



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 05:23 AM GMT

PDB ID : 2QFW
Title : Crystal structure of *Saccharomyces cerevesiae* mitochondrial NADP(+)-dependent isocitrate dehydrogenase in complex with isocitrate
Authors : Peng, Y.J.; Ding, J.P.
Deposited on : 2007-06-28
Resolution : 2.60 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
A user guide is available at
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

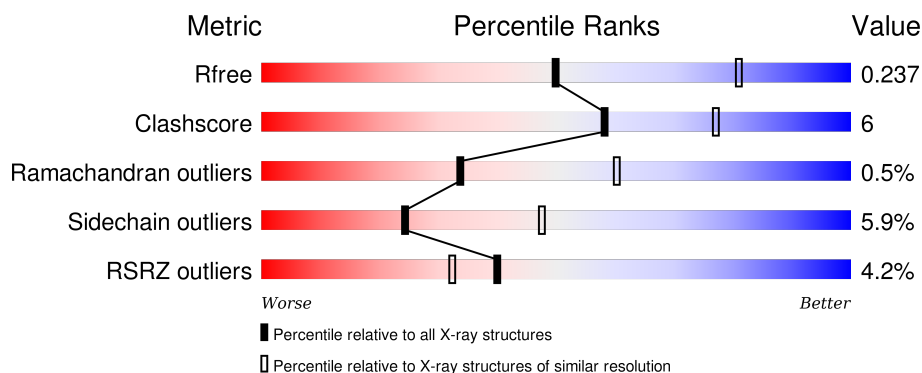
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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}	91344	2328 (2.60-2.60)
Clashscore	102246	2679 (2.60-2.60)
Ramachandran outliers	100387	2635 (2.60-2.60)
Sidechain outliers	100360	2635 (2.60-2.60)
RSRZ outliers	91569	2334 (2.60-2.60)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	427	<div> <div>2%</div> <div>79%</div> <div>15%</div> <div>5%</div> </div>
1	B	427	<div> <div>%</div> <div>79%</div> <div>15%</div> <div>.</div> </div>
1	C	427	<div> <div>4%</div> <div>75%</div> <div>20%</div> <div>.</div> </div>
1	D	427	<div> <div>5%</div> <div>77%</div> <div>17%</div> <div>.</div> </div>
1	E	427	<div> <div>5%</div> <div>77%</div> <div>17%</div> <div>.</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	427	

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
2	ICT	B	2102	-	-	-	X
2	ICT	D	2104	-	-	-	X
2	ICT	E	2105	-	-	-	X
2	ICT	F	2106	-	-	-	X

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 20688 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 Isocitrate dehydrogenase [NADP].

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	407	Total	C	N	O	S	0	0	0
			3222	2052	546	612	12			
1	B	408	Total	C	N	O	S	0	0	0
			3231	2058	548	613	12			
1	C	410	Total	C	N	O	S	0	0	0
			3245	2067	550	616	12			
1	D	412	Total	C	N	O	S	0	0	0
			3261	2079	552	618	12			
1	E	409	Total	C	N	O	S	0	0	0
			3237	2061	549	615	12			
1	F	411	Total	C	N	O	S	0	0	0
			3256	2076	551	617	12			

There are 84 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-13	MET	-	EXPRESSION TAG	UNP P21954
A	-12	HIS	-	EXPRESSION TAG	UNP P21954
A	-11	HIS	-	EXPRESSION TAG	UNP P21954
A	-10	HIS	-	EXPRESSION TAG	UNP P21954
A	-9	HIS	-	EXPRESSION TAG	UNP P21954
A	-8	HIS	-	EXPRESSION TAG	UNP P21954
A	-7	HIS	-	EXPRESSION TAG	UNP P21954
A	-6	ALA	-	EXPRESSION TAG	UNP P21954
A	-5	MET	-	EXPRESSION TAG	UNP P21954
A	-4	GLY	-	EXPRESSION TAG	UNP P21954
A	-3	ILE	-	EXPRESSION TAG	UNP P21954
A	-2	PRO	-	EXPRESSION TAG	UNP P21954
A	-1	GLY	-	EXPRESSION TAG	UNP P21954
A	0	HIS	-	EXPRESSION TAG	UNP P21954
B	-13	MET	-	EXPRESSION TAG	UNP P21954
B	-12	HIS	-	EXPRESSION TAG	UNP P21954
B	-11	HIS	-	EXPRESSION TAG	UNP P21954

