



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 02:34 PM EDT

PDB ID : 3I6E  
Title : CRYSTAL STRUCTURE OF MUCONATE LACTONIZING ENZYME FROM *Ruegeria pomeroyi*.  
Authors : Fedorov, A.A.; Fedorov, E.V.; Sauder, J.M.; Burley, S.K.; Gerlt, J.A.; Almo, S.C.; New York SGX Research Center for Structural Genomics (NYSGXRC)  
Deposited on : 2009-07-07  
Resolution : 1.70 Å(reported)

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<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) : 1.20.1  
EDS : 2.36.2  
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) : 2.36.2

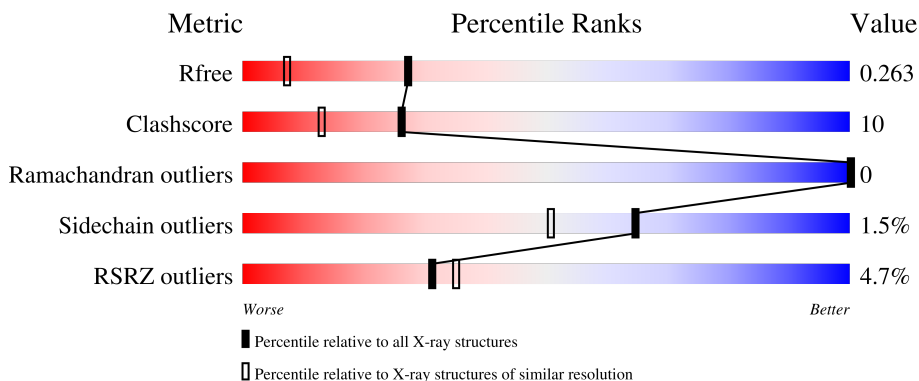
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.70 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.



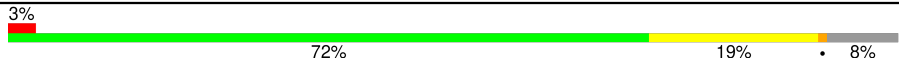

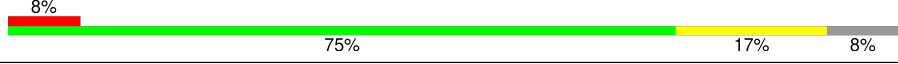
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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  $\geq 3$ , 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	385	 3% 76% 16% • 8%
1	B	385	 3% 76% 17% 8%
1	C	385	 4% 75% 17% • 8%
1	D	385	 4% 72% 20% • 8%
1	E	385	 6% 71% 21% • 8%

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Mol	Chain	Length	Quality of chain
1	F	385	
1	G	385	
1	H	385	

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 22777 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 Muconate cycloisomerase I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	356	2728	1730	480	502	16	0	0	0
1	B	356	2728	1730	480	502	16	0	0	0
1	C	356	2728	1730	480	502	16	0	0	0
1	D	356	2728	1730	480	502	16	0	0	0
1	E	356	2728	1730	480	502	16	0	0	0
1	F	356	2728	1730	480	502	16	0	0	0
1	G	356	2728	1730	480	502	16	0	0	0
1	H	356	2728	1730	480	502	16	0	0	0

There are 88 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP Q5LM96
A	2	SER	-	expression tag	UNP Q5LM96
A	3	LEU	-	expression tag	UNP Q5LM96
A	378	GLU	-	expression tag	UNP Q5LM96
A	379	GLY	-	expression tag	UNP Q5LM96
A	380	HIS	-	expression tag	UNP Q5LM96
A	381	HIS	-	expression tag	UNP Q5LM96
A	382	HIS	-	expression tag	UNP Q5LM96
A	383	HIS	-	expression tag	UNP Q5LM96
A	384	HIS	-	expression tag	UNP Q5LM96
A	385	HIS	-	expression tag	UNP Q5LM96
B	1	MET	-	expression tag	UNP Q5LM96
B	2	SER	-	expression tag	UNP Q5LM96

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Chain	Residue	Modelled	Actual	Comment	Reference
B	3	LEU	-	expression tag	UNP Q5LM96
B	378	GLU	-	expression tag	UNP Q5LM96
B	379	GLY	-	expression tag	UNP Q5LM96
B	380	HIS	-	expression tag	UNP Q5LM96
B	381	HIS	-	expression tag	UNP Q5LM96
B	382	HIS	-	expression tag	UNP Q5LM96
B	383	HIS	-	expression tag	UNP Q5LM96
B	384	HIS	-	expression tag	UNP Q5LM96
B	385	HIS	-	expression tag	UNP Q5LM96
C	1	MET	-	expression tag	UNP Q5LM96
C	2	SER	-	expression tag	UNP Q5LM96
C	3	LEU	-	expression tag	UNP Q5LM96
C	378	GLU	-	expression tag	UNP Q5LM96
C	379	GLY	-	expression tag	UNP Q5LM96
C	380	HIS	-	expression tag	UNP Q5LM96
C	381	HIS	-	expression tag	UNP Q5LM96
C	382	HIS	-	expression tag	UNP Q5LM96
C	383	HIS	-	expression tag	UNP Q5LM96
C	384	HIS	-	expression tag	UNP Q5LM96
C	385	HIS	-	expression tag	UNP Q5LM96
D	1	MET	-	expression tag	UNP Q5LM96
D	2	SER	-	expression tag	UNP Q5LM96
D	3	LEU	-	expression tag	UNP Q5LM96
D	378	GLU	-	expression tag	UNP Q5LM96
D	379	GLY	-	expression tag	UNP Q5LM96
D	380	HIS	-	expression tag	UNP Q5LM96
D	381	HIS	-	expression tag	UNP Q5LM96
D	382	HIS	-	expression tag	UNP Q5LM96
D	383	HIS	-	expression tag	UNP Q5LM96
D	384	HIS	-	expression tag	UNP Q5LM96
D	385	HIS	-	expression tag	UNP Q5LM96
E	1	MET	-	expression tag	UNP Q5LM96
E	2	SER	-	expression tag	UNP Q5LM96
E	3	LEU	-	expression tag	UNP Q5LM96
E	378	GLU	-	expression tag	UNP Q5LM96
E	379	GLY	-	expression tag	UNP Q5LM96
E	380	HIS	-	expression tag	UNP Q5LM96
E	381	HIS	-	expression tag	UNP Q5LM96
E	382	HIS	-	expression tag	UNP Q5LM96
E	383	HIS	-	expression tag	UNP Q5LM96
E	384	HIS	-	expression tag	UNP Q5LM96
E	385	HIS	-	expression tag	UNP Q5LM96

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Chain	Residue	Modelled	Actual	Comment	Reference
F	1	MET	-	expression tag	UNP Q5LM96
F	2	SER	-	expression tag	UNP Q5LM96
F	3	LEU	-	expression tag	UNP Q5LM96
F	378	GLU	-	expression tag	UNP Q5LM96
F	379	GLY	-	expression tag	UNP Q5LM96
F	380	HIS	-	expression tag	UNP Q5LM96
F	381	HIS	-	expression tag	UNP Q5LM96
F	382	HIS	-	expression tag	UNP Q5LM96
F	383	HIS	-	expression tag	UNP Q5LM96
F	384	HIS	-	expression tag	UNP Q5LM96
F	385	HIS	-	expression tag	UNP Q5LM96
G	1	MET	-	expression tag	UNP Q5LM96
G	2	SER	-	expression tag	UNP Q5LM96
G	3	LEU	-	expression tag	UNP Q5LM96
G	378	GLU	-	expression tag	UNP Q5LM96
G	379	GLY	-	expression tag	UNP Q5LM96
G	380	HIS	-	expression tag	UNP Q5LM96
G	381	HIS	-	expression tag	UNP Q5LM96
G	382	HIS	-	expression tag	UNP Q5LM96
G	383	HIS	-	expression tag	UNP Q5LM96
G	384	HIS	-	expression tag	UNP Q5LM96
G	385	HIS	-	expression tag	UNP Q5LM96
H	1	MET	-	expression tag	UNP Q5LM96
H	2	SER	-	expression tag	UNP Q5LM96
H	3	LEU	-	expression tag	UNP Q5LM96
H	378	GLU	-	expression tag	UNP Q5LM96
H	379	GLY	-	expression tag	UNP Q5LM96
H	380	HIS	-	expression tag	UNP Q5LM96
H	381	HIS	-	expression tag	UNP Q5LM96
H	382	HIS	-	expression tag	UNP Q5LM96
H	383	HIS	-	expression tag	UNP Q5LM96
H	384	HIS	-	expression tag	UNP Q5LM96
H	385	HIS	-	expression tag	UNP Q5LM96

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Mg 1 1	0	0
2	B	1	Total Mg 1 1	0	0
2	C	1	Total Mg 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	D	1	Total Mg 1 1	0	0
2	E	1	Total Mg 1 1	0	0
2	F	1	Total Mg 1 1	0	0
2	G	1	Total Mg 1 1	0	0
2	H	1	Total Mg 1 1	0	0

