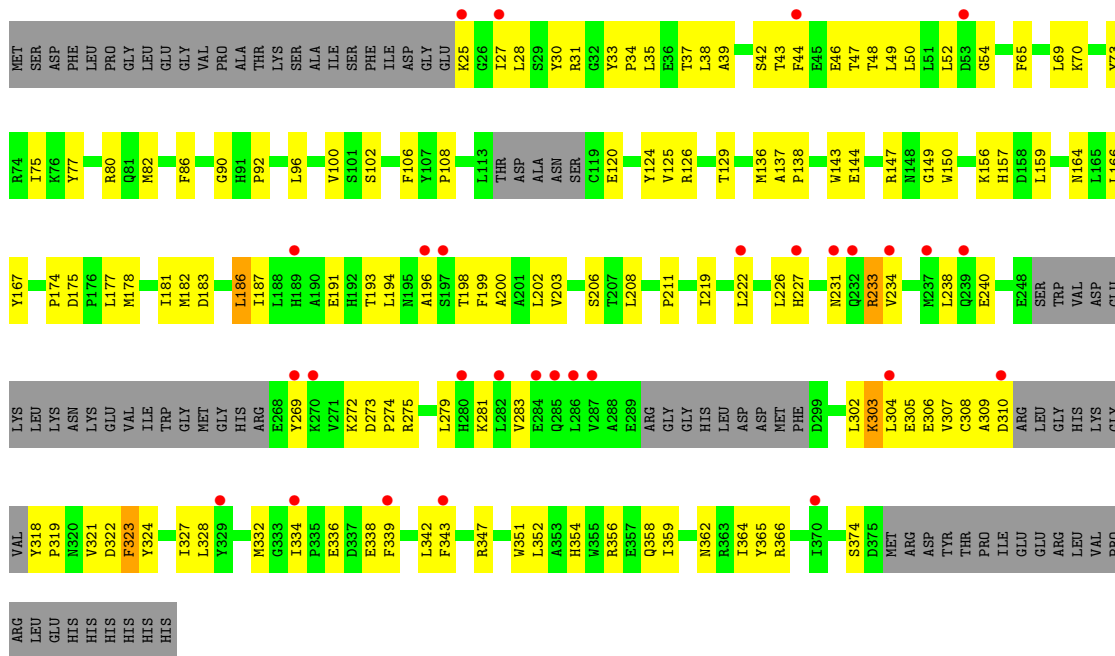


- Molecule 1: Citrate synthase

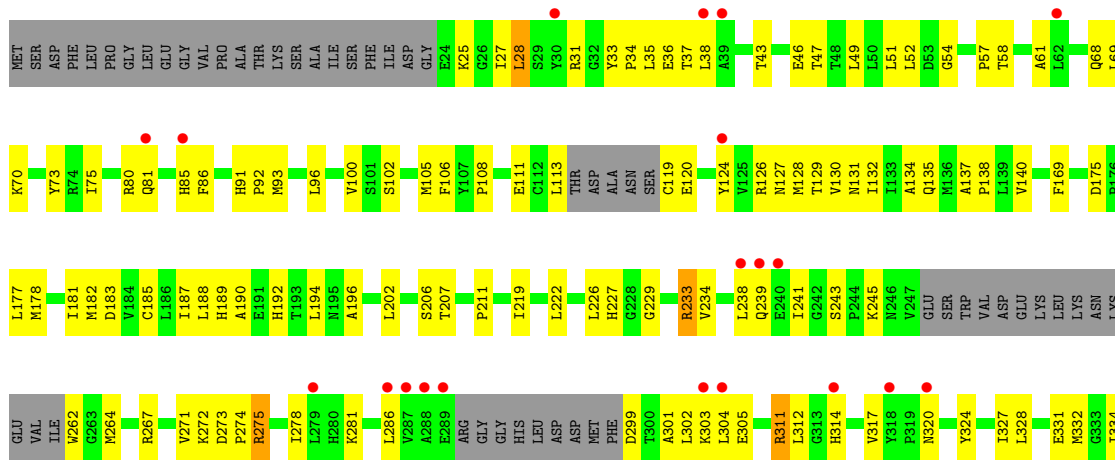


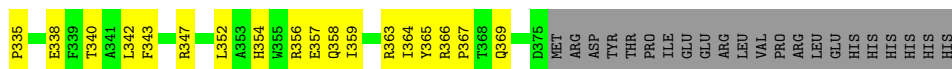


● Molecule 1: Citrate synthase

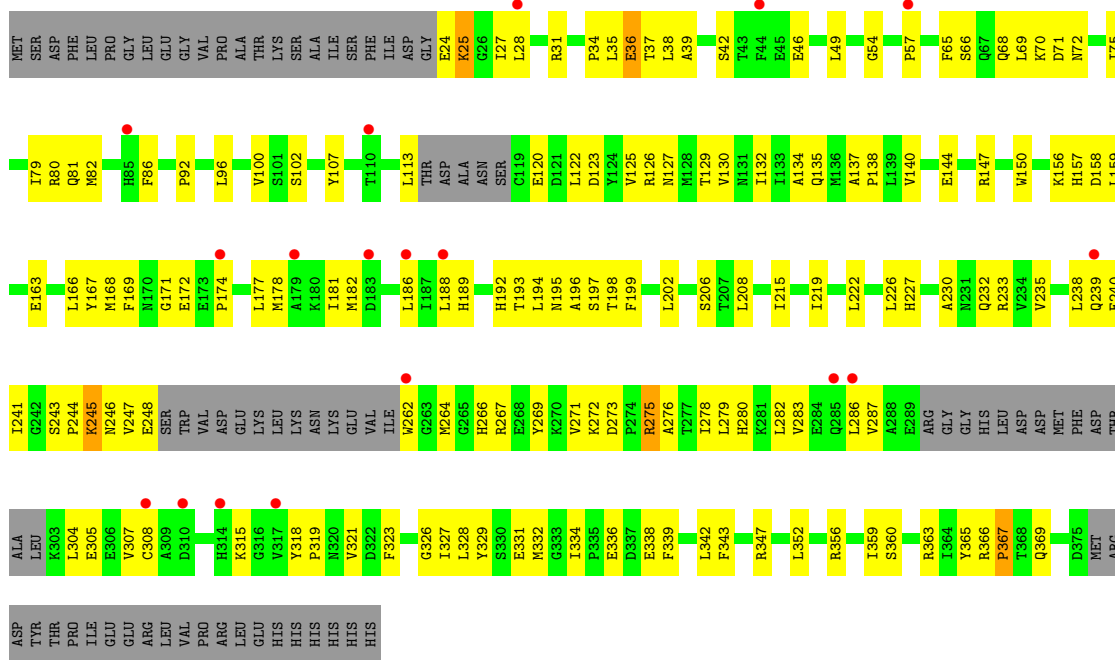


● Molecule 1: Citrate synthase

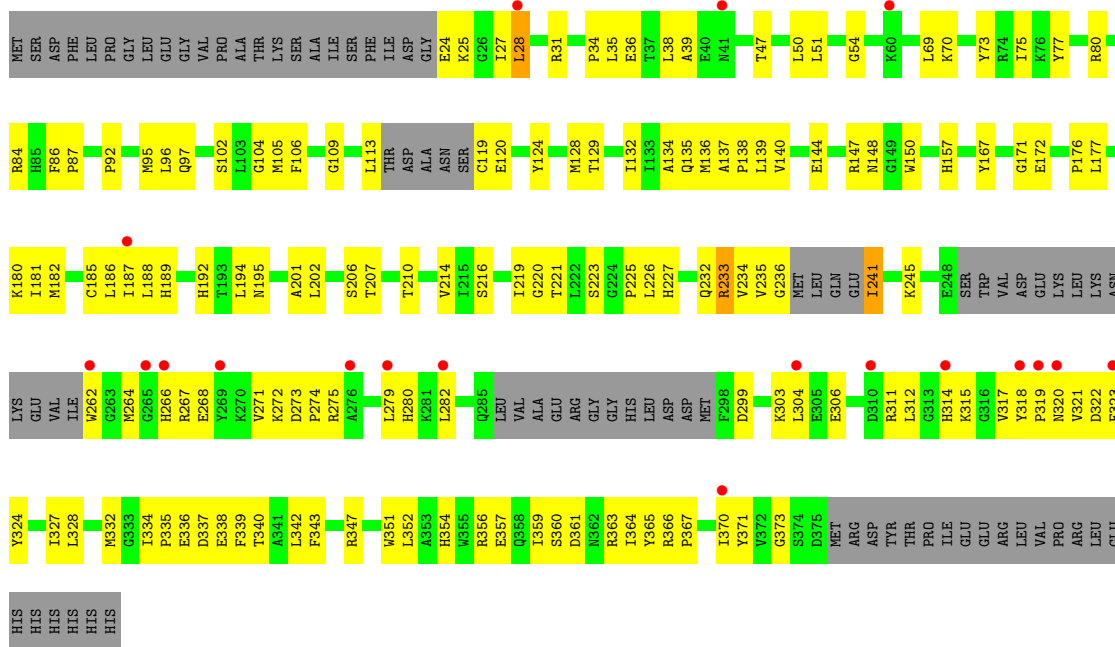




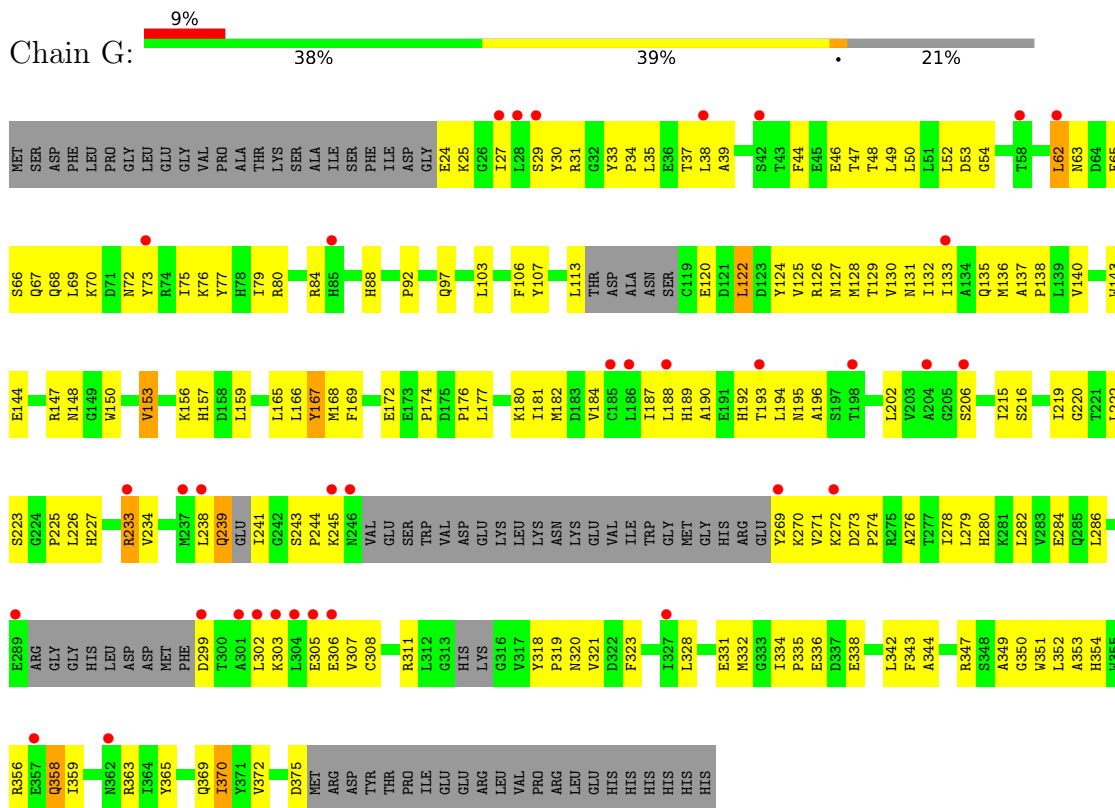
● Molecule 1: Citrate synthase



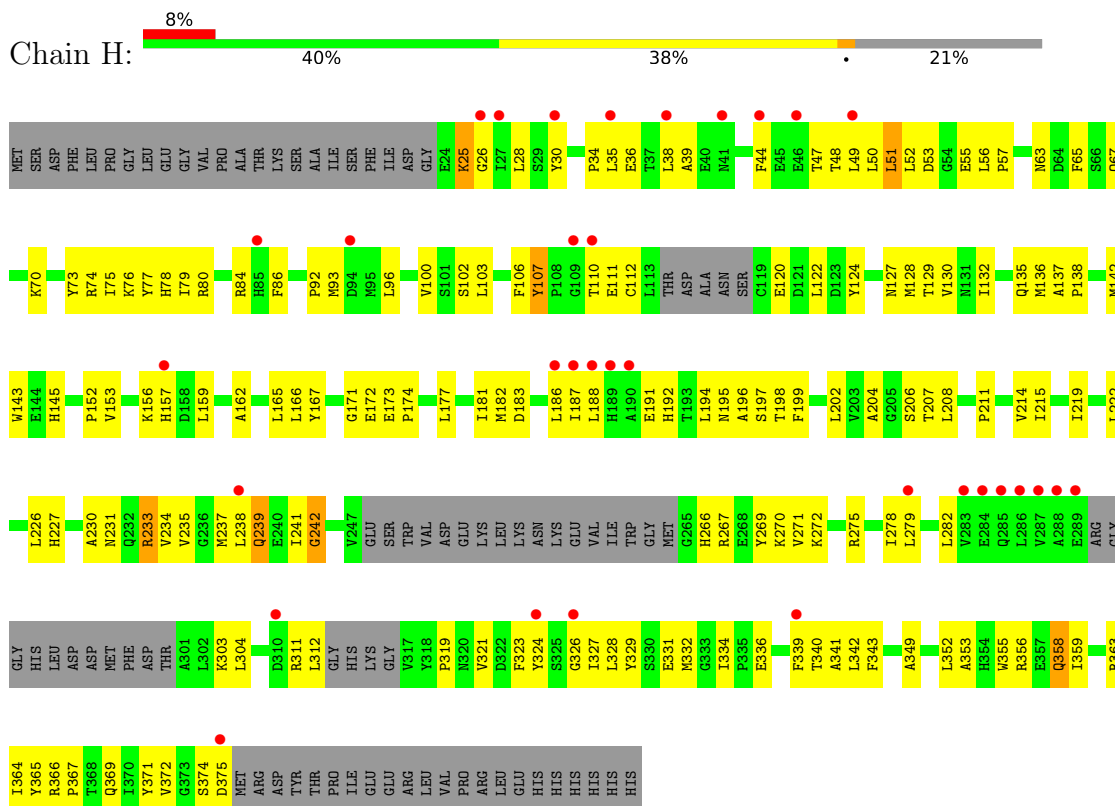
● Molecule 1: Citrate synthase