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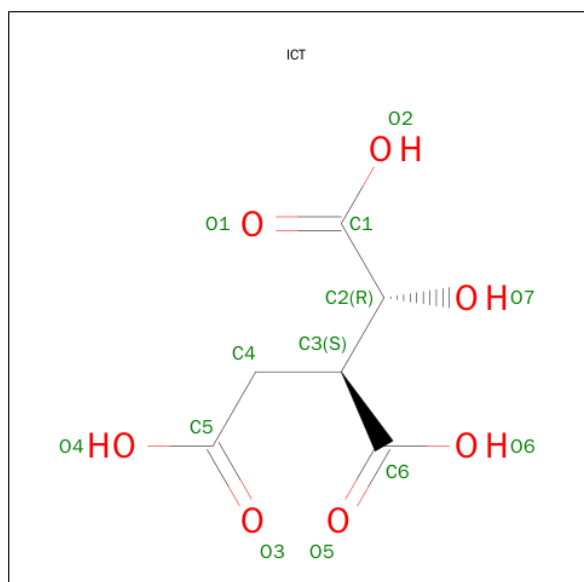
Chain	Residue	Modelled	Actual	Comment	Reference
B	-10	HIS	-	EXPRESSION TAG	UNP P21954
B	-9	HIS	-	EXPRESSION TAG	UNP P21954
B	-8	HIS	-	EXPRESSION TAG	UNP P21954
B	-7	HIS	-	EXPRESSION TAG	UNP P21954
B	-6	ALA	-	EXPRESSION TAG	UNP P21954
B	-5	MET	-	EXPRESSION TAG	UNP P21954
B	-4	GLY	-	EXPRESSION TAG	UNP P21954
B	-3	ILE	-	EXPRESSION TAG	UNP P21954
B	-2	PRO	-	EXPRESSION TAG	UNP P21954
B	-1	GLY	-	EXPRESSION TAG	UNP P21954
B	0	HIS	-	EXPRESSION TAG	UNP P21954
C	-13	MET	-	EXPRESSION TAG	UNP P21954
C	-12	HIS	-	EXPRESSION TAG	UNP P21954
C	-11	HIS	-	EXPRESSION TAG	UNP P21954
C	-10	HIS	-	EXPRESSION TAG	UNP P21954
C	-9	HIS	-	EXPRESSION TAG	UNP P21954
C	-8	HIS	-	EXPRESSION TAG	UNP P21954
C	-7	HIS	-	EXPRESSION TAG	UNP P21954
C	-6	ALA	-	EXPRESSION TAG	UNP P21954
C	-5	MET	-	EXPRESSION TAG	UNP P21954
C	-4	GLY	-	EXPRESSION TAG	UNP P21954
C	-3	ILE	-	EXPRESSION TAG	UNP P21954
C	-2	PRO	-	EXPRESSION TAG	UNP P21954
C	-1	GLY	-	EXPRESSION TAG	UNP P21954
C	0	HIS	-	EXPRESSION TAG	UNP P21954
D	-13	MET	-	EXPRESSION TAG	UNP P21954
D	-12	HIS	-	EXPRESSION TAG	UNP P21954
D	-11	HIS	-	EXPRESSION TAG	UNP P21954
D	-10	HIS	-	EXPRESSION TAG	UNP P21954
D	-9	HIS	-	EXPRESSION TAG	UNP P21954
D	-8	HIS	-	EXPRESSION TAG	UNP P21954
D	-7	HIS	-	EXPRESSION TAG	UNP P21954
D	-6	ALA	-	EXPRESSION TAG	UNP P21954
D	-5	MET	-	EXPRESSION TAG	UNP P21954
D	-4	GLY	-	EXPRESSION TAG	UNP P21954
D	-3	ILE	-	EXPRESSION TAG	UNP P21954
D	-2	PRO	-	EXPRESSION TAG	UNP P21954
D	-1	GLY	-	EXPRESSION TAG	UNP P21954
D	0	HIS	-	EXPRESSION TAG	UNP P21954
E	-13	MET	-	EXPRESSION TAG	UNP P21954
E	-12	HIS	-	EXPRESSION TAG	UNP P21954
E	-11	HIS	-	EXPRESSION TAG	UNP P21954

