



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 2, 2024 – 09:56 AM EST

PDB ID : 1KUT  
Title : Structural Genomics, Protein TM1243, (SAICAR synthetase)  
Authors : Zhang, R.; Skarina, T.; Beasley, S.; Edwards, A.; Joachimiak, A.; Savchenko, A.; Midwest Center for Structural Genomics (MCSG)  
Deposited on : 2002-01-22  
Resolution : 2.20 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 1.21  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.004 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

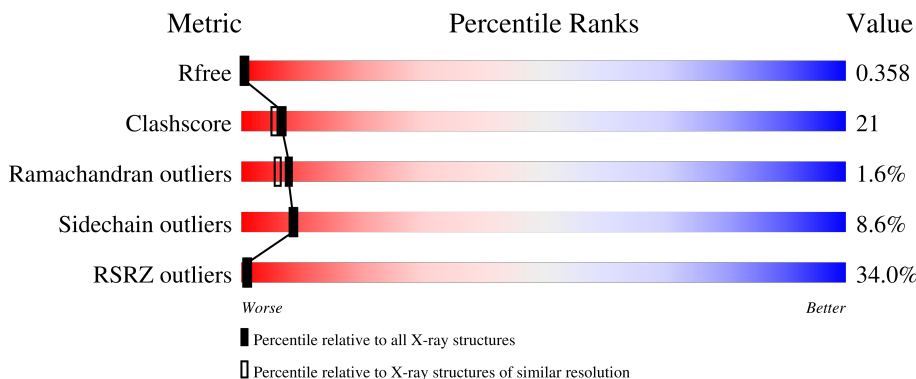
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.20 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	5791 (2.20-2.20)
Clashscore	180529	6634 (2.20-2.20)
Ramachandran outliers	177936	6560 (2.20-2.20)
Sidechain outliers	177891	6561 (2.20-2.20)
RSRZ outliers	164620	5791 (2.20-2.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ .

Mol	Chain	Length	Quality of chain
1	A	230	
1	B	230	

## 2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 3583 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 Phosphoribosylaminoimidazole-succinocarboxamide synthase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	213	1718	1109	286	316	3	4	0	0	0
1	B	222	1784	1149	298	330	3	4	0	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	MET	modified residue	UNP Q9X0X0
A	51	MSE	MET	modified residue	UNP Q9X0X0
A	79	MSE	MET	modified residue	UNP Q9X0X0
A	124	MSE	MET	modified residue	UNP Q9X0X0
A	144	MSE	MET	modified residue	UNP Q9X0X0
B	1	MSE	MET	modified residue	UNP Q9X0X0
B	51	MSE	MET	modified residue	UNP Q9X0X0
B	79	MSE	MET	modified residue	UNP Q9X0X0
B	124	MSE	MET	modified residue	UNP Q9X0X0
B	144	MSE	MET	modified residue	UNP Q9X0X0

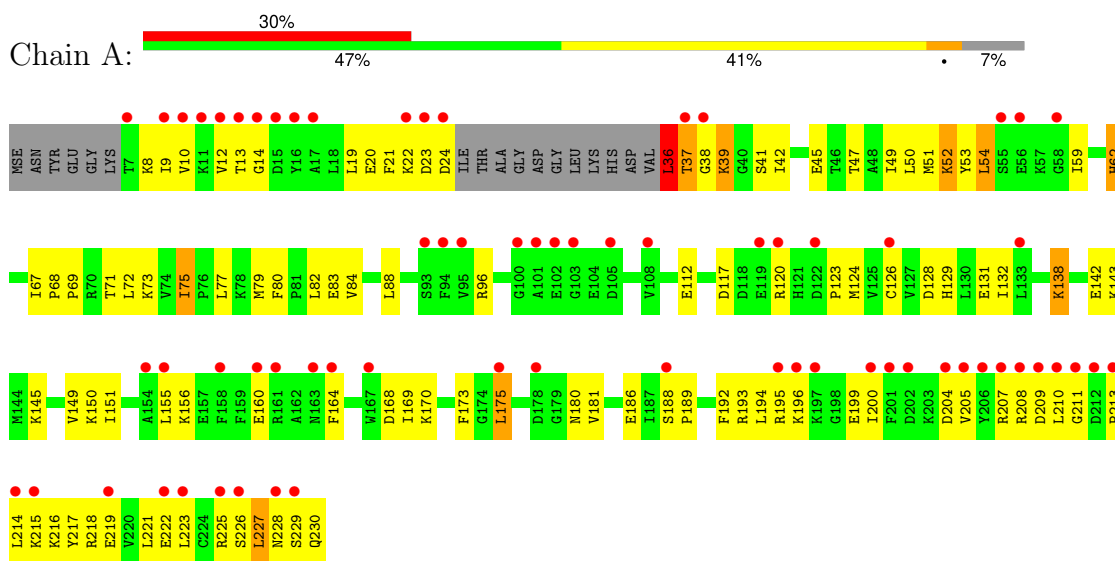
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	42	Total	O	0	0
			42	42		
2	B	39	Total	O	0	0
			39	39		