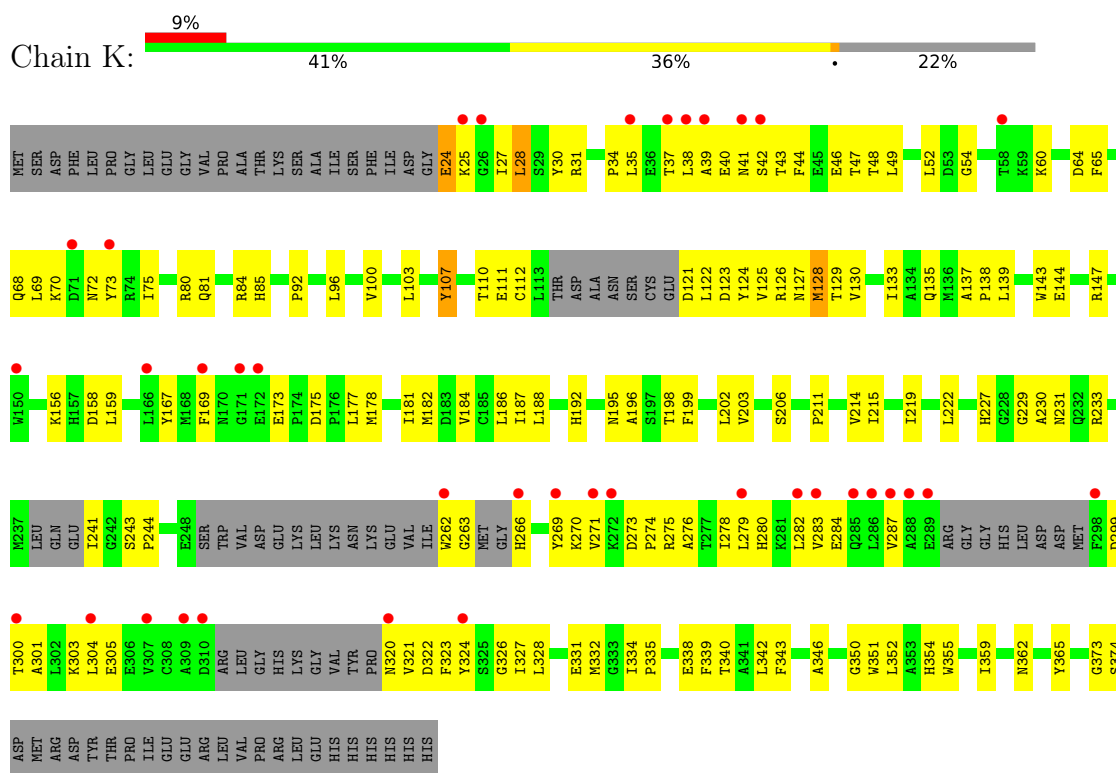
- Molecule 1: Citrate synthase



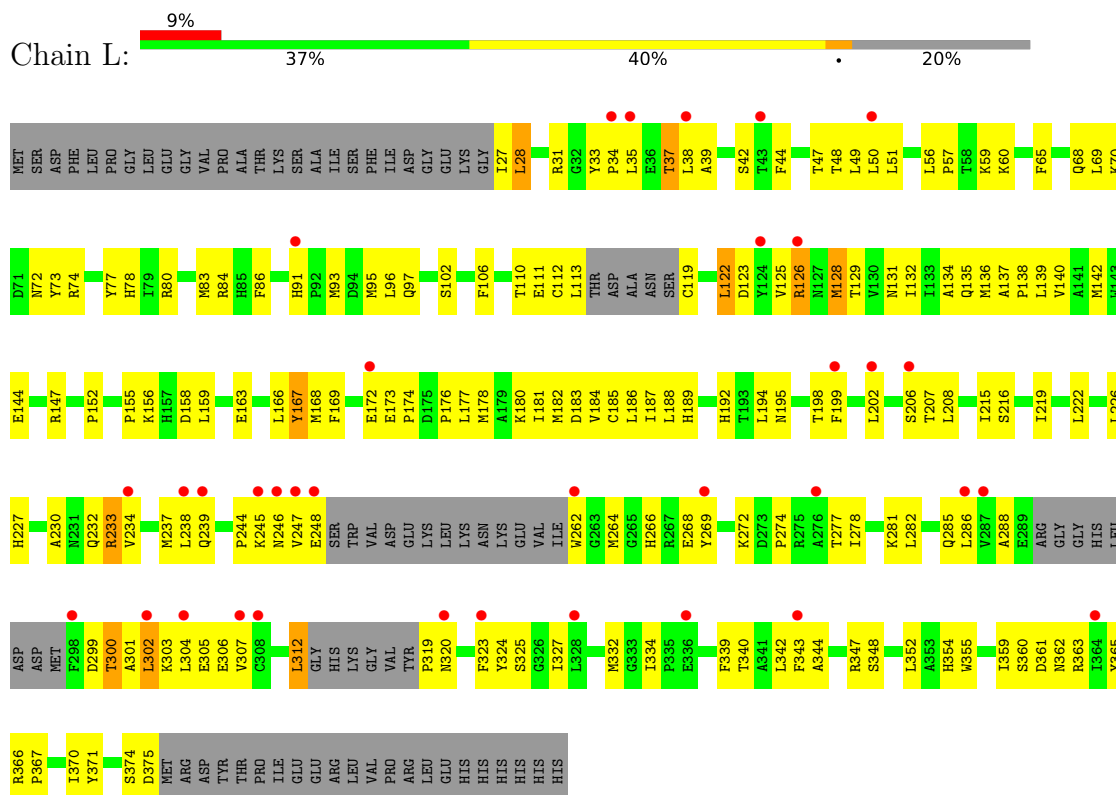
- Molecule 1: Citrate synthase







● Molecule 1: Citrate synthase



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	155.69Å 96.61Å 203.10Å 90.00° 110.41° 90.00°	Depositor
Resolution (Å)	48.31 – 3.20 48.31 – 3.20	Depositor EDS
% Data completeness (in resolution range)	98.8 (48.31-3.20) 99.0 (48.31-3.20)	Depositor EDS
