wwPDB X-ray Structure Validation Summary Report (i)

Feb 11, 2024 – 01:51 AM EST

PDB ID	:	3BFJ
Title	:	Crystal structure analysis of 1,3-propanediol oxidoreductase
Authors	:	Marcal, D.; Enguita, F.J.; Carrondo, M.A.; Structural Proteomics in Europe (SPINE)
Deposited on	:	2007-11-21
Resolution	:	2.70 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
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) 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 (1)) were used in the production of this report:

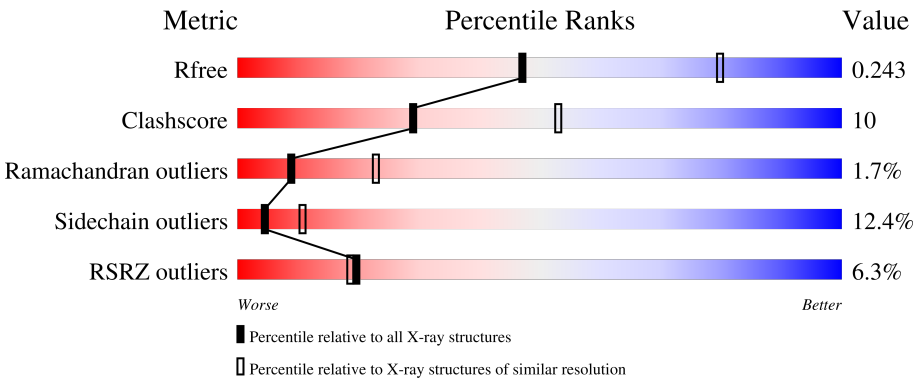
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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 <=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	387	4% 74% 21% • •
1	B	387	5% 73% 21% • ••
1	C	387	8% 76% 19% • •
1	D	387	6% 75% 19% 5% •
1	E	387	3% 75% 19% 5% •

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Mol	Chain	Length	Quality of chain
1	F	387	10% 75% 19% 5%
1	G	387	7% 74% 19% 5%
1	H	387	4% 71% 21% 5%
1	I	387	5% 73% 20% 5%
1	J	387	5% 78% 17%
1	K	387	4% 72% 20% 6%
1	L	387	6% 73% 20% 5%
1	M	387	5% 76% 18% 5%
1	N	387	4% 75% 19% 5%
1	O	387	4% 78% 16% 5%
1	P	387	2% 70% 22% 6%
1	Q	387	6% 73% 20% 5%
1	R	387	5% 77% 17% 5%
1	S	387	12% 71% 22% 5%
1	T	387	17% 76% 20%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 58348 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 1,3-propanediol oxidoreductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	382	2871	1810	505	540	16	0	0	0
1	B	382	2871	1810	505	540	16	0	0	0
1	C	382	2871	1810	505	540	16	0	0	0
1	D	382	2871	1810	505	540	16	0	0	0
1	E	382	2871	1810	505	540	16	0	0	0
1	F	382	2871	1810	505	540	16	0	0	0
1	G	382	2871	1810	505	540	16	0	0	0
1	H	382	2871	1810	505	540	16	0	0	0
1	I	382	2871	1810	505	540	16	0	0	0
1	J	382	2871	1810	505	540	16	0	0	0
1	K	382	2871	1810	505	540	16	0	0	0
1	L	382	2871	1810	505	540	16	0	0	0
1	M	382	2871	1810	505	540	16	0	0	0
1	N	382	2871	1810	505	540	16	0	0	0
1	O	382	2871	1810	505	540	16	0	0	0
1	P	382	2871	1810	505	540	16	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	Q	382	2871	1810	505	540	16	0	0	0
1	R	382	2871	1810	505	540	16	0	0	0
1	S	382	2871	1810	505	540	16	0	0	0
1	T	382	2871	1810	505	540	16	0	0	0

- Molecule 2 is FE (II) ION (three-letter code: FE2) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Fe		
2	A	1	1	1	0	0
2	B	1	1	1	0	0
2	C	1	1	1	0	0
2	D	1	1	1	0	0
2	E	1	1	1	0	0
2	F	1	1	1	0	0
2	G	1	1	1	0	0
2	H	1	1	1	0	0
2	I	1	1	1	0	0
2	J	1	1	1	0	0
2	K	1	1	1	0	0
2	L	1	1	1	0	0
2	M	1	1	1	0	0
2	N	1	1	1	0	0
2	O	1	1	1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Fe		
2	P	1	1	1	0	0
			Total	Fe		
2	Q	1	1	1	0	0
			Total	Fe		
2	R	1	1	1	0	0
			Total	Fe		
2	S	1	1	1	0	0
			Total	Fe		
2	T	1	1	1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	36	36	36	0	0
			Total	O		
3	B	45	45	45	0	0
			Total	O		
3	C	27	27	27	0	0
			Total	O		
3	D	49	49	49	0	0
			Total	O		
3	E	76	76	76	0	0
			Total	O		
3	F	19	19	19	0	0
			Total	O		
3	G	41	41	41	0	0
			Total	O		
3	H	61	61	61	0	0
			Total	O		
3	I	51	51	51	0	0
			Total	O		
3	J	31	31	31	0	0
			Total	O		
3	K	89	89	89	0	0
			Total	O		
3	L	42	42	42	0	0
			Total	O		
3	M	58	58	58	0	0
			Total	O		
3	N	33	33	33	0	0

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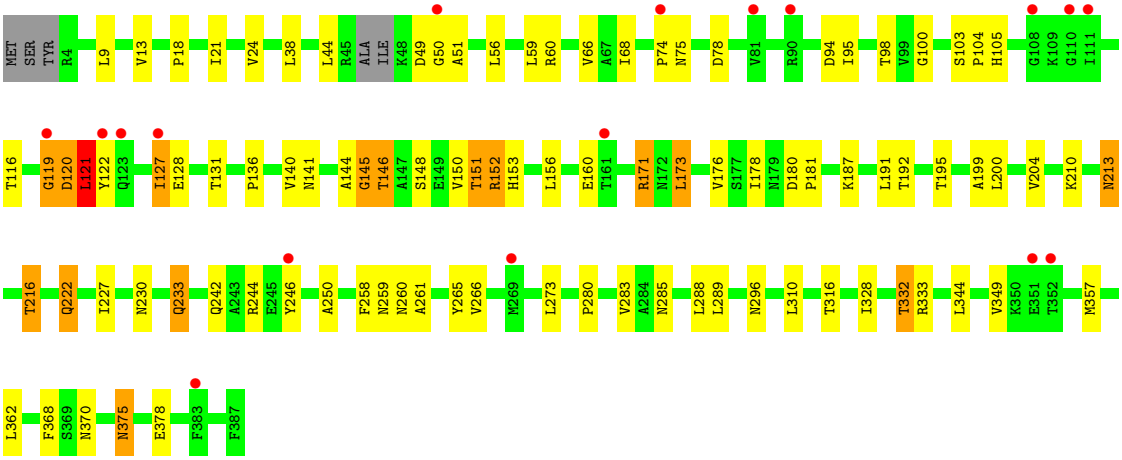
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	O	50	50	50	0	0
			Total	O		
3	P	64	64	64	0	0
			Total	O		
3	Q	43	43	43	0	0
			Total	O		
3	R	39	39	39	0	0
			Total	O		
3	S	19	19	19	0	0
			Total	O		
3	T	35	35	35	0	0

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.