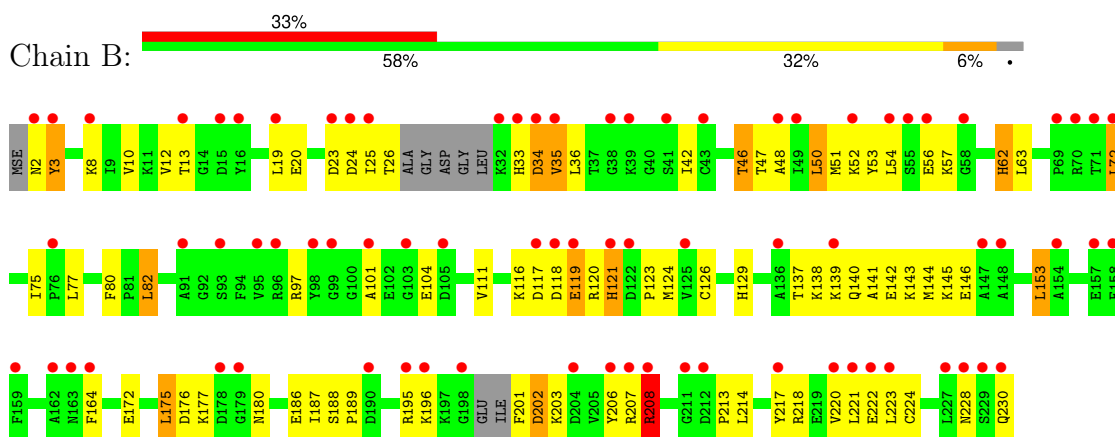
### 3 Residue-property plots

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. 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. 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: Phosphoribosylaminoimidazole-succinocarboxamide synthase



- Molecule 1: Phosphoribosylaminoimidazole-succinocarboxamide synthase



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	63.51Å 43.07Å 80.22Å 90.00° 92.30° 90.00°	Depositor
Resolution (Å)	10.00 – 2.20 10.00 – 2.20	Depositor EDS
% Data completeness (in resolution range)	82.0 (10.00-2.20) 96.7 (10.00-2.20)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.55 (at 2.01Å)	Xtrriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.245 , 0.281 0.363 , 0.358	Depositor DCC
$R_{free}$ test set	1087 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.1	Xtrriage
Anisotropy	0.369	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.51 , 82.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.048 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.82	EDS
Total number of atoms	3583	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	29.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.21% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality i

### 5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.44	0/1744	0.72	3/2334 (0.1%)
1	B	0.46	0/1811	1.37	10/2425 (0.4%)
All	All	0.45	0/3555	1.10	13/4759 (0.3%)

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	B	0	1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	208	ARG	NE-CZ-NH1	-34.03	103.29	120.30
1	B	208	ARG	NE-CZ-NH2	28.74	134.67	120.30
1	B	207	ARG	NE-CZ-NH2	-25.71	107.44	120.30
1	B	207	ARG	NE-CZ-NH1	24.04	132.32	120.30
1	A	36	LEU	CB-CG-CD2	9.85	127.75	111.00
1	A	36	LEU	CB-CG-CD1	-9.23	95.31	111.00
1	B	207	ARG	CD-NE-CZ	7.87	134.62	123.60
1	B	208	ARG	CA-CB-CG	6.53	127.76	113.40
1	B	207	ARG	CG-CD-NE	6.42	125.27	111.80
1	B	208	ARG	CG-CD-NE	6.31	125.05	111.80
1	B	207	ARG	CA-CB-CG	6.19	127.01	113.40
1	B	208	ARG	CB-CG-CD	-6.05	95.86	111.60
1	A	36	LEU	CA-CB-CG	5.78	128.59	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	208	ARG	Sidechain

## 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	1718	0	1775	81	0
1	B	1784	0	1823	72	0
2	A	42	0	0	1	0
2	B	39	0	0	3	0
All	All	3583	0	3598	149	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 21.