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-10	HIS	-	EXPRESSION TAG	UNP P21954
E	-9	HIS	-	EXPRESSION TAG	UNP P21954
E	-8	HIS	-	EXPRESSION TAG	UNP P21954
E	-7	HIS	-	EXPRESSION TAG	UNP P21954
E	-6	ALA	-	EXPRESSION TAG	UNP P21954
E	-5	MET	-	EXPRESSION TAG	UNP P21954
E	-4	GLY	-	EXPRESSION TAG	UNP P21954
E	-3	ILE	-	EXPRESSION TAG	UNP P21954
E	-2	PRO	-	EXPRESSION TAG	UNP P21954
E	-1	GLY	-	EXPRESSION TAG	UNP P21954
E	0	HIS	-	EXPRESSION TAG	UNP P21954
F	-13	MET	-	EXPRESSION TAG	UNP P21954
F	-12	HIS	-	EXPRESSION TAG	UNP P21954
F	-11	HIS	-	EXPRESSION TAG	UNP P21954
F	-10	HIS	-	EXPRESSION TAG	UNP P21954
F	-9	HIS	-	EXPRESSION TAG	UNP P21954
F	-8	HIS	-	EXPRESSION TAG	UNP P21954
F	-7	HIS	-	EXPRESSION TAG	UNP P21954
F	-6	ALA	-	EXPRESSION TAG	UNP P21954
F	-5	MET	-	EXPRESSION TAG	UNP P21954
F	-4	GLY	-	EXPRESSION TAG	UNP P21954
F	-3	ILE	-	EXPRESSION TAG	UNP P21954
F	-2	PRO	-	EXPRESSION TAG	UNP P21954
F	-1	GLY	-	EXPRESSION TAG	UNP P21954
F	0	HIS	-	EXPRESSION TAG	UNP P21954

- Molecule 2 is ISOCITRIC ACID (three-letter code: ICT) (formula: $C_6H_8O_7$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 13 6 7	0	0
2	B	1	Total C O 13 6 7	0	0
2	C	1	Total C O 13 6 7	0	0
2	D	1	Total C O 13 6 7	0	0
2	E	1	Total C O 13 6 7	0	0
2	F	1	Total C O 13 6 7	0	0

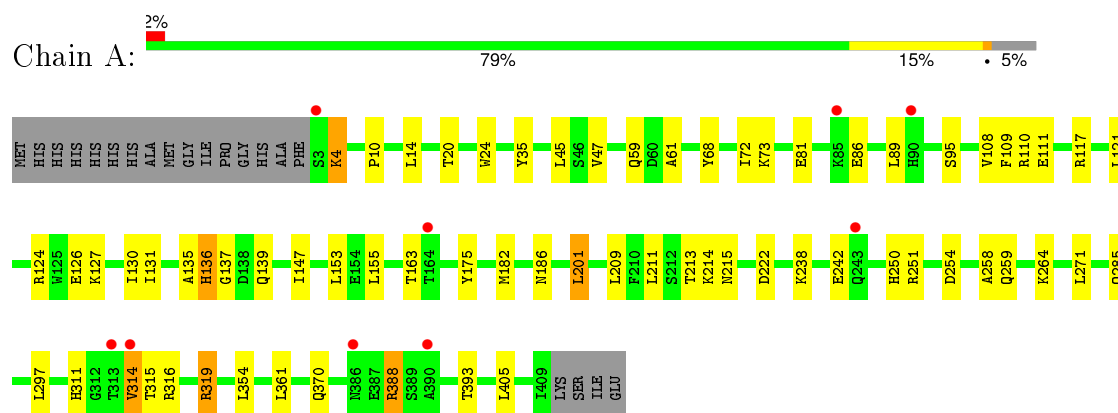
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	217	Total O 217 217	0	0
3	B	252	Total O 252 252	0	0
3	C	161	Total O 161 161	0	0
3	D	185	Total O 185 185	0	0
3	E	163	Total O 163 163	0	0
3	F	180	Total O 180 180	0	0