$R_{merge}$	0.13	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.30 (at 3.19Å)	Xtrriage
Refinement program	PHENIX 1.18.2-3874	Depositor
R, $R_{free}$	0.282 , 0.325 0.325 , 0.324	Depositor DCC
$R_{free}$ test set	4638 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	114.5	Xtrriage
Anisotropy	0.406	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 126.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.019 for h,-k,-h-l	Xtrriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	30057	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	134.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 14.13% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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	0.61	0/2615	0.57	0/3547
1	B	0.60	0/2640	0.58	0/3580
1	C	0.59	0/2494	0.60	0/3385
1	D	0.60	0/2611	0.59	0/3542
1	E	0.60	0/2592	0.58	0/3515
1	F	0.59	0/2568	0.61	0/3482
1	G	0.61	0/2510	0.57	0/3404
1	H	0.61	0/2539	0.58	0/3444
1	I	0.60	0/2498	0.60	0/3384
1	J	0.60	0/2622	0.58	0/3557
1	K	0.60	0/2487	0.58	0/3372
1	L	0.61	0/2561	0.58	0/3474
All	All	0.60	0/30737	0.59	0/41686

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 [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	2555	0	2508	135	0
1	B	2580	0	2527	147	0
1	C	2441	0	2391	121	0
1	D	2552	0	2503	130	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	2533	0	2482	145	0
1	F	2509	0	2452	156	0
1	G	2457	0	2415	149	0
1	H	2484	0	2443	152	0
1	I	2446	0	2402	156	0
1	J	2563	0	2507	141	0
1	K	2433	0	2377	148	0
1	L	2504	0	2452	170	0
All	All	30057	0	29459	1660	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 28.

The worst 5 of 1660 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:F:264:MET:HA	1:F:319:PRO:HB3	1.34	1.05
1:A:28:LEU:HD12	1:A:35:LEU:HB2	1.42	1.02
1:A:334:ILE:HG21	1:A:342:LEU:HD11	1.42	0.99
1:K:266:HIS:HB3	1:K:269:TYR:HB2	1.45	0.98
1:I:233:ARG:HB2	1:I:323:PHE:HA	1.47	0.96