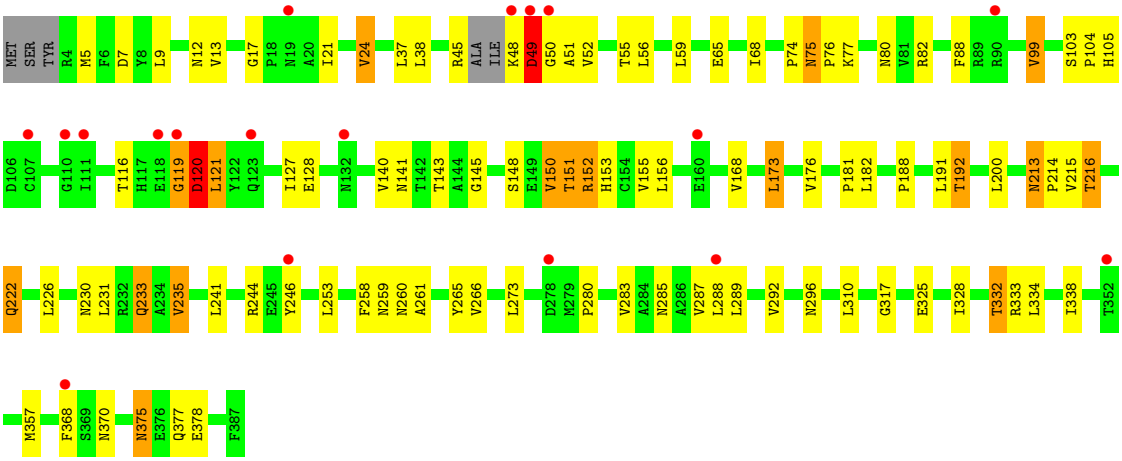
• Molecule 1: 1,3-propanediol oxidoreductase

Chain A:



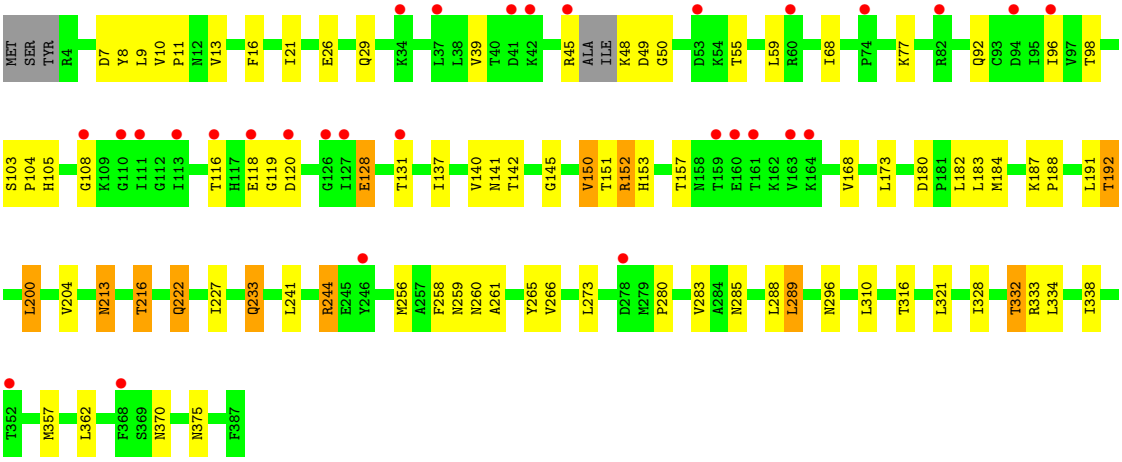
• Molecule 1: 1,3-propanediol oxidoreductase

Chain B:



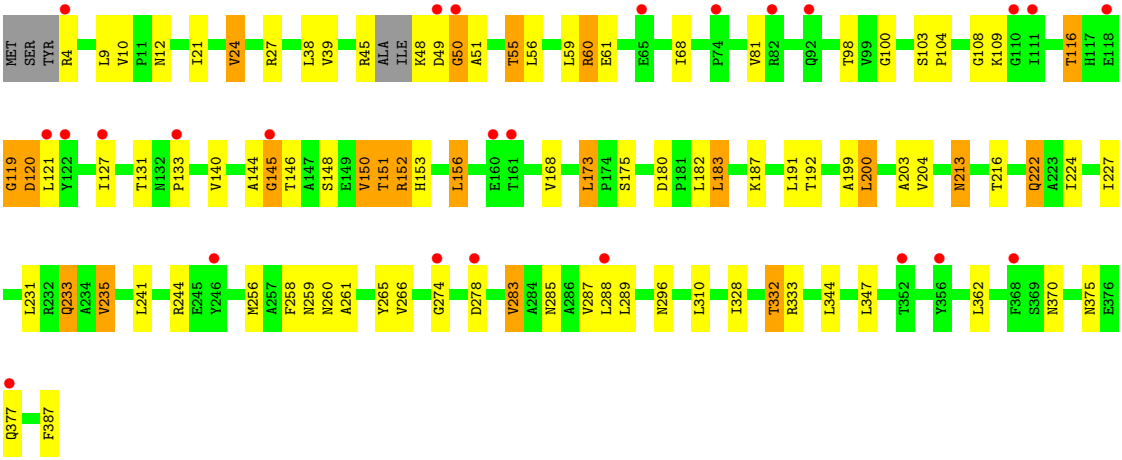
• Molecule 1: 1,3-propanediol oxidoreductase

Chain C:



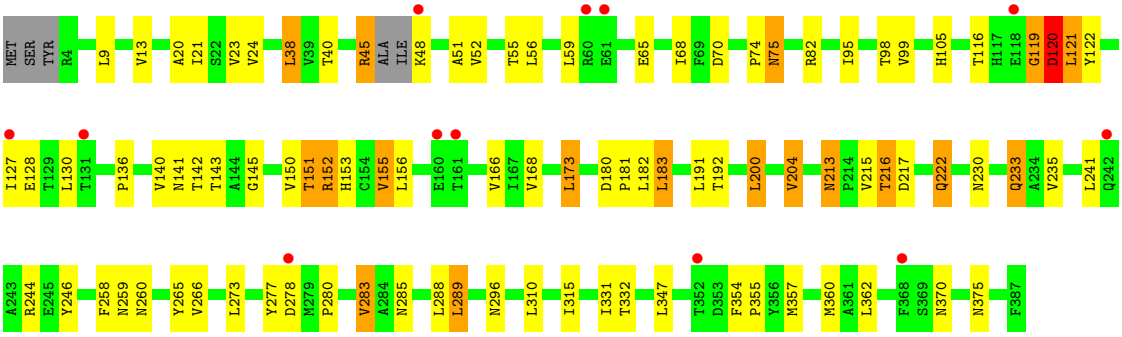
- Molecule 1: 1,3-propanediol oxidoreductase

Chain D:



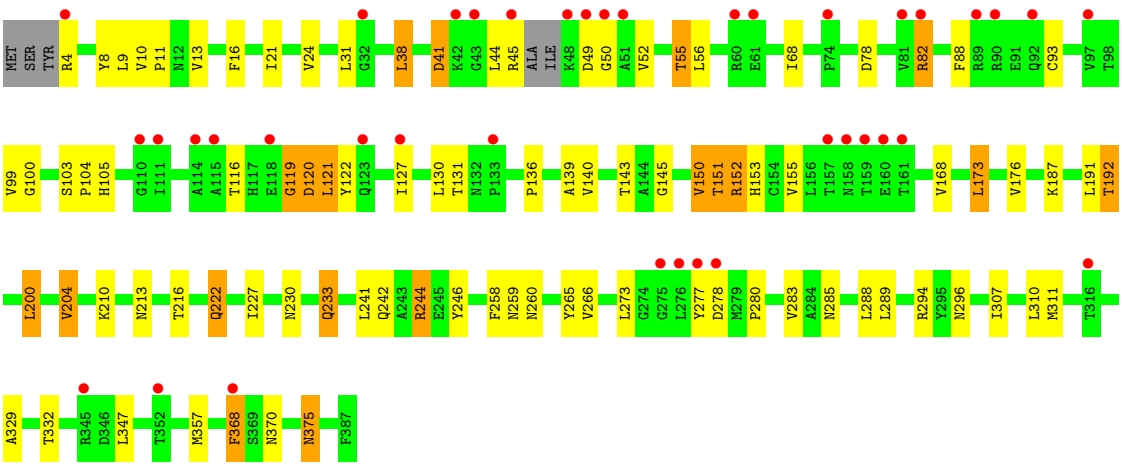
- Molecule 1: 1,3-propanediol oxidoreductase

Chain E:



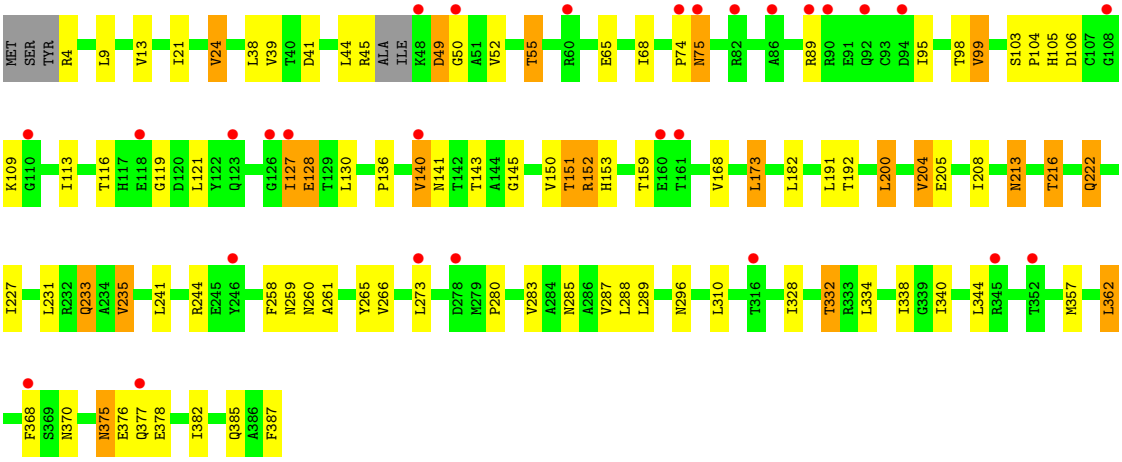
- Molecule 1: 1,3-propanediol oxidoreductase

Chain F:



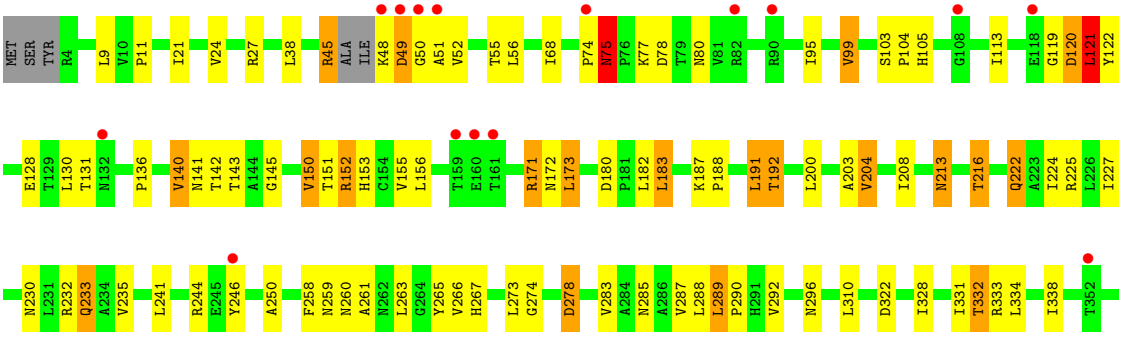
- Molecule 1: 1,3-propanediol oxidoreductase

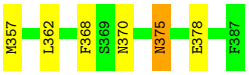
Chain G:



- Molecule 1: 1,3-propanediol oxidoreductase

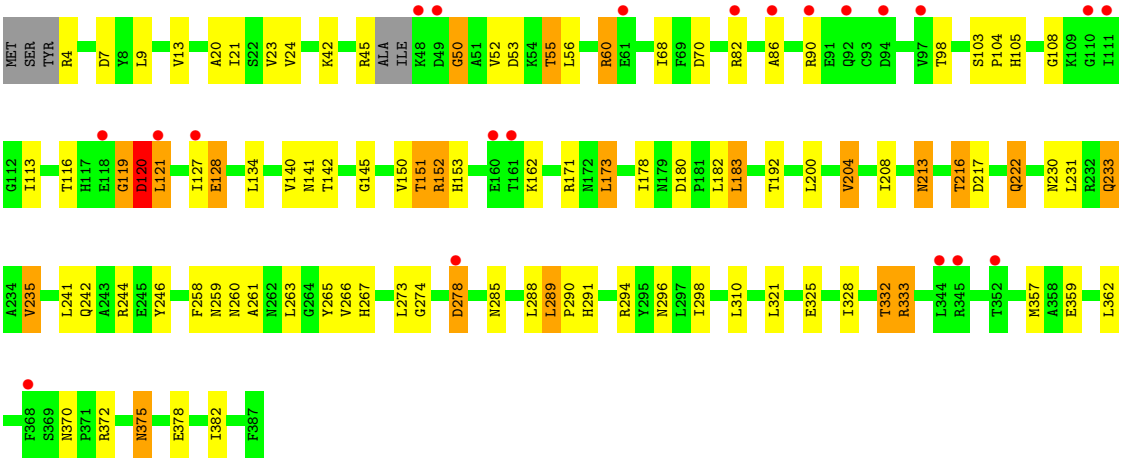
Chain H:





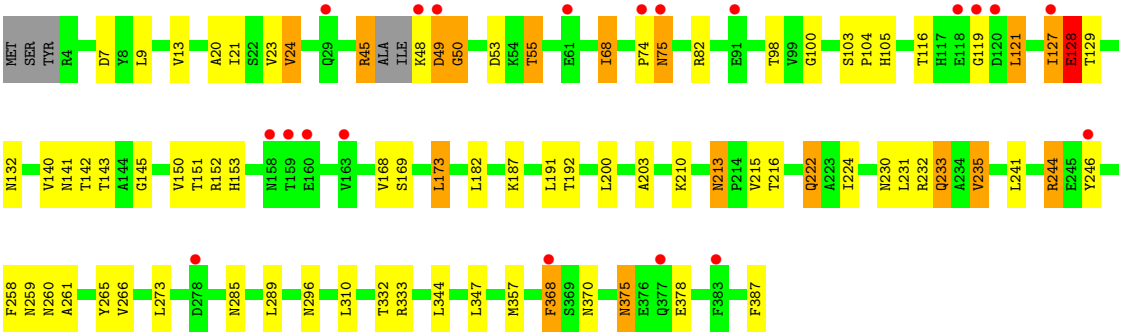
• Molecule 1: 1,3-propanediol oxidoreductase

Chain I:



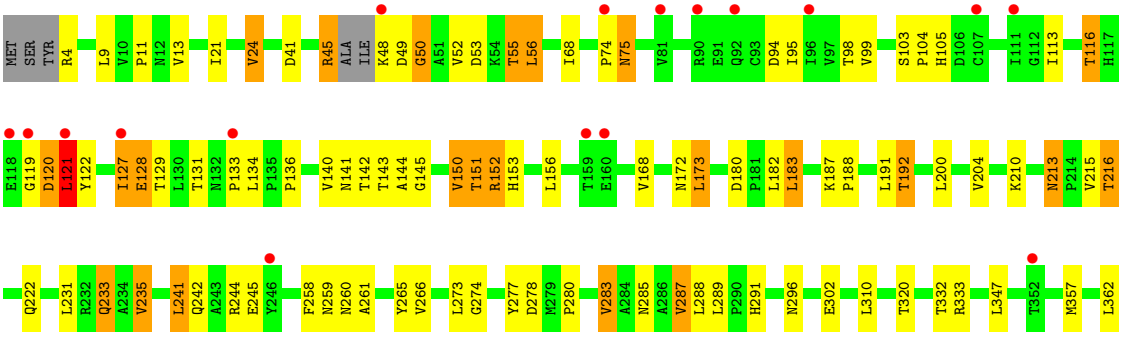
• Molecule 1: 1,3-propanediol oxidoreductase

Chain J:



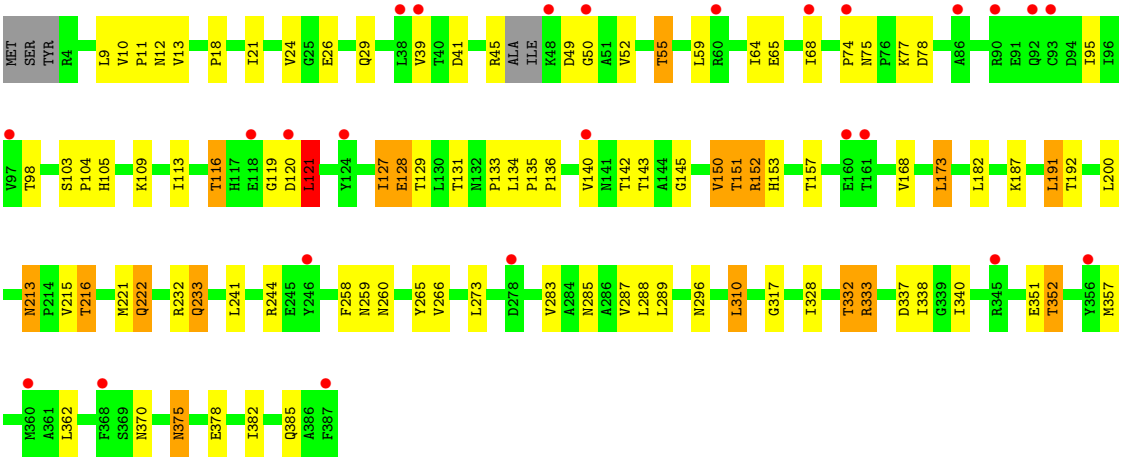
• Molecule 1: 1,3-propanediol oxidoreductase

Chain K:



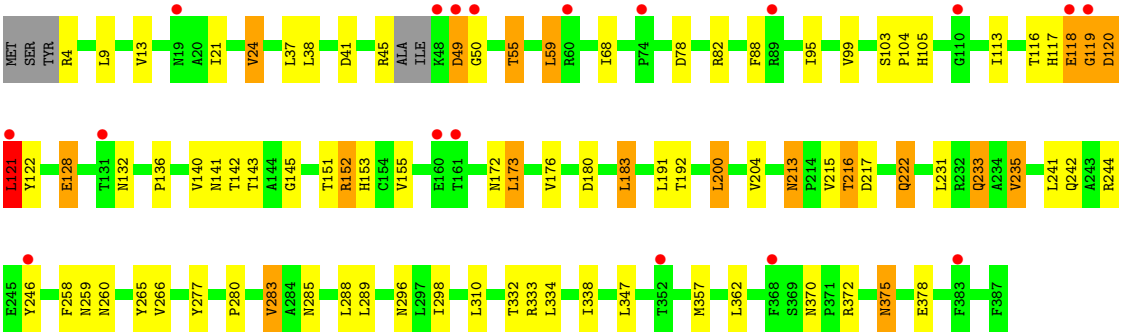
• Molecule 1: 1,3-propanediol oxidoreductase

Chain L:



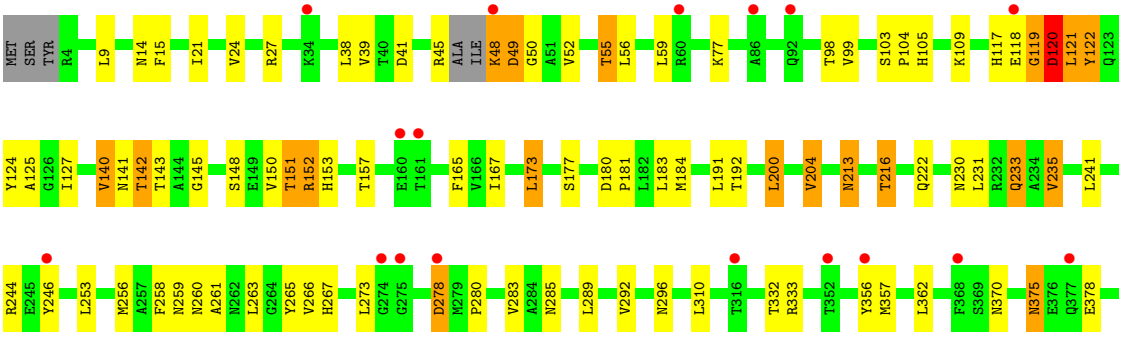
• Molecule 1: 1,3-propanediol oxidoreductase

Chain M:



• Molecule 1: 1,3-propanediol oxidoreductase

Chain N:



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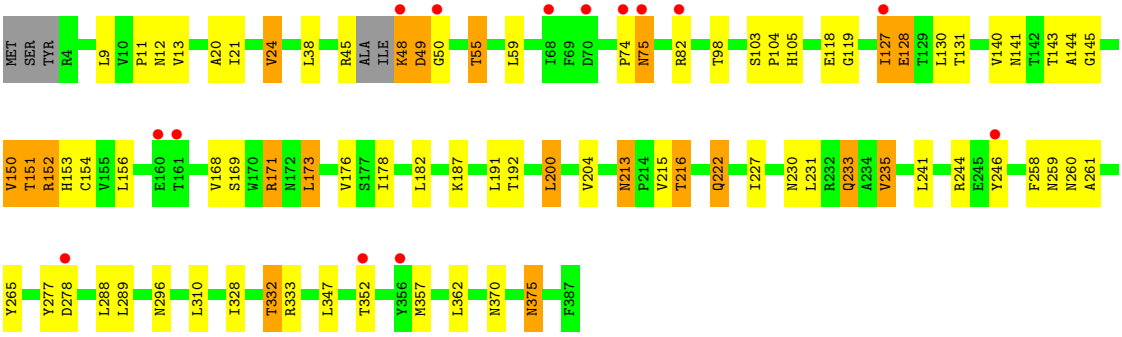
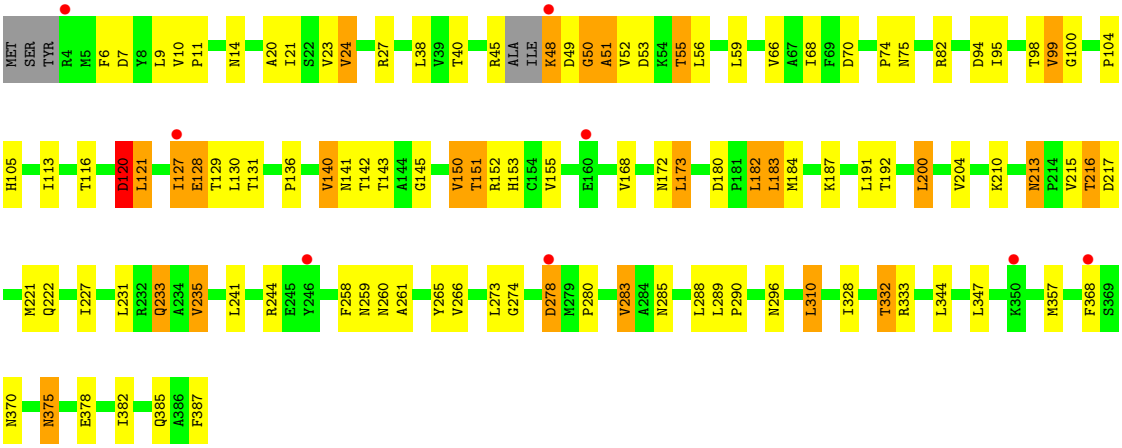
- Molecule 1: 1,3-propanediol oxidoreductase

Chain O:



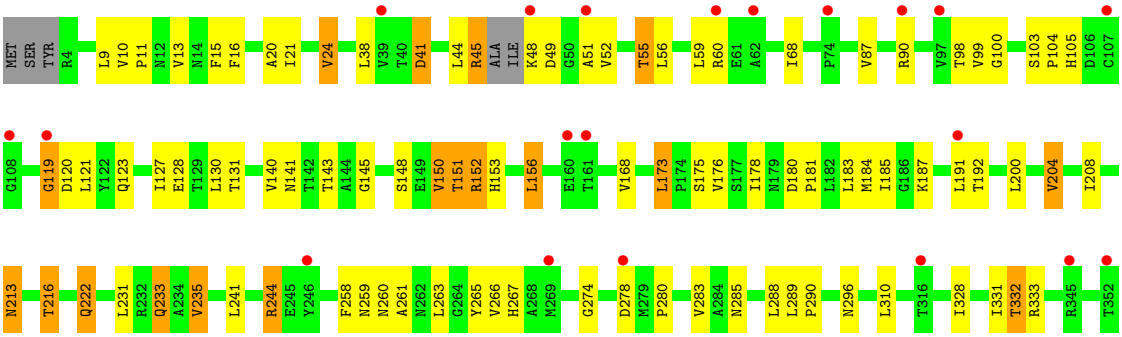
- Molecule 1: 1,3-propanediol oxidoreductase

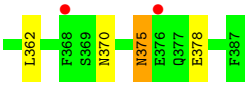
Chain P:



- Molecule 1: 1,3-propanediol oxidoreductase

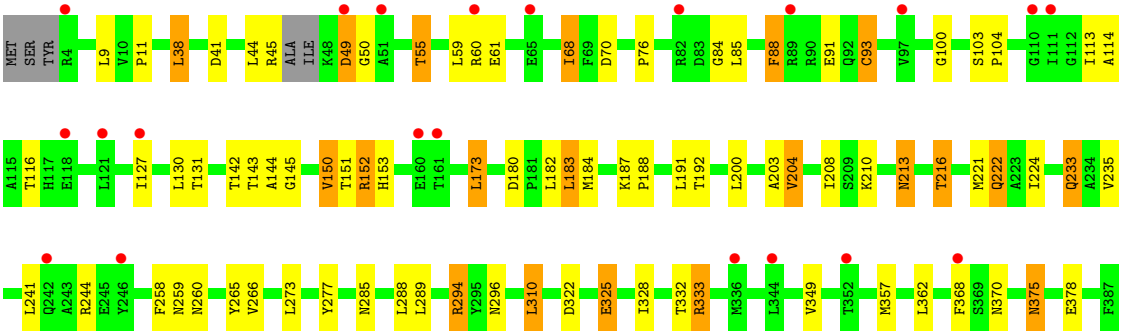
Chain Q:





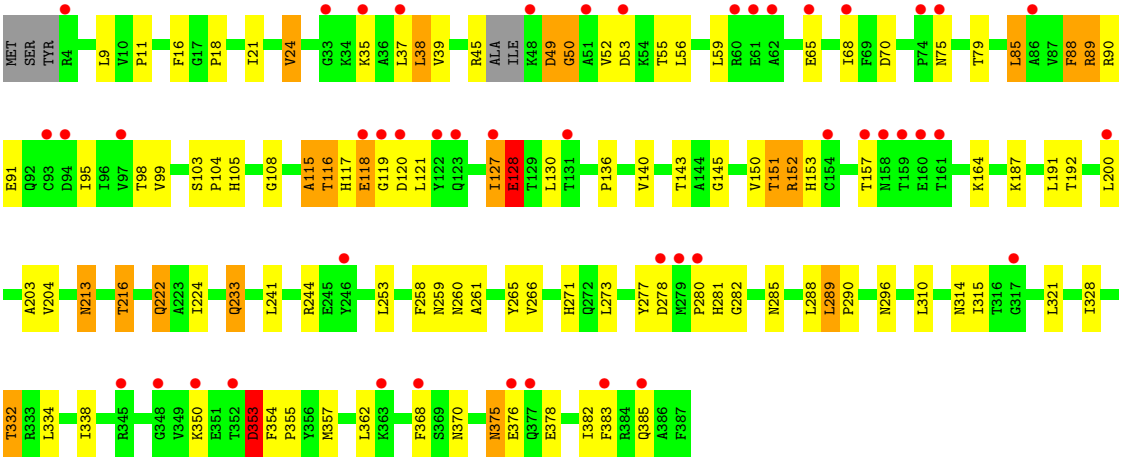
• Molecule 1: 1,3-propanediol oxidoreductase

Chain R:



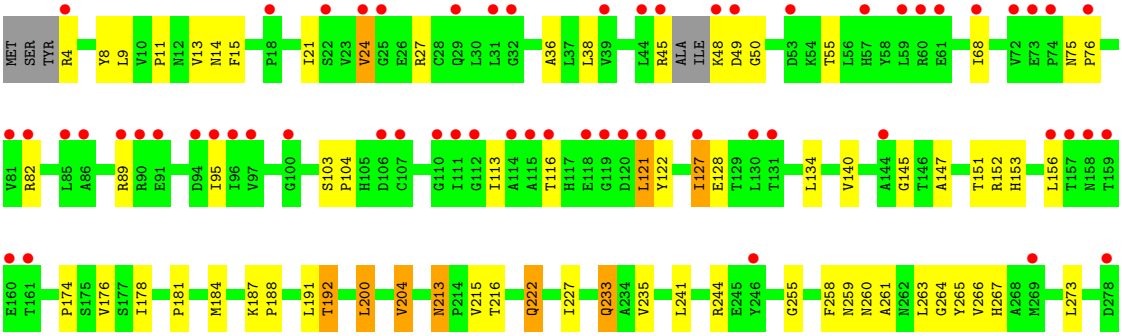
• Molecule 1: 1,3-propanediol oxidoreductase

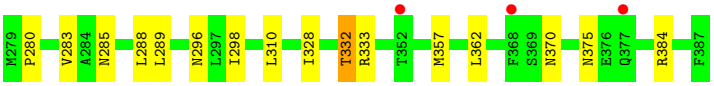
Chain S:



• Molecule 1: 1,3-propanediol oxidoreductase

Chain T:




M279
P280
V283
A284
N285
L288
L289
N296
L297
I298
L310
I328
T332
R333
T352
M357
L362
F368
S369
N370
N375
E376
Q377
R384
F387

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	91.94Å 226.61Å 232.63Å 90.00° 92.91° 90.00°	Depositor
Resolution (Å)	20.00 – 2.70 20.00 – 2.70	Depositor EDS
% Data completeness (in resolution range)	97.7 (20.00-2.70) 97.7 (20.00-2.70)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	2.92 (at 2.71Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.203 , 0.251 0.198 , 0.243	Depositor DCC
R_{free} test set	12840 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	48.0	Xtriage
Anisotropy	0.094	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 57.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.004 for -h,l,k 0.009 for -h,-l,-k 0.021 for h,-k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	58348	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.63% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ 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)

Bond lengths and bond angles in the following residue types are not validated in this section: FE2