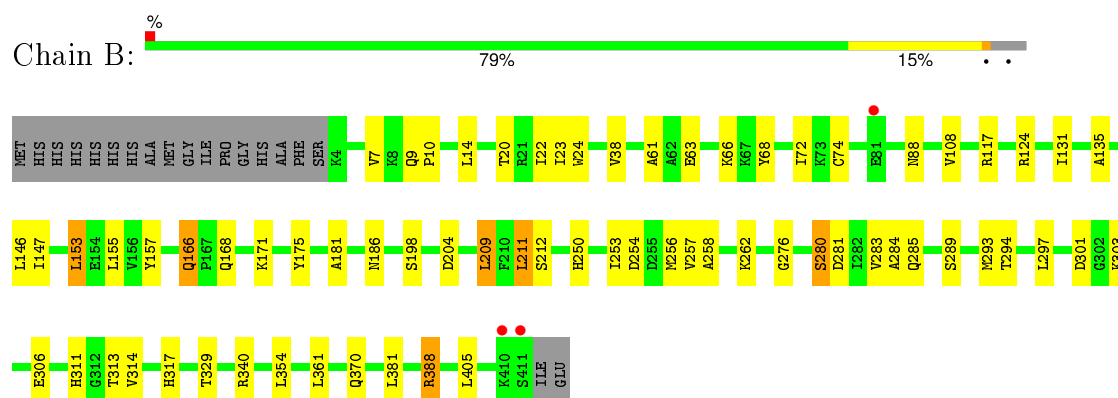
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

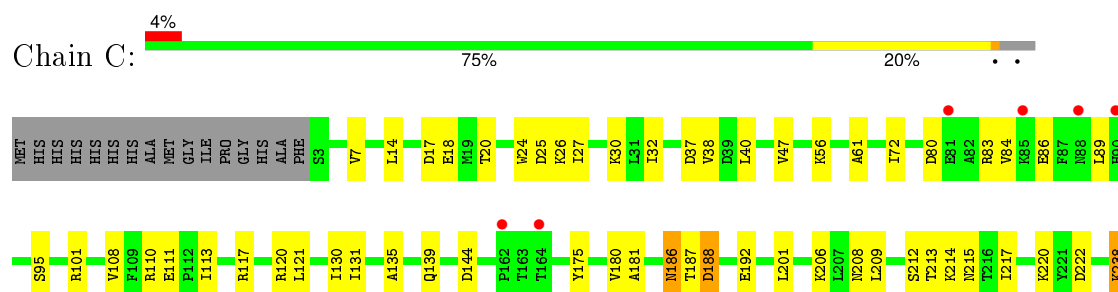
- Molecule 1: Isocitrate dehydrogenase [NADP]

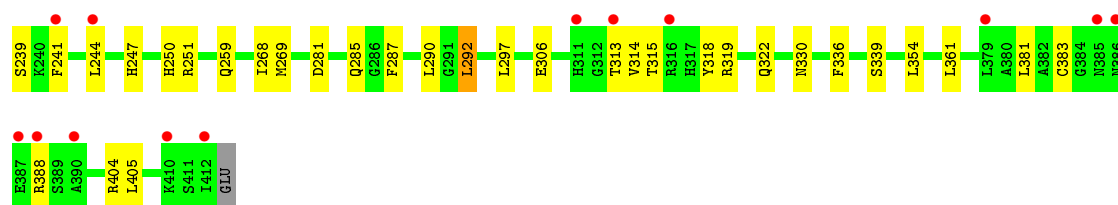


- Molecule 1: Isocitrate dehydrogenase [NADP]