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	316/397 (80%)	297 (94%)	19 (6%)	0	100 100
1	B	319/397 (80%)	292 (92%)	27 (8%)	0	100 100
1	C	301/397 (76%)	283 (94%)	18 (6%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	316/397 (80%)	300 (95%)	16 (5%)	0	100	100
1	E	313/397 (79%)	297 (95%)	15 (5%)	1 (0%)	41	74
1	F	308/397 (78%)	284 (92%)	24 (8%)	0	100	100
1	G	301/397 (76%)	282 (94%)	19 (6%)	0	100	100
1	H	305/397 (77%)	283 (93%)	21 (7%)	1 (0%)	41	74
1	I	297/397 (75%)	280 (94%)	16 (5%)	1 (0%)	41	74
1	J	318/397 (80%)	299 (94%)	19 (6%)	0	100	100
1	K	295/397 (74%)	280 (95%)	15 (5%)	0	100	100
1	L	307/397 (77%)	286 (93%)	21 (7%)	0	100	100
All	All	3696/4764 (78%)	3463 (94%)	230 (6%)	3 (0%)	51	83

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	242	GLY
1	I	108	PRO
1	E	367	PRO

### 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	275/340 (81%)	270 (98%)	5 (2%)	59	82
1	B	278/340 (82%)	270 (97%)	8 (3%)	42	74
1	C	265/340 (78%)	259 (98%)	6 (2%)	50	78
1	D	275/340 (81%)	269 (98%)	6 (2%)	52	79
1	E	273/340 (80%)	267 (98%)	6 (2%)	52	79
1	F	270/340 (79%)	265 (98%)	5 (2%)	57	81
1	G	266/340 (78%)	256 (96%)	10 (4%)	33	67
1	H	269/340 (79%)	260 (97%)	9 (3%)	38	71

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	I	264/340 (78%)	257 (97%)	7 (3%)	44	75
1	J	275/340 (81%)	263 (96%)	12 (4%)	28	64
1	K	262/340 (77%)	258 (98%)	4 (2%)	65	85
1	L	271/340 (80%)	258 (95%)	13 (5%)	25	61
All	All	3243/4080 (80%)	3152 (97%)	91 (3%)	43	74

5 of 91 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	I	219	ILE
1	J	281	LYS
1	I	245	LYS
1	J	107	TYR
1	K	28	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 84 such sidechains are listed below:

Mol	Chain	Res	Type
1	I	97	GLN
1	K	72	ASN
1	I	148	ASN
1	J	148	ASN
1	L	72	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	324/397 (81%)	0.41	15 (4%) 32 20	86, 118, 157, 237	0
1	B	327/397 (82%)	0.54	33 (10%) 7 4	84, 114, 187, 280	0
1	C	311/397 (78%)	0.49	29 (9%) 8 5	89, 135, 208, 286	0
1	D	324/397 (81%)	0.46	20 (6%) 20 11	85, 117, 172, 218	0
1	E	321/397 (80%)	0.40	18 (5%) 24 13	85, 116, 171, 259	0
1	F	318/397 (80%)	0.36	19 (5%) 21 12	30, 122, 183, 255	0
1	G	313/397 (78%)	0.71	35 (11%) 5 3	96, 127, 207, 286	0
1	H	315/397 (79%)	0.61	33 (10%) 6 3	89, 140, 207, 271	0
1	I	311/397 (78%)	0.49	24 (7%) 13 7	94, 135, 209, 262	0
1	J	326/397 (82%)	0.42	14 (4%) 35 22	96, 131, 187, 285	0
1	K	309/397 (77%)	0.68	37 (11%) 4 2	92, 132, 205, 241	0
1	L	317/397 (79%)	0.73	35 (11%) 5 3	30, 147, 209, 288	0
All	All	3816/4764 (80%)	0.52	312 (8%) 11 6	30, 128, 199, 288	0

The worst 5 of 312 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	K	39	ALA	7.5
1	B	374	SER	7.2
1	G	269	TYR	6.8
1	K	288	ALA	6.6
1	L	320	ASN	6.5

### 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 [i](#)

There are no ligands in this entry.

### 6.5 Other polymers [i](#)

There are no such residues in this entry.