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Na 1 1	0	0
3	B	1	Total Na 1 1	0	0
3	C	1	Total Na 1 1	0	0
3	D	1	Total Na 1 1	0	0
3	E	1	Total Na 1 1	0	0
3	F	1	Total Na 1 1	0	0
3	G	1	Total Na 1 1	0	0
3	H	1	Total Na 1 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	125	Total O 125 125	0	0
4	B	133	Total O 133 133	0	0
4	C	97	Total O 97 97	0	0
4	D	116	Total O 116 116	0	0

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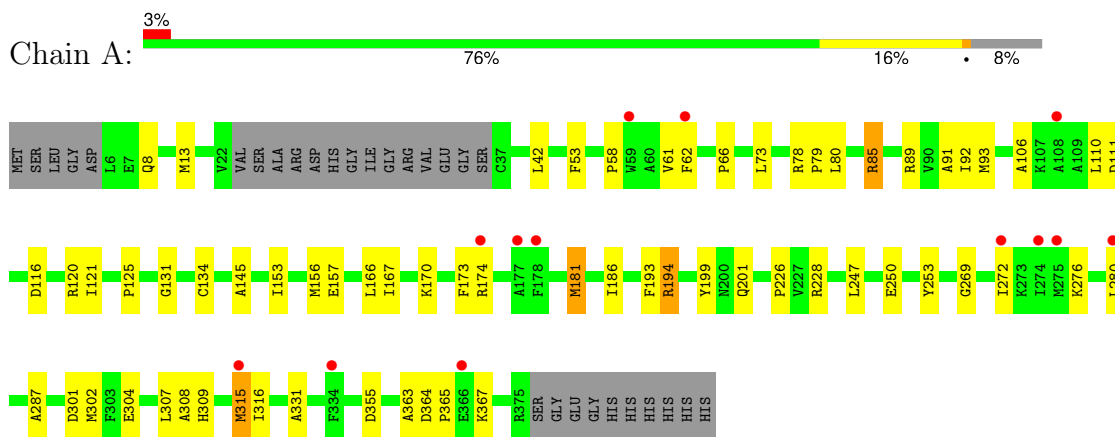
<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
4	E	101	Total 101	O 101	0	0
4	F	130	Total 130	O 130	0	0
4	G	150	Total 150	O 150	0	0
4	H	85	Total 85	O 85	0	0



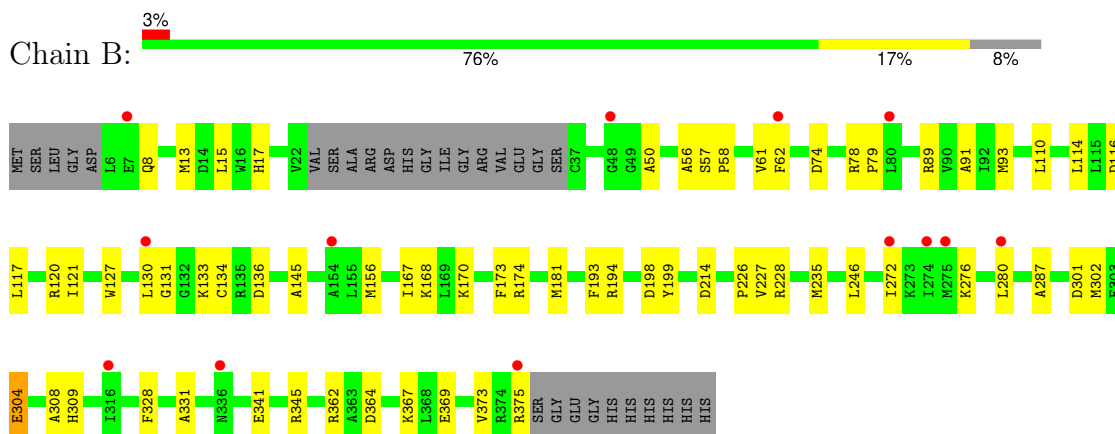
### 3 Residue-property plots

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.