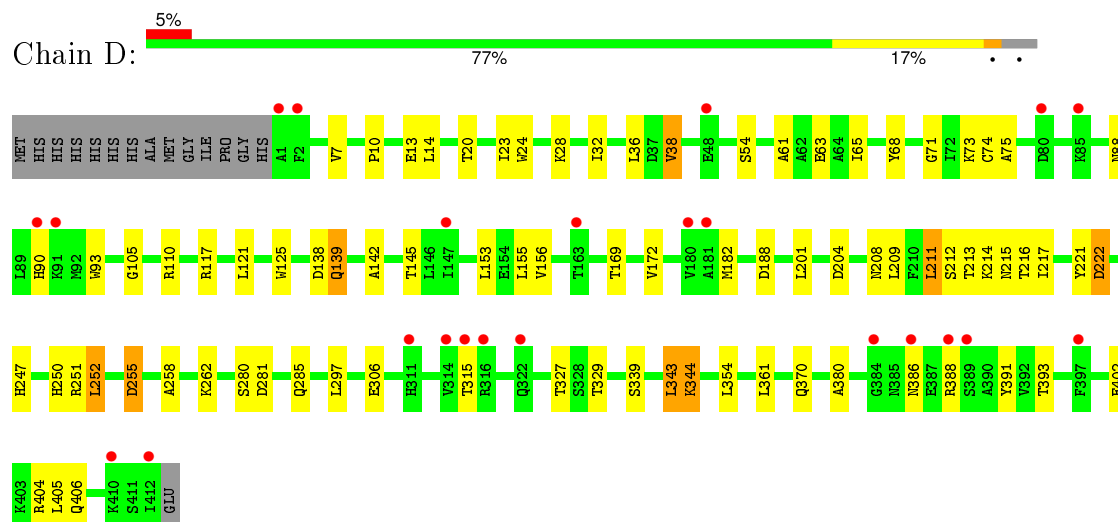


- Molecule 1: Isocitrate dehydrogenase [NADP]