All (149) 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:B:51:MSE:HE3	1:B:63:LEU:HB2	1.53	0.91
1:A:37:THR:HG22	1:A:214:LEU:HD13	1.58	0.85
1:B:46:THR:HG22	1:B:221:LEU:HD13	1.58	0.84
1:B:121:HIS:O	1:B:123:PRO:HD3	1.77	0.83
1:B:126:CYS:H	1:B:129:HIS:HD2	1.24	0.82
1:B:36:LEU:HD11	1:B:213:PRO:HB2	1.61	0.82
1:B:42:ILE:O	1:B:46:THR:HG23	1.80	0.82
1:A:37:THR:CG2	1:A:214:LEU:HD13	2.10	0.81
1:B:47:THR:HG22	1:B:51:MSE:HE2	1.62	0.81
1:A:156:LYS:O	1:A:160:GLU:HG3	1.79	0.81
1:B:42:ILE:HD12	1:B:214:LEU:HD11	1.63	0.80
1:A:168:ASP:OD1	1:A:193:ARG:HG3	1.82	0.80
1:A:189:PRO:HB3	1:A:216:LYS:HE2	1.61	0.79
1:A:54:LEU:HD21	1:A:151:ILE:HG23	1.68	0.76
1:B:42:ILE:HG21	1:B:217:TYR:HB3	1.67	0.76
1:A:218:ARG:O	1:A:222:GLU:HG3	1.86	0.76
1:B:52:LYS:O	1:B:56:GLU:HG2	1.87	0.74
1:B:51:MSE:CE	1:B:63:LEU:HB2	2.17	0.74
1:A:227:LEU:C	1:A:229:SER:H	1.90	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:126:CYS:H	1:B:129:HIS:CD2	2.05	0.73
1:A:84:VAL:HG11	1:A:173:PHE:HE1	1.54	0.72
1:A:225:ARG:O	1:A:230:GLN:HB2	1.91	0.71
1:A:209:ASP:OD1	1:A:215:LYS:HD3	1.91	0.71
1:A:10:VAL:HG22	1:A:19:LEU:HD13	1.73	0.70
1:B:142:GLU:O	1:B:146:GLU:HG3	1.92	0.68
1:A:225:ARG:C	1:A:230:GLN:HB2	2.15	0.68
1:A:42:ILE:HG23	1:A:221:LEU:HD22	1.77	0.67
1:B:218:ARG:O	1:B:222:GLU:HG3	1.95	0.66
1:A:83:GLU:HG2	1:A:170:LYS:HE2	1.77	0.65
1:A:128:ASP:O	1:A:132:ILE:HD13	1.97	0.65
1:B:189:PRO:HG3	1:B:220:VAL:HG21	1.79	0.64
1:A:138:LYS:O	1:A:142:GLU:HB2	1.99	0.63
1:A:145:LYS:O	1:A:149:VAL:HG23	2.00	0.62
1:A:39:LYS:HB3	1:A:214:LEU:HD11	1.82	0.62
1:A:169:ILE:HG13	1:A:192:PHE:HB3	1.82	0.62
1:A:96:ARG:O	1:B:120:ARG:HD3	1.99	0.62
1:B:3:TYR:HB3	1:B:10:VAL:HG12	1.81	0.61
1:A:208:ARG:HG3	1:A:209:ASP:N	2.15	0.61
1:A:84:VAL:HG11	1:A:173:PHE:CE1	2.36	0.61
1:B:34:ASP:CG	1:B:35:VAL:H	2.03	0.61
1:A:131:GLU:CD	1:A:138:LYS:HD3	2.20	0.61
1:B:23:ASP:HB3	1:B:36:LEU:O	2.00	0.59
1:B:25:ILE:HG22	1:B:26:THR:N	2.17	0.59
1:B:137:THR:OG1	1:B:140:GLN:HG3	2.02	0.59
1:A:8:LYS:HB2	1:A:20:GLU:O	2.04	0.58
1:B:62:HIS:HB3	1:B:77:LEU:HD11	1.86	0.58
1:A:200:ILE:O	1:A:200:ILE:HG13	2.04	0.57
1:A:52:LYS:O	1:A:52:LYS:HD3	2.04	0.57
1:A:205:VAL:O	1:A:209:ASP:HB3	2.05	0.56
1:B:2:ASN:O	1:B:3:TYR:HB2	2.05	0.56