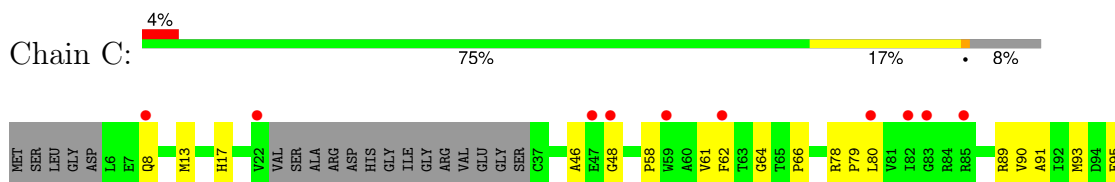
- Molecule 1: Muconate cycloisomerase I

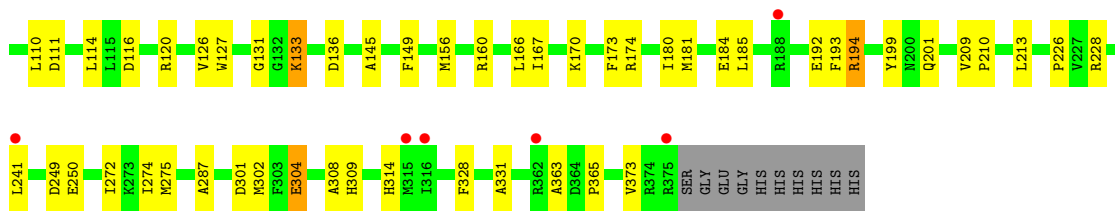


- Molecule 1: Muconate cycloisomerase I

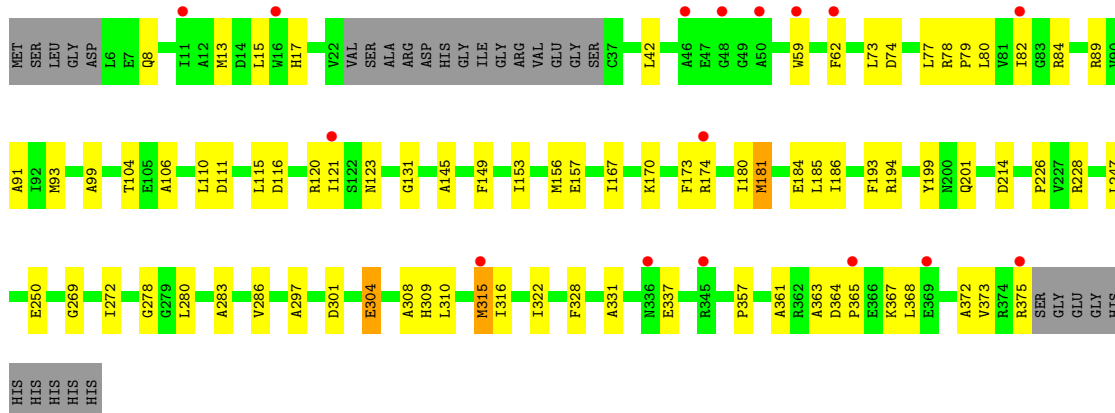


- Molecule 1: Muconate cycloisomerase I

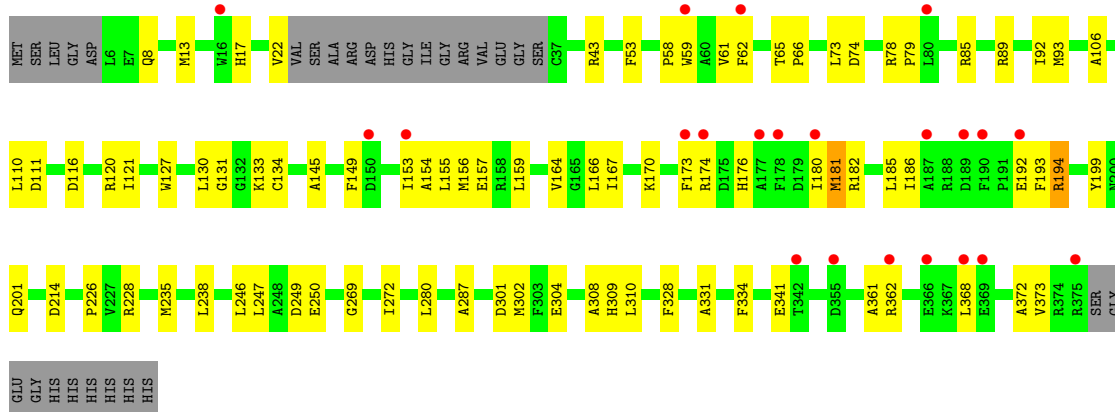




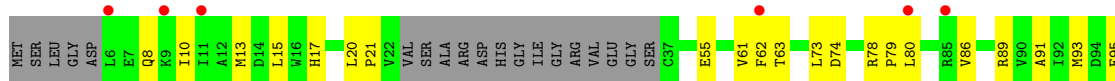
• Molecule 1: Muconate cycloisomerase I

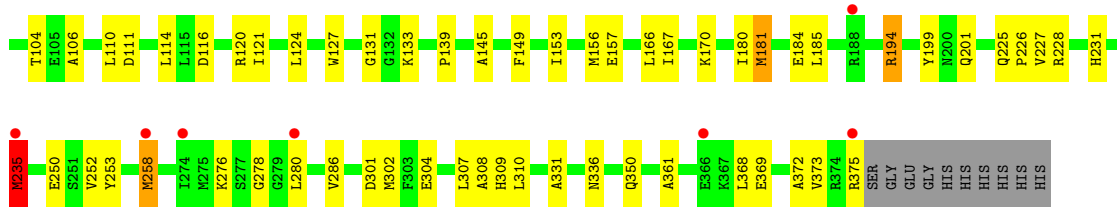


• Molecule 1: Muconate cycloisomerase I

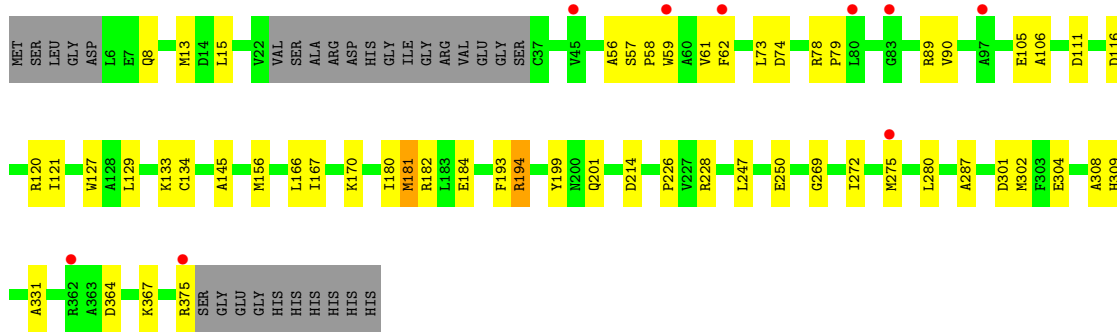
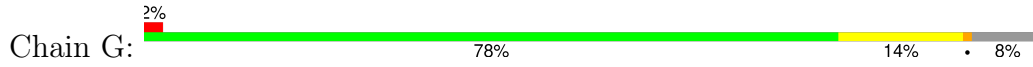


• Molecule 1: Muconate cycloisomerase I

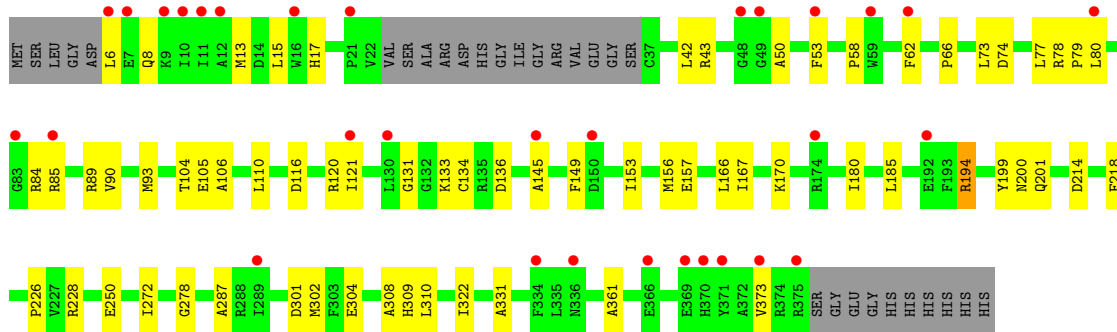
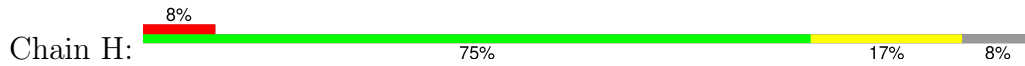




• Molecule 1: Muconate cycloisomerase I



• Molecule 1: Muconate cycloisomerase I



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	109.14Å 135.36Å 113.02Å 90.00° 103.18° 90.00°	Depositor
Resolution (Å)	24.87 – 1.70 37.76 – 1.69	Depositor EDS
% Data completeness (in resolution range)	97.8 (24.87-1.70) 97.2 (37.76-1.69)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.15 (at 1.70Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.235 , 0.263 0.234 , 0.263	Depositor DCC
$R_{free}$ test set	17364 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	27.4	Xtrriage
Anisotropy	0.342	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.39 , 57.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtrriage
Estimated twinning fraction	0.005 for l,-k,h	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	22777	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.89% 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

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

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	0.32	0/2782	0.61	1/3773 (0.0%)
1	B	0.32	0/2782	0.62	1/3773 (0.0%)
1	C	0.31	0/2782	0.59	1/3773 (0.0%)
1	D	0.33	0/2782	0.61	1/3773 (0.0%)
1	E	0.31	0/2782	0.60	1/3773 (0.0%)
1	F	0.39	2/2782 (0.1%)	0.63	1/3773 (0.0%)
1	G	0.36	0/2782	0.63	1/3773 (0.0%)
1	H	0.31	0/2782	0.60	1/3773 (0.0%)
All	All	0.33	2/22256 (0.0%)	0.61	8/30184 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	235	MET	CB-CG	8.23	1.77	1.51
1	F	235	MET	CG-SD	-5.10	1.67	1.81

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	194	ARG	N-CA-C	-5.64	95.78	111.00
1	B	194	ARG	N-CA-C	-5.46	96.27	111.00
1	A	194	ARG	N-CA-C	-5.44	96.31	111.00
1	D	194	ARG	N-CA-C	-5.33	96.61	111.00
1	H	194	ARG	N-CA-C	-5.29	96.72	111.00
1	F	194	ARG	N-CA-C	-5.25	96.83	111.00
1	C	194	ARG	N-CA-C	-5.20	96.97	111.00
1	G	194	ARG	N-CA-C	-5.17	97.04	111.00

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2728	0	2719	45	0
1	B	2728	0	2719	51	0
1	C	2728	0	2719	57	0
1	D	2728	0	2719	68	0
1	E	2728	0	2719	69	0
1	F	2728	0	2719	81	0
1	G	2728	0	2719	51	0
1	H	2728	0	2719	57	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
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	125	0	0	2	0
4	B	133	0	0	2	0
4	C	97	0	0	1	0
4	D	116	0	0	2	0
4	E	101	0	0	1	0
4	F	130	0	0	3	0
4	G	150	0	0	2	0
4	H	85	0	0	1	0
All	All	22777	0	21752	455	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.