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	0.38	0/2922	0.56	0/3969
1	B	0.38	0/2922	0.56	0/3969
1	C	0.36	0/2922	0.53	0/3969
1	D	0.37	0/2922	0.58	0/3969
1	E	0.43	0/2922	0.62	2/3969 (0.1%)
1	F	0.36	0/2922	0.54	0/3969
1	G	0.43	2/2922 (0.1%)	0.60	2/3969 (0.1%)
1	H	0.41	0/2922	0.61	0/3969
1	I	0.84	8/2922 (0.3%)	0.69	3/3969 (0.1%)
1	J	0.37	0/2922	0.54	0/3969
1	K	0.42	0/2922	0.59	0/3969
1	L	0.50	2/2922 (0.1%)	0.56	0/3969
1	M	0.39	0/2922	0.58	0/3969
1	N	0.47	4/2922 (0.1%)	0.57	0/3969
1	O	0.38	0/2922	0.57	0/3969
1	P	0.39	0/2922	0.58	0/3969
1	Q	0.38	0/2922	0.57	1/3969 (0.0%)
1	R	0.71	8/2922 (0.3%)	0.65	4/3969 (0.1%)
1	S	1.23	25/2922 (0.9%)	1.16	13/3969 (0.3%)
1	T	0.54	7/2922 (0.2%)	0.74	5/3969 (0.1%)
All	All	0.53	56/58440 (0.1%)	0.63	30/79380 (0.0%)

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	S	0	3

The worst 5 of 56 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	S	89	ARG	NE-CZ	31.52	1.74	1.33
1	I	60	ARG	CZ-NH1	27.64	1.69	1.33
1	I	90	ARG	NE-CZ	18.03	1.56	1.33
1	S	89	ARG	CZ-NH2	17.00	1.55	1.33
1	S	376	GLU	CD-OE1	16.53	1.43	1.25

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	S	89	ARG	NE-CZ-NH2	-48.18	96.21	120.30
1	S	89	ARG	NH1-CZ-NH2	23.44	145.18	119.40
1	T	27	ARG	NE-CZ-NH2	-23.04	108.78	120.30
1	I	90	ARG	NE-CZ-NH2	-20.39	110.11	120.30
1	S	89	ARG	CD-NE-CZ	-16.11	101.05	123.60

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	S	116	THR	Mainchain
1	S	353	ASP	Sidechain,Mainchain

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	2871	0	2872	58	0
1	B	2871	0	2872	60	0
1	C	2871	0	2872	51	0
1	D	2871	0	2872	54	0
1	E	2871	0	2872	50	0
1	F	2871	0	2872	51	0
1	G	2871	0	2872	57	0
1	H	2871	0	2872	79	0
1	I	2871	0	2872	63	0
1	J	2871	0	2872	48	0
1	K	2871	0	2872	66	0
1	L	2871	0	2872	56	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	M	2871	0	2872	53	0
1	N	2871	0	2872	55	0
1	O	2871	0	2872	53	0
1	P	2871	0	2872	67	0
1	Q	2871	0	2872	50	0
1	R	2871	0	2872	49	0
1	S	2871	0	2872	68	0
1	T	2871	0	2872	50	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
2	M	1	0	0	0	0
2	N	1	0	0	0	0
2	O	1	0	0	0	0
2	P	1	0	0	0	0
2	Q	1	0	0	0	0
2	R	1	0	0	0	0
2	S	1	0	0	0	0
2	T	1	0	0	0	0
3	A	36	0	0	3	0
3	B	45	0	0	4	0
3	C	27	0	0	3	0
3	D	49	0	0	6	0
3	E	76	0	0	3	0
3	F	19	0	0	2	0
3	G	41	0	0	1	0
3	H	61	0	0	7	0
3	I	51	0	0	5	0
3	J	31	0	0	1	0
3	K	89	0	0	6	0
3	L	42	0	0	0	0
3	M	58	0	0	1	0
3	N	33	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	O	50	0	0	3	0
3	P	64	0	0	5	0
3	Q	43	0	0	1	0
3	R	39	0	0	0	0
3	S	19	0	0	6	0
3	T	35	0	0	1	0
All	All	58348	0	57440	1102	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 10.

The worst 5 of 1102 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:S:85:LEU:CG	1:S:85:LEU:CD1	1.74	1.63
1:I:60:ARG:CZ	1:I:60:ARG:NH1	1.69	1.52
1:S:89:ARG:NE	1:S:89:ARG:CZ	1.74	1.49
1:R:93:CYS:CB	1:R:93:CYS:SG	2.09	1.39
1:H:171:ARG:HG2	1:H:171:ARG:HH11	1.16	1.05

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	378/387 (98%)	361 (96%)	10 (3%)	7 (2%)	8 20
1	B	378/387 (98%)	356 (94%)	15 (4%)	7 (2%)	8 20
1	C	378/387 (98%)	357 (94%)	15 (4%)	6 (2%)	9 24
1	D	378/387 (98%)	357 (94%)	15 (4%)	6 (2%)	9 24
1	E	378/387 (98%)	359 (95%)	12 (3%)	7 (2%)	8 20

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	F	378/387 (98%)	358 (95%)	14 (4%)	6 (2%)	9	24
1	G	378/387 (98%)	356 (94%)	16 (4%)	6 (2%)	9	24
1	H	378/387 (98%)	359 (95%)	13 (3%)	6 (2%)	9	24
1	I	378/387 (98%)	356 (94%)	15 (4%)	7 (2%)	8	20
1	J	378/387 (98%)	352 (93%)	19 (5%)	7 (2%)	8	20
1	K	378/387 (98%)	358 (95%)	12 (3%)	8 (2%)	7	18
1	L	378/387 (98%)	360 (95%)	11 (3%)	7 (2%)	8	20
1	M	378/387 (98%)	363 (96%)	9 (2%)	6 (2%)	9	24
1	N	378/387 (98%)	359 (95%)	13 (3%)	6 (2%)	9	24
1	O	378/387 (98%)	360 (95%)	12 (3%)	6 (2%)	9	24
1	P	378/387 (98%)	354 (94%)	19 (5%)	5 (1%)	12	30
1	Q	378/387 (98%)	358 (95%)	16 (4%)	4 (1%)	14	34
1	R	378/387 (98%)	363 (96%)	11 (3%)	4 (1%)	14	34
1	S	378/387 (98%)	352 (93%)	15 (4%)	11 (3%)	4	10
1	T	378/387 (98%)	356 (94%)	18 (5%)	4 (1%)	14	34
All	All	7560/7740 (98%)	7154 (95%)	280 (4%)	126 (2%)	9	23