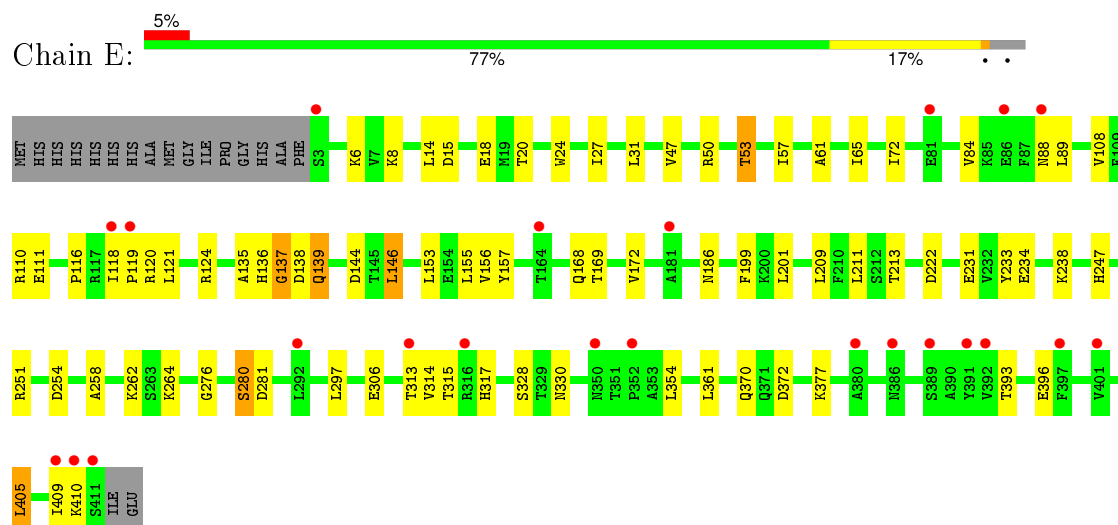




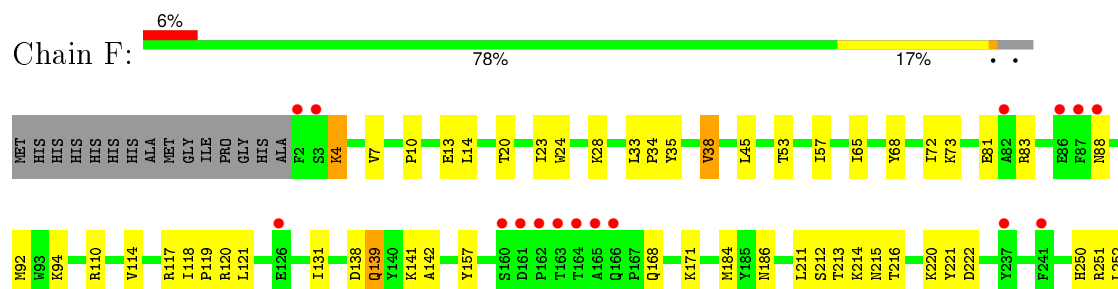
• Molecule 1: Isocitrate dehydrogenase [NADP]

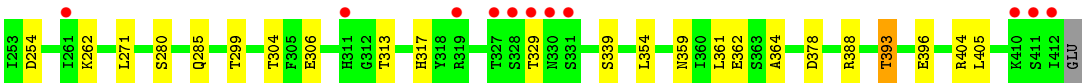


• Molecule 1: Isocitrate dehydrogenase [NADP]



• Molecule 1: Isocitrate dehydrogenase [NADP]





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	74.70Å 97.89Å 190.65Å 90.00° 98.95° 90.00°	Depositor
Resolution (Å)	20.00 – 2.60 19.79 – 2.60	Depositor EDS
% Data completeness (in resolution range)	98.4 (20.00-2.60) 98.4 (19.79-2.60)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.52 (at 2.59Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.232 , 0.292 0.241 , 0.237	Depositor DCC
R_{free} test set	4114 reflections (5.27%)	DCC
Wilson B-factor (Å ²)	44.4	Xtriage
Anisotropy	0.359	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 38.4	EDS
Estimated twinning fraction	0.000 for h,-k,-h-l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.53$, $\langle L^2 \rangle = 0.37$	Xtriage
Outliers	1 of 82148 reflections (0.001%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	20688	wwPDB-VP
Average B, all atoms (Å ²)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.51% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.29	0/3284	0.64	0/4431
1	B	0.29	0/3293	0.63	1/4442 (0.0%)
1	C	0.29	0/3307	0.64	2/4461 (0.0%)
1	D	0.29	0/3324	0.64	3/4484 (0.1%)
1	E	0.29	0/3299	0.64	1/4450 (0.0%)
1	F	0.29	0/3319	0.64	0/4477
All	All	0.29	0/19826	0.64	7/26745 (0.0%)

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	188	ASP	CB-CG-OD2	5.62	123.36	118.30
1	C	37	ASP	CB-CG-OD2	5.51	123.25	118.30
1	D	281	ASP	CB-CG-OD2	5.49	123.24	118.30
1	C	188	ASP	CB-CG-OD2	5.24	123.01	118.30
1	D	222	ASP	CB-CG-OD2	5.23	123.01	118.30

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	3222	0	3264	33	0
1	B	3231	0	3277	34	0
1	C	3245	0	3293	49	0
1	D	3261	0	3310	50	0
1	E	3237	0	3282	39	0
1	F	3256	0	3302	44	0
2	A	13	0	5	1	0
2	B	13	0	5	0	0
2	C	13	0	5	0	0
2	D	13	0	5	0	0
2	E	13	0	5	0	0
2	F	13	0	5	0	0
3	A	217	0	0	1	0
3	B	252	0	0	1	0
3	C	161	0	0	1	0
3	D	185	0	0	2	0
3	E	163	0	0	4	0
3	F	180	0	0	2	0
All	All	20688	0	19758	233	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 6.