All (455) 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:235:MET:CG	1:F:235:MET:CB	1.77	1.60
1:F:93:MET:HE2	1:F:93:MET:HA	1.33	1.09
1:G:57:SER:H	1:G:275:MET:HE2	0.88	1.03
1:G:57:SER:N	1:G:275:MET:HE2	1.73	1.00
1:F:227:VAL:H	1:F:235:MET:HE3	1.34	0.93
1:C:93:MET:HE3	1:C:110:LEU:HG	1.48	0.91
1:G:145:ALA:HB1	1:G:170:LYS:HD3	1.55	0.88
1:E:93:MET:HE3	1:E:110:LEU:HG	1.57	0.86
1:F:227:VAL:HG13	4:F:392:HOH:O	1.75	0.86
1:A:93:MET:HE3	1:A:110:LEU:HG	1.55	0.86
1:B:93:MET:HE3	1:B:110:LEU:HG	1.57	0.86
1:D:8:GLN:HE22	1:D:121:ILE:HD12	1.38	0.86
1:G:13:MET:HE3	1:G:15:LEU:HD11	1.56	0.86
1:D:283:ALA:O	1:D:286:VAL:HG22	1.77	0.85
1:B:227:VAL:H	1:B:235:MET:HE1	1.43	0.82
1:F:8:GLN:HE22	1:F:121:ILE:HD12	1.44	0.82
1:G:57:SER:H	1:G:275:MET:CE	1.83	0.79
1:A:131:GLY:HA2	1:B:89:ARG:HH21	1.48	0.79
1:G:309:HIS:HE1	1:G:331:ALA:H	1.32	0.77
1:F:227:VAL:H	1:F:235:MET:CE	1.98	0.77
1:D:93:MET:HE3	1:D:110:LEU:HG	1.67	0.76
1:B:116:ASP:O	1:B:120:ARG:HG2	1.87	0.74
1:E:226:PRO:HD2	1:E:235:MET:HE2	1.69	0.74
1:F:93:MET:HE2	1:F:93:MET:CA	2.14	0.74
1:F:258:MET:HG3	1:F:286:VAL:HG13	1.70	0.73
1:F:258:MET:CG	1:F:286:VAL:HG13	2.19	0.73
1:B:228:ARG:HG2	4:B:393:HOH:O	1.89	0.73
1:F:227:VAL:N	1:F:235:MET:HE3	2.05	0.72
1:D:272:ILE:HD13	1:D:286:VAL:HG23	1.71	0.71
1:E:226:PRO:HD2	1:E:235:MET:CE	2.21	0.71
1:B:156:MET:HE3	1:B:167:ILE:HD13	1.73	0.70
1:E:153:ILE:O	1:E:157:GLU:HG2	1.91	0.70
1:C:309:HIS:HE1	1:C:331:ALA:H	1.36	0.70
1:A:315:MET:HG3	1:A:316:ILE:N	2.06	0.69
1:E:304:GLU:HB2	1:E:308:ALA:HB3	1.75	0.69
1:A:309:HIS:HE1	1:A:331:ALA:H	1.39	0.69
1:D:8:GLN:NE2	1:D:121:ILE:HD12	2.09	0.68
1:F:181:MET:HE2	4:F:609:HOH:O	1.93	0.68
1:G:8:GLN:HE22	1:G:121:ILE:HD12	1.56	0.68
1:E:228:ARG:HG2	4:E:388:HOH:O	1.93	0.68
1:E:309:HIS:HE1	1:E:331:ALA:H	1.40	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:8:GLN:HE22	1:H:121:ILE:HD12	1.59	0.68
1:F:258:MET:HA	1:F:258:MET:HE2	1.76	0.68
1:A:89:ARG:HH21	1:B:131:GLY:HA2	1.60	0.67
1:C:8:GLN:HE21	1:C:46:ALA:HB1	1.60	0.67
1:D:181:MET:HE2	4:D:543:HOH:O	1.95	0.66
1:E:78:ARG:HB3	1:E:79:PRO:HD3	1.76	0.66
1:E:85:ARG:HH11	1:E:85:ARG:HG3	1.60	0.66
1:C:304:GLU:HB2	1:C:308:ALA:HB3	1.78	0.66
1:E:235:MET:HE3	1:E:235:MET:HA	1.78	0.66
1:H:153:ILE:O	1:H:157:GLU:HG2	1.96	0.66
1:F:227:VAL:HG12	1:F:228:ARG:N	2.10	0.66
1:E:58:PRO:HG3	1:E:66:PRO:HA	1.77	0.65
1:F:201:GLN:NE2	1:F:250:GLU:HG2	2.12	0.65
1:D:78:ARG:HB3	1:D:79:PRO:HD3	1.79	0.64
1:F:131:GLY:O	1:H:90:VAL:HG23	1.97	0.64
1:G:145:ALA:CB	1:G:170:LYS:HD3	2.27	0.64
1:F:145:ALA:HB1	1:F:170:LYS:HD3	1.79	0.64
1:C:180:ILE:O	1:C:184:GLU:HG3	1.98	0.63
1:B:173:PHE:CD1	1:B:174:ARG:HG3	2.34	0.63
1:B:309:HIS:HE1	1:B:331:ALA:H	1.45	0.63
1:F:13:MET:HE3	1:F:15:LEU:HD11	1.80	0.63
1:C:58:PRO:HG3	1:C:66:PRO:HA	1.81	0.63
1:B:13:MET:HE3	1:B:15:LEU:HD11	1.80	0.63
1:E:176:HIS:NE2	1:E:180:ILE:HD11	2.14	0.62
1:A:228:ARG:HG2	4:A:425:HOH:O	1.98	0.62
1:A:304:GLU:HB2	1:A:308:ALA:HB3	1.82	0.62
1:C:213:LEU:HD21	1:C:241:LEU:HB3	1.81	0.62
1:D:156:MET:HE3	1:D:167:ILE:HD13	1.80	0.62
1:F:89:ARG:HH21	1:H:131:GLY:HA2	1.64	0.62
1:F:309:HIS:HE1	1:F:331:ALA:H	1.48	0.62
1:F:78:ARG:HB3	1:F:79:PRO:HD3	1.82	0.62
1:F:252:VAL:HG21	1:F:258:MET:CE	2.30	0.61
1:F:304:GLU:HB2	1:F:308:ALA:HB3	1.82	0.61
1:C:274:ILE:HG13	1:C:275:MET:HE2	1.82	0.61
1:C:116:ASP:O	1:C:120:ARG:HG2	2.00	0.61
1:D:116:ASP:O	1:D:120:ARG:HG2	2.01	0.61
1:F:252:VAL:HG11	1:F:258:MET:HE2	1.82	0.61
1:D:309:HIS:HE1	1:D:331:ALA:H	1.46	0.61
1:C:201:GLN:NE2	1:C:250:GLU:HG2	2.16	0.61
1:H:93:MET:HE3	1:H:110:LEU:HG	1.82	0.60
1:G:116:ASP:O	1:G:120:ARG:HG2	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:80:LEU:HD11	1:F:95:GLU:OE1	2.01	0.60
1:D:131:GLY:O	1:G:90:VAL:HG23	2.01	0.60
1:D:272:ILE:HD12	1:D:322:ILE:HD11	1.84	0.60
1:F:227:VAL:O	1:F:235:MET:HE1	2.01	0.59
1:E:310:LEU:HD11	1:E:361:ALA:HB3	1.84	0.59
1:H:309:HIS:HE1	1:H:331:ALA:H	1.49	0.59
1:A:78:ARG:HB3	1:A:79:PRO:HD3	1.83	0.59
1:E:341:GLU:HG3	1:E:362:ARG:O	2.02	0.59
1:H:304:GLU:HB2	1:H:308:ALA:HB3	1.82	0.59
1:B:89:ARG:HG3	1:B:114:LEU:HD13	1.85	0.59
1:B:369:GLU:OE2	1:B:375:ARG:NE	2.35	0.59
1:G:304:GLU:HB2	1:G:308:ALA:HB3	1.84	0.59
1:D:149:PHE:HE2	1:D:185:LEU:HD13	1.67	0.59
1:A:181:MET:HE2	4:A:612:HOH:O	2.03	0.59
1:C:90:VAL:HG23	1:E:131:GLY:O	2.03	0.59
1:D:78:ARG:O	1:D:82:ILE:HD13	2.03	0.59
1:C:149:PHE:HE2	1:C:185:LEU:HD13	1.66	0.59
1:G:56:ALA:HA	1:G:275:MET:HE1	1.83	0.59
1:E:199:TYR:HB2	1:E:226:PRO:HA	1.85	0.58
1:H:116:ASP:O	1:H:120:ARG:HG2	2.03	0.58
1:F:180:ILE:O	1:F:184:GLU:HG3	2.02	0.58
1:B:8:GLN:HE22	1:B:121:ILE:HD12	1.67	0.58
1:C:127:TRP:CH2	1:C:133:LYS:HD2	2.38	0.58
1:E:61:VAL:HG23	1:E:62:PHE:CD1	2.38	0.58
1:F:63:THR:HG21	1:F:302:MET:HE3	1.84	0.58
1:B:127:TRP:CZ2	1:B:133:LYS:HD2	2.38	0.58
1:D:272:ILE:HD12	1:D:322:ILE:CD1	2.33	0.58
1:F:127:TRP:CZ2	1:F:133:LYS:HD2	2.39	0.58
1:G:8:GLN:NE2	1:G:121:ILE:HD12	2.18	0.58
1:F:116:ASP:O	1:F:120:ARG:HG2	2.03	0.58
1:D:13:MET:HE3	1:D:15:LEU:HD11	1.86	0.57
1:E:173:PHE:CD1	1:E:174:ARG:HG3	2.39	0.57
1:H:272:ILE:HD12	1:H:322:ILE:HD11	1.85	0.57
1:G:181:MET:HE2	4:G:624:HOH:O	2.04	0.57
1:G:364:ASP:HB3	1:G:367:LYS:HG3	1.86	0.57
1:A:201:GLN:NE2	1:A:250:GLU:HG2	2.20	0.57
1:E:127:TRP:CZ2	1:E:133:LYS:HD2	2.39	0.57
1:H:13:MET:CE	1:H:74:ASP:HA	2.34	0.57
1:B:364:ASP:OD2	1:B:367:LYS:HG3	2.03	0.57
1:C:228:ARG:HG2	4:C:616:HOH:O	2.05	0.57
1:C:8:GLN:NE2	1:C:48:GLY:H	2.03	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:145:ALA:HB1	1:D:170:LYS:HD3	1.87	0.57
1:H:93:MET:HE2	1:H:93:MET:HA	1.87	0.56
1:C:89:ARG:HG3	1:C:114:LEU:HD13	1.87	0.56
1:F:93:MET:HE1	1:F:110:LEU:HD23	1.87	0.56
1:B:227:VAL:HG22	1:B:235:MET:HE1	1.86	0.56
1:C:89:ARG:HH21	1:E:131:GLY:HA2	1.71	0.56
1:A:247:LEU:HD22	1:A:269:GLY:C	2.26	0.56
1:H:145:ALA:HB1	1:H:170:LYS:HD3	1.88	0.56
1:B:345:ARG:HG2	1:B:345:ARG:HH11	1.70	0.56
1:C:145:ALA:HB1	1:C:170:LYS:HD3	1.87	0.56
1:H:93:MET:HA	1:H:93:MET:CE	2.36	0.56
1:F:89:ARG:HG3	1:F:114:LEU:HD13	1.88	0.55
1:B:61:VAL:HG23	1:B:62:PHE:CD1	2.41	0.55
1:C:80:LEU:HD11	1:C:95:GLU:OE1	2.06	0.55
1:A:173:PHE:CD1	1:A:174:ARG:HG3	2.42	0.55
1:D:173:PHE:CD1	1:D:174:ARG:HG3	2.41	0.55
1:B:13:MET:HE1	1:B:74:ASP:HA	1.89	0.55
1:D:13:MET:CE	1:D:74:ASP:HA	2.37	0.55
1:F:8:GLN:NE2	1:F:121:ILE:HD12	2.17	0.55
1:F:252:VAL:HG11	1:F:258:MET:CE	2.36	0.55
1:G:105:GLU:HB3	1:G:275:MET:CE	2.36	0.54
1:H:272:ILE:HD12	1:H:322:ILE:CD1	2.38	0.54
1:E:120:ARG:NH2	1:E:362:ARG:HG3	2.22	0.54
1:H:201:GLN:NE2	1:H:250:GLU:HG2	2.23	0.54
1:C:274:ILE:HG13	1:C:275:MET:CE	2.37	0.54
1:B:8:GLN:NE2	1:B:121:ILE:HD12	2.23	0.54
1:D:364:ASP:HB3	1:D:367:LYS:CG	2.38	0.54
1:F:153:ILE:O	1:F:157:GLU:HG2	2.07	0.54
1:F:227:VAL:CG1	1:F:228:ARG:N	2.71	0.54
1:B:93:MET:HE3	1:B:110:LEU:CG	2.35	0.54
1:G:201:GLN:NE2	1:G:250:GLU:HG2	2.22	0.53
1:D:80:LEU:HD21	1:D:99:ALA:HB2	1.90	0.53