1:A:227:LEU:C	1:A:229:SER:N	2.56	0.56
1:A:9:ILE:HG23	1:A:22:LYS:NZ	2.21	0.55
1:A:194:LEU:C	1:A:195:ARG:HD3	2.28	0.55
1:B:177:LYS:HG3	2:B:315:HOH:O	2.08	0.54
1:B:33:HIS:ND1	1:B:34:ASP:N	2.55	0.54
1:B:119:GLU:C	1:B:121:HIS:H	2.11	0.54
1:B:139:LYS:HE3	1:B:143:LYS:NZ	2.23	0.54
1:A:8:LYS:HB3	1:A:21:PHE:HA	1.89	0.54
1:A:41:SER:HA	1:A:69:PRO:O	2.07	0.54
1:A:188:SER:HB2	1:A:189:PRO:HD2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:131:GLU:OE1	1:A:138:LYS:HD3	2.07	0.54
1:B:82:LEU:O	1:B:172:GLU:HG2	2.08	0.54
1:A:67:ILE:HD11	1:A:73:LYS:HB2	1.89	0.54
1:A:143:LYS:HB3	1:A:181:VAL:HG21	1.89	0.54
1:B:3:TYR:HB3	1:B:10:VAL:CG1	2.37	0.54
1:A:188:SER:HB2	1:A:189:PRO:CD	2.37	0.54
1:B:195:ARG:HG3	1:B:195:ARG:HH11	1.70	0.54
1:A:45:GLU:O	1:A:49:ILE:HG13	2.08	0.54
1:B:8:LYS:HD2	1:B:19:LEU:HD11	1.90	0.53
1:A:123:PRO:HG3	1:B:97:ARG:O	2.09	0.53
1:A:126:CYS:H	1:A:129:HIS:CD2	2.26	0.53
1:A:112:GLU:OE2	1:B:129:HIS:HE1	1.91	0.53
1:A:156:LYS:HE2	1:A:160:GLU:OE2	2.09	0.53
1:B:75:ILE:O	1:B:75:ILE:HG13	2.09	0.53
1:A:42:ILE:HG23	1:A:221:LEU:CD2	2.38	0.52
1:A:62:HIS:HA	1:A:75:ILE:HG23	1.91	0.52
1:A:12:VAL:HG12	1:A:14:GLY:H	1.75	0.52
1:A:47:THR:O	1:A:51:MSE:HB2	2.10	0.51
1:B:63:LEU:HD13	1:B:72:LEU:HG	1.93	0.51
1:A:189:PRO:HB2	1:A:217:TYR:CE2	2.46	0.50
1:B:2:ASN:HB2	1:B:10:VAL:O	2.12	0.50
1:A:62:HIS:HB3	1:A:77:LEU:HD11	1.94	0.50
1:A:208:ARG:HG3	1:A:208:ARG:HH11	1.76	0.50
1:A:214:LEU:HA	1:A:217:TYR:HD1	1.76	0.50
1:B:53:TYR:O	1:B:57:LYS:HG3	2.12	0.49
1:A:169:ILE:CG1	1:A:192:PHE:HB3	2.42	0.49
1:B:175:LEU:HA	1:B:180:ASN:O	2.12	0.49
1:B:117:ASP:O	1:B:121:HIS:O	2.31	0.49
1:A:208:ARG:HG3	1:A:208:ARG:NH1	2.27	0.49
1:B:118:ASP:OD2	1:B:118:ASP:N	2.46	0.48
1:B:201:PHE:O	1:B:202:ASP:C	2.50	0.48
1:A:207:ARG:O	1:A:210:LEU:HB3	2.14	0.48
1:B:24:ASP:O	1:B:25:ILE:HD13	2.13	0.48
1:B:223:LEU:C	1:B:223:LEU:HD23	2.34	0.48
1:B:46:THR:HG22	1:B:221:LEU:CD1	2.40	0.47
1:B:46:THR:HG21	2:B:310:HOH:O	2.13	0.47
1:A:226:SER:HA	1:A:230:GLN:HB3	1.96	0.47
1:B:195:ARG:CZ	1:B:195:ARG:HB2	2.44	0.47
1:A:117:ASP:OD2	1:A:120:ARG:HD2	2.14	0.47
1:B:13:THR:HG23	1:B:13:THR:O	2.15	0.46
1:B:111:VAL:HG11	1:B:145:LYS:HG2	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:ARG:O	1:A:210:LEU:CB	2.63	0.46