The worst 5 of 233 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:C:18:GLU:HB2	1:C:313:THR:HG21	1.19	1.15
1:C:238:LYS:HD2	1:C:239:SER:H	1.31	0.92
1:C:180:VAL:HG21	1:D:221:TYR:HA	1.59	0.85
1:A:117:ARG:H	1:A:370:GLN:HE22	1.25	0.84
1:D:214:LYS:HE3	1:D:217:ILE:HD13	1.60	0.83

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	405/427 (95%)	388 (96%)	14 (4%)	3 (1%)	26	51
1	B	406/427 (95%)	390 (96%)	15 (4%)	1 (0%)	52	77
1	C	408/427 (96%)	385 (94%)	21 (5%)	2 (0%)	34	60
1	D	410/427 (96%)	393 (96%)	15 (4%)	2 (0%)	34	60
1	E	407/427 (95%)	379 (93%)	25 (6%)	3 (1%)	26	51
1	F	409/427 (96%)	390 (95%)	17 (4%)	2 (0%)	34	60
All	All	2445/2562 (95%)	2325 (95%)	107 (4%)	13 (0%)	34	60

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4	LYS
1	A	314	VAL
1	A	136	HIS
1	C	292	LEU
1	D	90	HIS

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	351/367 (96%)	328 (93%)	23 (7%)	21	40
1	B	352/367 (96%)	331 (94%)	21 (6%)	24	47
1	C	354/367 (96%)	335 (95%)	19 (5%)	27	52
1	D	355/367 (97%)	333 (94%)	22 (6%)	23	45
1	E	353/367 (96%)	329 (93%)	24 (7%)	20	39
1	F	355/367 (97%)	339 (96%)	16 (4%)	34	62
All	All	2120/2202 (96%)	1995 (94%)	125 (6%)	24	47

5 of 125 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	330	ASN
1	D	201	LEU
1	F	171	LYS
1	C	361	LEU
1	D	38	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	285	GLN
1	C	330	ASN
1	F	259	GLN
1	C	322	GLN
1	D	208	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	ICT	A	2101	-	2,12,12	0.36	0	2,16,16	0.66	0
2	ICT	B	2102	-	2,12,12	0.40	0	2,16,16	0.62	0
2	ICT	C	2103	-	2,12,12	0.33	0	2,16,16	0.57	0
2	ICT	D	2104	-	2,12,12	0.36	0	2,16,16	0.64	0
2	ICT	E	2105	-	2,12,12	0.36	0	2,16,16	0.77	0
2	ICT	F	2106	-	2,12,12	0.35	0	2,16,16	0.62	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ICT	A	2101	-	-	0/6/16/16	0/0/0/0
2	ICT	B	2102	-	-	0/6/16/16	0/0/0/0
2	ICT	C	2103	-	-	0/6/16/16	0/0/0/0
2	ICT	D	2104	-	-	0/6/16/16	0/0/0/0
2	ICT	E	2105	-	-	0/6/16/16	0/0/0/0
2	ICT	F	2106	-	-	0/6/16/16	0/0/0/0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2101	ICT	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	407/427 (95%)	0.14	9 (2%) 65 59	34, 43, 72, 81	0
1	B	408/427 (95%)	0.05	3 (0%) 89 87	29, 42, 70, 90	0
1	C	410/427 (96%)	0.33	19 (4%) 36 29	36, 50, 80, 116	0
1	D	412/427 (96%)	0.35	23 (5%) 28 21	34, 50, 83, 97	0
1	E	409/427 (95%)	0.47	23 (5%) 28 21	39, 52, 86, 116	0
1	F	411/427 (96%)	0.33	27 (6%) 22 16	33, 48, 79, 101	0
All	All	2457/2562 (95%)	0.28	104 (4%) 40 32	29, 47, 80, 116	0

The worst 5 of 104 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	1	ALA	7.8
1	A	314	VAL	5.6
1	E	410	LYS	5.3
1	F	164	THR	5.1
1	D	315	THR	4.5

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
2	ICT	D	2104	13/13	0.48	0.52	13.69	96,100,101,101	0
2	ICT	B	2102	13/13	0.73	0.30	3.73	76,80,81,81	0
2	ICT	F	2106	13/13	0.70	0.28	3.39	81,82,84,84	0
2	ICT	E	2105	13/13	0.81	0.26	2.99	75,76,77,77	0
2	ICT	A	2101	13/13	0.90	0.20	1.17	43,48,55,55	0
2	ICT	C	2103	13/13	0.86	0.18	0.63	54,55,56,58	0

6.5 Other polymers [i](#)

There are no such residues in this entry.