1:E:181:MET:HE1	1:E:182:ARG:HA	1.89	0.53
1:F:225:GLN:NE2	1:F:235:MET:HE1	2.23	0.53
1:H:228:ARG:HG2	4:H:391:HOH:O	2.09	0.53
1:F:225:GLN:HE21	1:F:235:MET:HE1	1.74	0.53
1:G:73:LEU:HG	1:G:106:ALA:HB1	1.90	0.53
1:B:78:ARG:N	1:B:79:PRO:HD2	2.23	0.53
1:C:363:ALA:O	1:C:365:PRO:HD3	2.09	0.53
1:G:156:MET:HE3	1:G:193:PHE:CE2	2.44	0.53
1:D:199:TYR:HB2	1:D:226:PRO:HA	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:228:ARG:HG2	4:D:567:HOH:O	2.09	0.53
1:D:13:MET:HG3	1:D:42:LEU:HD11	1.91	0.52
1:D:91:ALA:HB2	1:G:134:CYS:HA	1.92	0.52
1:H:13:MET:HE3	1:H:74:ASP:HA	1.91	0.52
1:H:156:MET:HE3	1:H:167:ILE:HD13	1.91	0.52
1:B:362:ARG:HG3	1:B:362:ARG:HH11	1.75	0.52
1:D:131:GLY:HA2	1:G:89:ARG:HH21	1.74	0.52
1:H:73:LEU:HG	1:H:106:ALA:HB1	1.92	0.52
1:D:13:MET:HE1	1:D:74:ASP:HA	1.90	0.52
1:A:93:MET:HE3	1:A:110:LEU:CG	2.33	0.52
1:D:363:ALA:O	1:D:365:PRO:HD3	2.09	0.52
1:D:89:ARG:NH1	1:D:111:ASP:OD1	2.43	0.52
1:D:272:ILE:CD1	1:D:286:VAL:HG23	2.38	0.52
1:E:17:HIS:O	1:E:373:VAL:HG22	2.10	0.52
1:E:201:GLN:NE2	1:E:250:GLU:HG2	2.23	0.52
1:F:89:ARG:HH21	1:H:131:GLY:CA	2.23	0.52
1:C:61:VAL:HG23	1:C:62:PHE:CD1	2.45	0.52
1:E:235:MET:HE1	1:E:238:LEU:HD12	1.92	0.52
1:C:309:HIS:CE1	1:C:331:ALA:H	2.24	0.51
1:A:145:ALA:HB1	1:A:170:LYS:HD3	1.92	0.51
1:D:283:ALA:O	1:D:286:VAL:CG2	2.55	0.51
1:F:93:MET:HA	1:F:93:MET:CE	2.24	0.51
1:E:185:LEU:HD23	1:E:185:LEU:C	2.31	0.51
1:F:55:GLU:HB2	1:F:307:LEU:HD23	1.92	0.51
1:D:337:GLU:CD	1:D:367:LYS:HE2	2.32	0.51
1:H:50:ALA:HB3	1:H:121:ILE:HD11	1.93	0.51
1:B:304:GLU:HB2	1:B:308:ALA:HB3	1.92	0.50
1:E:247:LEU:HD22	1:E:269:GLY:C	2.31	0.50
1:F:124:LEU:HD21	1:H:6:LEU:HD23	1.93	0.50
1:F:228:ARG:HG2	4:F:392:HOH:O	2.10	0.50
1:H:199:TYR:HB2	1:H:226:PRO:HA	1.94	0.50
1:A:80:LEU:C	1:A:80:LEU:HD12	2.32	0.50
1:F:225:GLN:NE2	1:F:235:MET:CE	2.74	0.50
1:G:272:ILE:CD1	1:G:287:ALA:HB2	2.41	0.50
1:C:91:ALA:HB2	1:E:134:CYS:HA	1.93	0.50
1:F:61:VAL:HG23	1:F:62:PHE:CD1	2.47	0.50
1:D:304:GLU:HB2	1:D:308:ALA:HB3	1.94	0.50
1:A:125:PRO:HG3	1:A:355:ASP:O	2.12	0.50
1:C:17:HIS:O	1:C:373:VAL:HG22	2.11	0.50
1:C:199:TYR:HB2	1:C:226:PRO:HA	1.94	0.50
1:G:180:ILE:O	1:G:184:GLU:HG3	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:156:MET:HE2	1:C:193:PHE:CE2	2.47	0.49
1:A:280:LEU:HD12	1:A:280:LEU:N	2.27	0.49
1:C:93:MET:HE3	1:C:110:LEU:CG	2.32	0.49
1:C:149:PHE:CE2	1:C:185:LEU:HD13	2.47	0.49
1:C:185:LEU:C	1:C:185:LEU:HD23	2.33	0.49
1:D:73:LEU:HG	1:D:106:ALA:HB1	1.94	0.49
1:E:149:PHE:HE2	1:E:185:LEU:HD13	1.77	0.49
1:H:85:ARG:HG3	1:H:85:ARG:HH11	1.77	0.49
1:B:309:HIS:CE1	1:B:331:ALA:H	2.29	0.49
1:E:156:MET:HE3	1:E:167:ILE:HD13	1.94	0.49
1:B:17:HIS:O	1:B:373:VAL:HG22	2.12	0.49
1:D:315:MET:HG3	1:D:316:ILE:N	2.27	0.49
1:G:156:MET:HE3	1:G:167:ILE:HD13	1.94	0.49
1:F:149:PHE:HE2	1:F:185:LEU:HD13	1.77	0.49
1:F:368:LEU:O	1:F:372:ALA:HB2	2.13	0.49
1:F:199:TYR:HB2	1:F:226:PRO:HA	1.94	0.49
1:F:310:LEU:HD11	1:F:361:ALA:HB3	1.95	0.49
1:H:13:MET:HE1	1:H:78:ARG:HB2	1.94	0.49
1:F:304:GLU:HG3	1:F:309:HIS:CD2	2.48	0.49
1:A:8:GLN:NE2	1:A:121:ILE:HD12	2.28	0.49
1:E:73:LEU:HG	1:E:106:ALA:HB1	1.95	0.49
1:F:63:THR:HG21	1:F:302:MET:CE	2.43	0.48
1:F:235:MET:CB	1:F:235:MET:SD	2.90	0.48
1:A:363:ALA:O	1:A:365:PRO:HD3	2.13	0.48
1:G:181:MET:HE2	1:G:181:MET:O	2.13	0.48
1:G:127:TRP:CZ2	1:G:133:LYS:HD2	2.48	0.48
1:H:78:ARG:N	1:H:79:PRO:HD2	2.28	0.48
1:C:173:PHE:CD1	1:C:174:ARG:HG3	2.48	0.48
1:D:123:ASN:ND2	1:D:357:PRO:HG3	2.28	0.48
1:F:258:MET:HG2	1:F:286:VAL:HG13	1.92	0.48
1:F:280:LEU:N	1:F:280:LEU:HD12	2.28	0.48
1:H:93:MET:HE2	1:H:93:MET:CA	2.44	0.48
1:C:13:MET:HB3	1:C:78:ARG:NH1	2.28	0.48
1:A:58:PRO:HG2	1:A:66:PRO:HA	1.96	0.48
1:A:272:ILE:CD1	1:A:287:ALA:HB2	2.44	0.48
1:D:149:PHE:CE2	1:D:185:LEU:HD13	2.47	0.48
1:G:302:MET:O	1:G:304:GLU:HG2	2.13	0.48
1:D:309:HIS:CE1	1:D:331:ALA:H	2.31	0.48
1:D:73:LEU:HD23	1:D:77:LEU:HD12	1.96	0.48
1:D:82:ILE:HD12	1:D:82:ILE:N	2.29	0.48
1:D:93:MET:HE3	1:D:110:LEU:CG	2.39	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:80:LEU:O	1:H:84:ARG:HG3	2.14	0.47
1:E:166:LEU:HD23	1:E:194:ARG:HB2	1.96	0.47
1:F:156:MET:HE3	1:F:167:ILE:HD13	1.97	0.47
1:F:13:MET:HE1	1:F:74:ASP:HA	1.96	0.47
1:H:58:PRO:HB3	1:H:105:GLU:OE2	2.14	0.47
1:C:272:ILE:CD1	1:C:287:ALA:HB2	2.44	0.47
1:D:368:LEU:O	1:D:372:ALA:HB2	2.14	0.47
1:D:59:TRP:HD1	1:D:62:PHE:CD2	2.32	0.47
1:E:8:GLN:HE22	1:E:121:ILE:HD12	1.80	0.47
1:E:85:ARG:HG3	1:E:85:ARG:NH1	2.29	0.47
1:D:297:ALA:CB	1:D:322:ILE:HD13	2.44	0.47
1:E:302:MET:O	1:E:304:GLU:HG2	2.15	0.47
1:E:309:HIS:CG	1:E:328:PHE:HB3	2.50	0.47
1:C:89:ARG:NH2	1:E:131:GLY:HA2	2.28	0.47
1:D:156:MET:HE2	1:D:193:PHE:CE2	2.50	0.47
1:F:227:VAL:CG1	1:F:228:ARG:H	2.27	0.47
1:G:309:HIS:CE1	1:G:331:ALA:H	2.21	0.47
1:H:309:HIS:CE1	1:H:331:ALA:H	2.30	0.47
1:B:145:ALA:HB1	1:B:170:LYS:HD3	1.96	0.47
1:G:56:ALA:HA	1:G:275:MET:CE	2.43	0.47
1:D:309:HIS:CG	1:D:328:PHE:HB3	2.50	0.47
1:H:133:LYS:HD3	1:H:136:ASP:OD1	2.15	0.47
1:A:73:LEU:HG	1:A:106:ALA:HB1	1.96	0.47
1:E:13:MET:HE1	1:E:78:ARG:HB2	1.97	0.46
1:F:10:ILE:HD11	1:F:86:VAL:HG22	1.96	0.46
1:B:50:ALA:HB3	1:B:121:ILE:HD11	1.97	0.46
1:B:117:LEU:O	1:B:121:ILE:HG12	2.15	0.46
1:C:89:ARG:NH1	1:C:111:ASP:OD1	2.49	0.46
1:F:131:GLY:HA2	1:H:89:ARG:NH2	2.30	0.46
1:G:78:ARG:N	1:G:79:PRO:HD2	2.30	0.46
1:E:145:ALA:HB1	1:E:170:LYS:HD3	1.97	0.46
1:G:199:TYR:HB2	1:G:226:PRO:HA	1.98	0.46
1:A:131:GLY:HA2	1:B:89:ARG:NH2	2.23	0.46
1:G:59:TRP:HD1	1:G:62:PHE:CD2	2.33	0.46
1:H:58:PRO:HG3	1:H:66:PRO:HA	1.98	0.46
1:F:17:HIS:O	1:F:373:VAL:HG22	2.15	0.46
1:B:93:MET:HA	1:B:93:MET:CE	2.46	0.46
1:G:247:LEU:HD22	1:G:269:GLY:C	2.36	0.46
1:B:13:MET:CE	1:B:15:LEU:HD11	2.43	0.46
1:D:185:LEU:C	1:D:185:LEU:HD23	2.36	0.46
1:C:275:MET:HB2	1:C:302:MET:CE	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:252:VAL:HG11	1:F:258:MET:HG2	1.98	0.46
1:B:131:GLY:N	4:B:424:HOH:O	2.44	0.45
1:A:85:ARG:HH11	1:A:85:ARG:HG2	1.81	0.45
1:C:133:LYS:HE3	1:C:136:ASP:OD1	2.16	0.45
1:E:173:PHE:CE1	1:E:174:ARG:HG3	2.52	0.45
1:G:228:ARG:HG2	4:G:395:HOH:O	2.16	0.45
1:B:280:LEU:N	1:B:280:LEU:HD12	2.31	0.45
1:E:130:LEU:HD11	1:E:280:LEU:HD23	1.97	0.45
1:F:227:VAL:CG1	1:F:231:HIS:CD2	3.00	0.45
1:C:58:PRO:HB2	1:C:64:GLY:O	2.17	0.45
1:E:13:MET:HE3	1:E:74:ASP:HA	1.99	0.45
1:G:61:VAL:HG23	1:G:62:PHE:CD1	2.52	0.45
1:B:199:TYR:HB2	1:B:226:PRO:HA	1.99	0.45
1:E:272:ILE:CD1	1:E:287:ALA:HB2	2.47	0.45
1:E:309:HIS:CE1	1:E:331:ALA:H	2.28	0.45
1:H:62:PHE:CZ	1:H:250:GLU:HG3	2.51	0.45
1:F:89:ARG:NH1	1:F:111:ASP:OD1	2.47	0.45
1:E:65:THR:HB	1:E:66:PRO:HD2	1.99	0.45
1:H:272:ILE:CD1	1:H:287:ALA:HB2	2.46	0.45
1:B:272:ILE:CD1	1:B:287:ALA:HB2	2.47	0.45
1:C:275:MET:HB2	1:C:302:MET:HE3	1.99	0.45
1:E:164:VAL:O	1:E:193:PHE:HE1	1.99	0.45
1:F:139:PRO:HA	1:F:350:GLN:NE2	2.31	0.45
1:A:89:ARG:NH2	1:B:131:GLY:HA2	2.28	0.44