5 of 126 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	120	ASP
1	A	127	ILE
1	B	120	ASP
1	B	127	ILE
1	D	120	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	296/302 (98%)	260 (88%)	36 (12%)	5	11

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	296/302 (98%)	257 (87%)	39 (13%)	4	9
1	C	296/302 (98%)	267 (90%)	29 (10%)	8	18
1	D	296/302 (98%)	253 (86%)	43 (14%)	3	8
1	E	296/302 (98%)	253 (86%)	43 (14%)	3	8
1	F	296/302 (98%)	261 (88%)	35 (12%)	5	12
1	G	296/302 (98%)	258 (87%)	38 (13%)	4	10
1	H	296/302 (98%)	256 (86%)	40 (14%)	4	9
1	I	296/302 (98%)	262 (88%)	34 (12%)	5	13
1	J	296/302 (98%)	264 (89%)	32 (11%)	6	15
1	K	296/302 (98%)	253 (86%)	43 (14%)	3	8
1	L	296/302 (98%)	262 (88%)	34 (12%)	5	13
1	M	296/302 (98%)	258 (87%)	38 (13%)	4	10
1	N	296/302 (98%)	262 (88%)	34 (12%)	5	13
1	O	296/302 (98%)	257 (87%)	39 (13%)	4	9
1	P	296/302 (98%)	249 (84%)	47 (16%)	2	6
1	Q	296/302 (98%)	253 (86%)	43 (14%)	3	8
1	R	296/302 (98%)	263 (89%)	33 (11%)	6	14
1	S	296/302 (98%)	265 (90%)	31 (10%)	7	16
1	T	296/302 (98%)	271 (92%)	25 (8%)	11	25
All	All	5920/6040 (98%)	5184 (88%)	736 (12%)	4	11

5 of 736 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	M	183	LEU
1	P	130	LEU
1	M	288	LEU
1	M	173	LEU
1	O	48	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 322 such sidechains are listed below:

Mol	Chain	Res	Type
1	N	385	GLN

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Mol	Chain	Res	Type
1	R	222	GLN
1	O	172	ASN
1	P	260	ASN
1	S	213	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)

Of 20 ligands modelled in this entry, 20 are monoatomic - leaving 0 for Mogul analysis.

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.

No monomer is involved in short contacts.

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	382/387 (98%)	0.31	17 (4%)	33	31	41, 46, 51, 57	0
1	B	382/387 (98%)	0.32	18 (4%)	31	30	39, 45, 51, 56	0
1	C	382/387 (98%)	0.44	30 (7%)	12	10	41, 46, 51, 55	0
1	D	382/387 (98%)	0.38	25 (6%)	18	17	39, 46, 51, 56	0
1	E	382/387 (98%)	0.20	12 (3%)	49	49	40, 45, 51, 56	0
1	F	382/387 (98%)	0.53	39 (10%)	6	5	41, 46, 51, 56	0
1	G	382/387 (98%)	0.41	28 (7%)	15	13	41, 45, 51, 57	0
1	H	382/387 (98%)	0.20	15 (3%)	39	38	39, 45, 51, 58	0
1	I	382/387 (98%)	0.41	21 (5%)	25	24	40, 46, 51, 55	0
1	J	382/387 (98%)	0.37	20 (5%)	27	25	41, 46, 51, 56	0
1	K	382/387 (98%)	0.23	17 (4%)	33	31	39, 45, 51, 59	0
1	L	382/387 (98%)	0.40	25 (6%)	18	17	41, 46, 51, 58	0
1	M	382/387 (98%)	0.26	18 (4%)	31	30	39, 45, 50, 57	0
1	N	382/387 (98%)	0.37	17 (4%)	33	31	41, 46, 51, 55	0
1	O	382/387 (98%)	0.29	14 (3%)	41	41	40, 45, 51, 58	0
1	P	382/387 (98%)	0.20	8 (2%)	63	65	40, 45, 50, 56	0
1	Q	382/387 (98%)	0.32	22 (5%)	23	22	39, 46, 50, 55	0
1	R	382/387 (98%)	0.43	21 (5%)	25	24	41, 46, 50, 57	0
1	S	382/387 (98%)	0.71	47 (12%)	4	3	41, 46, 51, 58	0
1	T	382/387 (98%)	0.84	64 (16%)	1	1	40, 46, 50, 55	0
All	All	7640/7740 (98%)	0.38	478 (6%)	20	19	39, 46, 51, 59	0

The worst 5 of 478 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	S	160	GLU	6.1
1	S	48	LYS	6.1
1	T	72	VAL	5.9
1	Q	160	GLU	5.8
1	T	121	LEU	5.5

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)

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
2	FE2	A	1388	1/1	0.98	0.13	41,41,41,41	0
2	FE2	B	1388	1/1	0.98	0.11	40,40,40,40	0
2	FE2	C	1388	1/1	0.98	0.14	43,43,43,43	0
2	FE2	F	1388	1/1	0.98	0.14	51,51,51,51	0
2	FE2	G	1388	1/1	0.98	0.12	43,43,43,43	0
2	FE2	I	1388	1/1	0.98	0.14	36,36,36,36	0
2	FE2	L	1388	1/1	0.98	0.14	39,39,39,39	0
2	FE2	D	1388	1/1	0.99	0.16	38,38,38,38	0
2	FE2	J	1388	1/1	0.99	0.12	43,43,43,43	0
2	FE2	K	1388	1/1	0.99	0.13	27,27,27,27	0
2	FE2	H	1388	1/1	0.99	0.14	31,31,31,31	0
2	FE2	N	1388	1/1	0.99	0.16	44,44,44,44	0
2	FE2	O	1388	1/1	0.99	0.16	33,33,33,33	0
2	FE2	P	1388	1/1	0.99	0.14	36,36,36,36	0
2	FE2	Q	1388	1/1	0.99	0.15	42,42,42,42	0
2	FE2	R	1388	1/1	0.99	0.14	49,49,49,49	0
2	FE2	S	1388	1/1	0.99	0.06	64,64,64,64	0
2	FE2	T	1388	1/1	0.99	0.11	65,65,65,65	0
2	FE2	M	1388	1/1	1.00	0.16	30,30,30,30	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FE2	E	1388	1/1	1.00	0.15	30,30,30,30	0

6.5 Other polymers (i)

There are no such residues in this entry.