1:B:188:SER:HB2	1:B:189:PRO:HD2	1.97	0.46
1:B:224:CYS:O	1:B:228:ASN:HB2	2.16	0.46
1:A:80:PHE:CE2	1:A:175:LEU:HD13	2.51	0.45
1:A:227:LEU:O	1:A:229:SER:N	2.48	0.45
1:A:164:PHE:HB3	1:A:194:LEU:HD11	1.98	0.45
1:A:8:LYS:NZ	1:A:186:GLU:OE1	2.47	0.45
1:B:141:ALA:HA	1:B:144:MSE:HE3	1.97	0.45
1:A:59:ILE:HD11	1:A:150:LYS:HE2	1.98	0.45
1:A:37:THR:HG21	1:A:214:LEU:HD13	1.96	0.45
1:A:42:ILE:HG23	1:A:221:LEU:HB2	1.98	0.45
1:B:80:PHE:HE1	1:B:175:LEU:HD13	1.82	0.45
1:B:164:PHE:CD1	1:B:223:LEU:HD11	2.52	0.45
1:B:188:SER:HB2	1:B:189:PRO:CD	2.46	0.44
1:B:164:PHE:CE2	1:B:196:LYS:HD2	2.53	0.44
1:A:204:ASP:O	1:A:208:ARG:HG2	2.18	0.44
1:B:50:LEU:HD23	1:B:187:ILE:HG22	2.00	0.44
1:A:164:PHE:CE2	1:A:196:LYS:HB3	2.53	0.44
1:A:124:MSE:O	1:B:124:MSE:HE1	2.18	0.43
1:B:101:ALA:HB3	1:B:104:GLU:HB2	1.99	0.43
1:B:177:LYS:HE3	1:B:177:LYS:HB2	1.76	0.43
1:B:25:ILE:HG22	1:B:26:THR:H	1.83	0.43
1:A:71:THR:HG22	1:A:72:LEU:N	2.34	0.43
1:A:22:LYS:HE2	1:A:24:ASP:OD2	2.19	0.43
1:A:216:LYS:HG3	1:A:217:TYR:N	2.34	0.42
1:B:203:LYS:H	1:B:203:LYS:HG2	1.61	0.42
1:A:68:PRO:HA	1:A:69:PRO:HA	1.74	0.42
1:B:20:GLU:HB2	2:B:372:HOH:O	2.20	0.42
1:B:47:THR:CG2	1:B:51:MSE:HE2	2.43	0.42
1:B:164:PHE:CE1	1:B:223:LEU:HD12	2.56	0.41
1:A:196:LYS:NZ	1:A:199:GLU:HG3	2.35	0.41
1:A:47:THR:OG1	1:A:186:GLU:HB2	2.19	0.41
1:B:34:ASP:CG	1:B:35:VAL:N	2.72	0.41
1:B:153:LEU:HD12	1:B:153:LEU:HA	1.91	0.41
1:A:219:GLU:O	1:A:223:LEU:HB2	2.20	0.41
1:B:220:VAL:O	1:B:223:LEU:HB3	2.19	0.41
1:A:126:CYS:HB3	2:A:305:HOH:O	2.20	0.41
1:A:39:LYS:HB3	1:A:214:LEU:CD1	2.50	0.41
1:A:188:SER:CB	1:A:189:PRO:CD	2.97	0.41
1:B:33:HIS:ND1	1:B:33:HIS:C	2.74	0.41
1:B:176:ASP:OD2	1:B:180:ASN:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:211:GLY:C	1:A:213:PRO:HD3	2.42	0.40
1:B:48:ALA:HA	1:B:63:LEU:HD22	2.03	0.40
1:A:227:LEU:HD12	1:A:227:LEU:HA	1.87	0.40
1:A:23:ASP:O	1:A:36:LEU:HD23	2.22	0.40
1:A:145:LYS:HB3	1:A:145:LYS:HE3	1.87	0.40
1:B:25:ILE:CG2	1:B:26:THR:N	2.84	0.40
1:B:8:LYS:NZ	1:B:186:GLU:OE1	2.53	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	209/230 (91%)	202 (97%)	4 (2%)	3 (1%)	9	7
1	B	216/230 (94%)	201 (93%)	11 (5%)	4 (2%)	6	4
All	All	425/460 (92%)	403 (95%)	15 (4%)	7 (2%)	8	6