1:B:227:VAL:H	1:B:235:MET:CE	2.21	0.44
1:E:22:VAL:HG11	1:E:334:PHE:CE2	2.52	0.44
1:G:13:MET:HE2	1:G:78:ARG:NH2	2.31	0.44
1:H:17:HIS:O	1:H:373:VAL:HG22	2.17	0.44
1:H:185:LEU:C	1:H:185:LEU:HD23	2.37	0.44
1:E:8:GLN:NE2	1:E:121:ILE:HD12	2.32	0.44
1:C:93:MET:CE	1:C:110:LEU:HG	2.35	0.44
1:H:15:LEU:HD12	1:H:74:ASP:HB2	1.98	0.44
1:H:73:LEU:HD23	1:H:77:LEU:HD12	2.00	0.44
1:G:156:MET:CE	1:G:167:ILE:HD13	2.47	0.44
1:H:310:LEU:HD11	1:H:361:ALA:HB3	1.99	0.44
1:B:309:HIS:CG	1:B:328:PHE:HB3	2.53	0.44
1:D:59:TRP:CD1	1:D:62:PHE:CD2	3.06	0.44
1:B:227:VAL:HG22	1:B:235:MET:CE	2.47	0.44
1:E:59:TRP:HD1	1:E:62:PHE:CD2	2.35	0.44
1:F:139:PRO:HA	1:F:350:GLN:HE22	1.83	0.44
1:C:8:GLN:HE21	1:C:46:ALA:CB	2.29	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:13:MET:HE2	1:H:78:ARG:NH2	2.33	0.44
1:A:131:GLY:CA	1:B:89:ARG:HH21	2.25	0.44
1:A:199:TYR:HB2	1:A:226:PRO:HA	1.98	0.44
1:H:62:PHE:CZ	1:H:250:GLU:HA	2.53	0.44
1:H:287:ALA:HB2	1:H:322:ILE:HD11	2.00	0.43
1:H:302:MET:O	1:H:304:GLU:HG2	2.17	0.43
1:A:364:ASP:OD2	1:A:367:LYS:HG3	2.18	0.43
1:C:133:LYS:NZ	1:C:133:LYS:CB	2.80	0.43
1:E:192:GLU:CD	1:E:192:GLU:H	2.21	0.43
1:G:375:ARG:HG2	1:G:375:ARG:HH11	1.82	0.43
1:F:201:GLN:NE2	1:F:250:GLU:CG	2.80	0.43
1:E:13:MET:HE2	1:E:78:ARG:NH2	2.33	0.43
1:G:13:MET:CE	1:G:74:ASP:HA	2.48	0.43
1:D:17:HIS:O	1:D:373:VAL:HG22	2.18	0.43
1:F:166:LEU:HD23	1:F:194:ARG:HB2	1.99	0.43
1:A:156:MET:HE3	1:A:167:ILE:HD13	2.01	0.43
1:A:181:MET:HE2	1:A:181:MET:O	2.19	0.43
1:F:10:ILE:CD1	1:F:86:VAL:HG22	2.48	0.43
1:D:93:MET:HA	1:D:93:MET:CE	2.48	0.43
1:D:180:ILE:O	1:D:184:GLU:HG3	2.19	0.43
1:E:154:ALA:O	1:E:157:GLU:HB2	2.19	0.43
1:G:166:LEU:HD23	1:G:194:ARG:HB2	2.01	0.43
1:A:134:CYS:HA	1:B:91:ALA:HB2	2.00	0.43
1:E:93:MET:HE3	1:E:110:LEU:CG	2.37	0.43
1:E:235:MET:HE2	1:E:246:LEU:HD11	2.01	0.43
1:H:180:ILE:HD12	1:H:218:PHE:HE2	1.84	0.43
1:C:78:ARG:N	1:C:79:PRO:HD2	2.33	0.43
1:C:131:GLY:HA2	1:E:89:ARG:NH2	2.34	0.43
1:C:131:GLY:HA2	1:E:89:ARG:HH21	1.84	0.42
1:D:80:LEU:O	1:D:84:ARG:HG3	2.18	0.42
1:D:310:LEU:HD11	1:D:361:ALA:HB3	2.01	0.42
1:E:89:ARG:NH1	1:E:111:ASP:OD1	2.49	0.42
1:E:156:MET:CE	1:E:167:ILE:HD13	2.49	0.42
1:F:13:MET:CE	1:F:74:ASP:HA	2.49	0.42
1:G:280:LEU:N	1:G:280:LEU:HD12	2.33	0.42
1:H:166:LEU:HD23	1:H:194:ARG:HB2	2.01	0.42
1:C:156:MET:HE3	1:C:167:ILE:HD13	2.02	0.42
1:H:13:MET:HG3	1:H:42:LEU:HD11	2.00	0.42
1:D:156:MET:HE3	1:D:167:ILE:CD1	2.46	0.42
1:F:91:ALA:HB2	1:H:134:CYS:HA	2.01	0.42
1:F:227:VAL:HG12	1:F:228:ARG:H	1.78	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:375:ARG:HH11	1:D:375:ARG:HG2	1.83	0.42
1:E:280:LEU:HD12	1:E:280:LEU:N	2.34	0.42
1:G:89:ARG:NH1	1:G:111:ASP:OD1	2.46	0.42
1:A:153:ILE:O	1:A:157:GLU:HG2	2.20	0.42
1:B:168:LYS:HD2	1:B:198:ASP:HB2	2.01	0.42
1:C:133:LYS:NZ	1:C:133:LYS:HB2	2.35	0.42
1:C:156:MET:HE2	1:C:193:PHE:CD2	2.54	0.42
1:D:156:MET:HE1	1:D:186:ILE:HG12	2.00	0.42
1:H:8:GLN:NE2	1:H:121:ILE:HD12	2.29	0.42
1:H:104:THR:O	1:H:278:GLY:HA2	2.20	0.42
1:A:166:LEU:HD23	1:A:194:ARG:HB2	2.01	0.42
1:B:56:ALA:C	1:B:58:PRO:HD3	2.40	0.42
1:D:247:LEU:HD22	1:D:269:GLY:C	2.40	0.42
1:D:297:ALA:HB1	1:D:322:ILE:HD13	2.01	0.42
1:E:13:MET:CE	1:E:74:ASP:HA	2.48	0.42
1:F:131:GLY:HA2	1:H:89:ARG:HH21	1.85	0.42
1:H:43:ARG:HB2	1:H:53:PHE:CE1	2.54	0.42
1:A:156:MET:HE3	1:A:193:PHE:CE2	2.54	0.42
1:B:276:LYS:HG3	1:B:302:MET:HE2	2.02	0.42
1:E:155:LEU:O	1:E:159:LEU:HG	2.20	0.42
1:G:56:ALA:O	1:G:58:PRO:HD3	2.20	0.42
1:D:173:PHE:CE1	1:D:174:ARG:HG3	2.55	0.42
1:G:181:MET:O	1:G:181:MET:CE	2.68	0.42
1:G:181:MET:HE1	1:G:182:ARG:HA	2.01	0.42
1:F:369:GLU:OE2	1:F:375:ARG:NE	2.53	0.42
1:A:92:ILE:HG22	1:A:93:MET:CE	2.50	0.42
1:F:20:LEU:HA	1:F:21:PRO:HD3	1.87	0.42
1:F:227:VAL:HG12	1:F:231:HIS:CD2	2.55	0.42
1:A:53:PHE:HB3	1:A:307:LEU:HD21	2.01	0.41
1:A:89:ARG:NH1	1:A:111:ASP:OD1	2.51	0.41
1:A:91:ALA:HB2	1:B:134:CYS:HA	2.01	0.41
1:D:13:MET:HG3	1:D:42:LEU:CD1	2.50	0.41
1:H:13:MET:HE3	1:H:15:LEU:HD11	2.01	0.41
1:C:127:TRP:CZ2	1:C:133:LYS:HD2	2.55	0.41
1:C:192:GLU:CD	1:C:192:GLU:H	2.24	0.41
1:B:133:LYS:HE2	1:B:136:ASP:OD1	2.20	0.41
1:D:89:ARG:CZ	1:D:115:LEU:HD21	2.50	0.41
1:D:364:ASP:HB3	1:D:367:LYS:HG3	2.02	0.41
1:F:104:THR:O	1:F:278:GLY:HA2	2.20	0.41
1:F:127:TRP:CH2	1:F:133:LYS:HD2	2.55	0.41
1:G:156:MET:HE3	1:G:193:PHE:CD2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:201:GLN:HB2	1:H:228:ARG:HA	2.02	0.41
1:A:116:ASP:O	1:A:120:ARG:HG2	2.20	0.41
1:E:249:ASP:HB3	1:E:250:GLU:OE1	2.20	0.41
1:H:200:ASN:O	1:H:201:GLN:HG2	2.20	0.41
1:C:185:LEU:HD23	1:C:185:LEU:O	2.21	0.41
1:C:309:HIS:CG	1:C:328:PHE:HB3	2.56	0.41
1:E:59:TRP:HA	1:E:59:TRP:CE3	2.56	0.41
1:F:73:LEU:HG	1:F:106:ALA:HB1	2.03	0.41
1:E:92:ILE:HG22	1:E:93:MET:CE	2.51	0.41
1:C:126:VAL:HB	1:C:314:HIS:CG	2.55	0.41
1:C:209:VAL:N	1:C:210:PRO:HD2	2.35	0.41
1:F:225:GLN:HA	1:F:235:MET:HE2	2.02	0.41
1:H:304:GLU:HG3	1:H:309:HIS:CD2	2.56	0.41
1:A:253:TYR:HA	1:A:276:LYS:HB3	2.03	0.41
1:B:127:TRP:CH2	1:B:133:LYS:HD2	2.56	0.41
1:C:166:LEU:HD23	1:C:194:ARG:HB2	2.03	0.41
1:D:104:THR:O	1:D:278:GLY:HA2	2.21	0.41
1:D:131:GLY:HA2	1:G:89:ARG:NH2	2.35	0.41
1:D:201:GLN:NE2	1:D:250:GLU:HG2	2.36	0.41
1:E:116:ASP:O	1:E:120:ARG:HG2	2.21	0.41
1:E:368:LEU:O	1:E:372:ALA:HB2	2.21	0.41
1:F:93:MET:CE	1:F:110:LEU:HD23	2.50	0.41
1:F:185:LEU:C	1:F:185:LEU:HD23	2.41	0.41
1:G:127:TRP:CE2	1:G:133:LYS:HD2	2.56	0.41
1:G:375:ARG:HG2	1:G:375:ARG:NH1	2.36	0.41
1:A:13:MET:HG3	1:A:42:LEU:CD1	2.51	0.41
1:G:56:ALA:C	1:G:58:PRO:HD3	2.41	0.41
1:A:61:VAL:HG23	1:A:62:PHE:CD1	2.56	0.40
1:D:153:ILE:O	1:D:157:GLU:HG2	2.21	0.40
1:G:59:TRP:CD1	1:G:62:PHE:CD2	3.09	0.40
1:C:249:ASP:HB3	1:C:250:GLU:OE1	2.22	0.40
1:D:280:LEU:N	1:D:280:LEU:HD12	2.36	0.40
1:E:182:ARG:O	1:E:186:ILE:HG13	2.21	0.40
1:A:302:MET:O	1:A:304:GLU:HG2	2.21	0.40
1:A:309:HIS:CE1	1:A:331:ALA:H	2.29	0.40
1:B:156:MET:HE2	1:B:193:PHE:HE2	1.87	0.40
1:B:341:GLU:HG2	1:B:364:ASP:HB2	2.02	0.40
1:C:160:ARG:HD3	1:C:192:GLU:OE1	2.21	0.40
1:E:43:ARG:HG3	1:E:53:PHE:CZ	2.56	0.40
1:E:92:ILE:HG22	1:E:93:MET:HE2	2.03	0.40
1:A:156:MET:HE1	1:A:186:ILE:HG12	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:156:MET:HE2	1:D:193:PHE:HE2	1.86	0.40
1:B:57:SER:OG	1:B:304:GLU:HB3	2.21	0.40
1:F:253:TYR:HA	1:F:276:LYS:HB3	2.04	0.40
1:H:149:PHE:HE2	1:H:185:LEU:HD13	1.87	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	352/385 (91%)	343 (97%)	9 (3%)	0	100	100
1	B	352/385 (91%)	341 (97%)	11 (3%)	0	100	100
1	C	352/385 (91%)	341 (97%)	11 (3%)	0	100	100
1	D	352/385 (91%)	339 (96%)	13 (4%)	0	100	100
1	E	352/385 (91%)	342 (97%)	10 (3%)	0	100	100
1	F	352/385 (91%)	342 (97%)	10 (3%)	0	100	100
1	G	352/385 (91%)	343 (97%)	9 (3%)	0	100	100
1	H	352/385 (91%)	341 (97%)	11 (3%)	0	100	100
All	All	2816/3080 (91%)	2732 (97%)	84 (3%)	0	100	100

There are no Ramachandran outliers to report.

### 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	277/299 (93%)	273 (99%)	4 (1%)	67	53
1	B	277/299 (93%)	271 (98%)	6 (2%)	52	34
1	C	277/299 (93%)	273 (99%)	4 (1%)	67	53
1	D	277/299 (93%)	272 (98%)	5 (2%)	59	43
1	E	277/299 (93%)	274 (99%)	3 (1%)	73	63
1	F	277/299 (93%)	272 (98%)	5 (2%)	59	43
1	G	277/299 (93%)	273 (99%)	4 (1%)	67	53
1	H	277/299 (93%)	275 (99%)	2 (1%)	84	77
All	All	2216/2392 (93%)	2183 (98%)	33 (2%)	65	51

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	85	ARG
1	A	181	MET
1	A	301	ASP
1	A	315	MET
1	B	130	LEU
1	B	181	MET
1	B	214	ASP
1	B	246	LEU
1	B	301	ASP
1	B	304	GLU
1	C	133	LYS
1	C	181	MET
1	C	301	ASP
1	C	304	GLU
1	D	181	MET
1	D	214	ASP
1	D	301	ASP
1	D	304	GLU
1	D	315	MET
1	E	181	MET
1	E	214	ASP
1	E	301	ASP
1	F	181	MET
1	F	235	MET
1	F	258	MET

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Mol	Chain	Res	Type
1	F	301	ASP
1	F	336	ASN
1	G	129	LEU
1	G	181	MET
1	G	214	ASP
1	G	301	ASP
1	H	214	ASP
1	H	301	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	200	ASN
1	A	309	HIS
1	A	350	GLN
1	B	309	HIS
1	C	8	GLN
1	C	309	HIS
1	C	370	HIS
1	D	102	HIS
1	D	123	ASN
1	D	200	ASN
1	D	309	HIS
1	D	350	GLN
1	E	309	HIS
1	F	8	GLN
1	F	309	HIS
1	F	336	ASN
1	F	350	GLN
1	G	8	GLN
1	G	200	ASN
1	G	309	HIS
1	G	350	GLN
1	H	309	HIS
1	H	350	GLN

### 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 16 ligands modelled in this entry, 16 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

### 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, 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	356/385 (92%)	0.33	13 (3%) 41 46	20, 31, 44, 54	0
1	B	356/385 (92%)	0.31	13 (3%) 41 46	21, 31, 46, 67	0
1	C	356/385 (92%)	0.39	16 (4%) 33 37	23, 34, 46, 59	0
1	D	356/385 (92%)	0.35	16 (4%) 33 37	21, 32, 50, 61	0
1	E	356/385 (92%)	0.42	22 (6%) 20 23	21, 34, 49, 57	0
1	F	356/385 (92%)	0.29	13 (3%) 41 46	21, 32, 44, 56	0
1	G	356/385 (92%)	0.13	9 (2%) 57 61	19, 27, 41, 52	0
1	H	356/385 (92%)	0.53	31 (8%) 10 11	22, 35, 55, 65	0
All	All	2848/3080 (92%)	0.34	133 (4%) 31 35	19, 32, 48, 67	0

All (133) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	62	PHE	6.1
1	E	153	ILE	5.5
1	H	6	LEU	5.0
1	E	62	PHE	4.7
1	B	375	ARG	4.7
1	H	49	GLY	4.6
1	C	62	PHE	4.6
1	E	178	PHE	4.5
1	A	62	PHE	4.5
1	E	174	ARG	4.4
1	F	235	MET	4.4
1	H	366	GLU	4.3
1	H	80	LEU	4.3
1	C	80	LEU	4.3
1	H	334	PHE	4.2
1	E	375	ARG	4.0

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	G	62	PHE	4.0
1	H	7	GLU	3.9
1	D	46	ALA	3.9
1	C	375	ARG	3.9
1	B	7	GLU	3.8
1	H	11	ILE	3.8
1	F	375	ARG	3.6
1	H	375	ARG	3.6
1	A	174	ARG	3.5
1	H	59	TRP	3.5
1	D	375	ARG	3.5
1	H	369	GLU	3.4
1	B	130	LEU	3.4
1	B	62	PHE	3.3
1	C	48	GLY	3.3
1	H	16	TRP	3.2
1	H	85	ARG	3.2
1	F	62	PHE	3.1
1	H	62	PHE	3.1
1	E	59	TRP	3.1
1	H	370	HIS	3.1
1	H	9	LYS	3.0
1	E	187	ALA	3.0
1	D	16	TRP	3.0
1	A	178	PHE	2.9
1	H	150	ASP	2.8
1	H	373	VAL	2.8
1	A	334	PHE	2.8
1	F	85	ARG	2.8
1	F	366	GLU	2.8
1	D	59	TRP	2.7
1	E	190	PHE	2.7
1	A	272	ILE	2.7
1	A	59	TRP	2.7
1	H	53	PHE	2.7
1	C	188	ARG	2.6
1	E	192	GLU	2.6
1	E	366	GLU	2.6
1	E	180	ILE	2.6
1	E	189	ASP	2.6
1	C	59	TRP	2.6
1	E	150	ASP	2.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	H	336	ASN	2.6
1	E	369	GLU	2.6
1	H	83	GLY	2.6
1	F	280	LEU	2.6
1	D	50	ALA	2.5
1	D	345	ARG	2.5
1	E	16	TRP	2.5
1	H	10	ILE	2.5
1	E	80	LEU	2.5
1	E	177	ALA	2.5
1	D	336	ASN	2.5
1	G	80	LEU	2.5
1	E	173	PHE	2.4
1	D	315	MET	2.4
1	G	59	TRP	2.4
1	F	188	ARG	2.4
1	A	275	MET	2.4
1	H	174	ARG	2.4
1	A	366	GLU	2.4
1	D	369	GLU	2.4
1	D	121	ILE	2.4
1	G	362	ARG	2.4
1	G	97	ALA	2.4
1	H	192	GLU	2.3
1	A	280	LEU	2.3
1	C	82	ILE	2.3
1	E	342	THR	2.3
1	H	21	PRO	2.3
1	D	48	GLY	2.3
1	E	368	LEU	2.3
1	E	355	ASP	2.3
1	B	274	ILE	2.3
1	F	274	ILE	2.3
1	C	315	MET	2.3
1	H	121	ILE	2.2
1	B	275	MET	2.2
1	C	8	GLN	2.2
1	E	362	ARG	2.2
1	G	375	ARG	2.2
1	D	365	PRO	2.2
1	B	336	ASN	2.2
1	A	274	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	362	ARG	2.2
1	F	258	MET	2.2
1	B	80	LEU	2.2
1	F	80	LEU	2.2
1	B	316	ILE	2.1
1	C	85	ARG	2.1
1	C	316	ILE	2.1
1	C	47	GLU	2.1
1	D	82	ILE	2.1
1	F	11	ILE	2.1
1	H	48	GLY	2.1
1	H	145	ALA	2.1
1	B	272	ILE	2.1
1	H	289	ILE	2.1
1	H	371	TYR	2.1
1	A	108	ALA	2.1
1	A	177	ALA	2.1
1	C	22	VAL	2.1
1	G	83	GLY	2.1
1	D	11	ILE	2.1
1	F	9	LYS	2.0
1	A	315	MET	2.0
1	B	48	GLY	2.0
1	B	154	ALA	2.0
1	G	275	MET	2.0
1	H	12	ALA	2.0
1	C	241	LEU	2.0
1	D	174	ARG	2.0
1	F	6	LEU	2.0
1	G	45	VAL	2.0
1	B	280	LEU	2.0
1	H	130	LEU	2.0
1	C	83	GLY	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 [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
2	MG	H	386	1/1	0.82	0.08	39,39,39,39	0
2	MG	B	386	1/1	0.85	0.07	36,36,36,36	0
2	MG	F	386	1/1	0.88	0.05	33,33,33,33	0
2	MG	C	386	1/1	0.91	0.04	40,40,40,40	0
2	MG	A	386	1/1	0.92	0.04	36,36,36,36	0
2	MG	E	386	1/1	0.93	0.11	36,36,36,36	0
2	MG	G	386	1/1	0.94	0.06	30,30,30,30	0
3	NA	H	387	1/1	0.95	0.05	28,28,28,28	0
3	NA	D	387	1/1	0.96	0.06	31,31,31,31	0
2	MG	D	386	1/1	0.96	0.04	37,37,37,37	0
3	NA	A	387	1/1	0.97	0.06	28,28,28,28	0
3	NA	E	387	1/1	0.97	0.06	27,27,27,27	0
3	NA	C	387	1/1	0.97	0.06	31,31,31,31	0
3	NA	G	387	1/1	0.98	0.06	23,23,23,23	0
3	NA	B	387	1/1	0.98	0.05	25,25,25,25	0
3	NA	F	387	1/1	0.99	0.04	26,26,26,26	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.