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	37	THR
1	B	3	TYR
1	A	228	ASN
1	B	34	ASP
1	B	119	GLU
1	A	38	GLY
1	B	35	VAL

### 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	188/196 (96%)	171 (91%)	17 (9%)	8	8
1	B	194/196 (99%)	178 (92%)	16 (8%)	9	9
All	All	382/392 (97%)	349 (91%)	33 (9%)	8	9

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

Mol	Chain	Res	Type
1	A	13	THR
1	A	36	LEU
1	A	39	LYS
1	A	50	LEU
1	A	52	LYS
1	A	53	TYR
1	A	54	LEU
1	A	62	HIS
1	A	75	ILE
1	A	79	MSE
1	A	82	LEU
1	A	88	LEU
1	A	138	LYS
1	A	155	LEU
1	A	175	LEU
1	A	180	ASN
1	A	227	LEU
1	B	12	VAL
1	B	46	THR
1	B	50	LEU
1	B	54	LEU
1	B	62	HIS
1	B	72	LEU
1	B	82	LEU
1	B	116	LYS
1	B	121	HIS
1	B	138	LYS

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Mol	Chain	Res	Type
1	B	153	LEU
1	B	175	LEU
1	B	202	ASP
1	B	206	TYR
1	B	208	ARG
1	B	230	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	129	HIS
1	A	228	ASN
1	B	2	ASN
1	B	129	HIS
1	B	230	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 oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

**Warning:** The R factor obtained from EDS is 0.3673, which does not match the depositor's R factor of 0.245. Please interpret the results in this section carefully.

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	209/230 (90%)	1.70	68 (32%) <b>1</b> <b>1</b>	15, 27, 48, 55	0
1	B	218/230 (94%)	1.69	77 (35%) <b>1</b> <b>1</b>	15, 29, 47, 54	0
All	All	427/460 (92%)	1.69	145 (33%) <b>1</b> <b>1</b>	15, 28, 48, 55	0

All (145) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	121	HIS	5.9
1	A	204	ASP	5.8
1	B	211	GLY	5.6
1	A	93	SER	5.0
1	A	15	ASP	4.8
1	A	225	ARG	4.8
1	B	162	ALA	4.7
1	A	197	LYS	4.5
1	B	15	ASP	4.4
1	A	17	ALA	4.2
1	A	219	GLU	4.2
1	A	214	LEU	4.1
1	A	222	GLU	4.0
1	A	205	VAL	4.0
1	B	164	PHE	4.0
1	A	163	ASN	4.0
1	B	118	ASP	3.9
1	A	229	SER	3.9
1	B	206	TYR	3.9
1	B	25	ILE	3.8
1	B	227	LEU	3.8
1	B	198	GLY	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	226	SER	3.7
1	A	160	GLU	3.7
1	A	95	VAL	3.7
1	A	103	GLY	3.6
1	B	91	ALA	3.6
1	B	32	LYS	3.5
1	B	99	GLY	3.5
1	A	105	ASP	3.5
1	B	222	GLU	3.5
1	A	16	TYR	3.5
1	B	95	VAL	3.4
1	B	195	ARG	3.4
1	A	7	THR	3.4
1	B	3	TYR	3.4
1	A	210	LEU	3.4
1	B	139	LYS	3.3
1	B	220	VAL	3.3
1	B	179	GLY	3.3
1	B	154	ALA	3.3
1	A	208	ARG	3.2
1	B	117	ASP	3.2
1	B	70	ARG	3.2
1	A	24	ASP	3.2
1	A	12	VAL	3.1
1	A	122	ASP	3.1
1	A	120	ARG	3.1
1	B	16	TYR	3.1
1	A	9	ILE	3.0
1	B	119	GLU	3.0
1	B	178	ASP	3.0
1	A	228	ASN	3.0
1	A	211	GLY	3.0
1	B	101	ALA	3.0
1	A	56	GLU	2.9
1	B	125	VAL	2.9
1	B	223	LEU	2.9
1	A	206	TYR	2.9
1	B	196	LYS	2.9
1	A	202	ASP	2.8
1	B	158	PHE	2.8
1	A	101	ALA	2.8
1	A	58	GLY	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	126	CYS	2.8
1	B	208	ARG	2.8
1	A	55	SER	2.8
1	A	22	LYS	2.8
1	A	215	LYS	2.8
1	B	35	VAL	2.8
1	B	33	HIS	2.8
1	A	23	ASP	2.8
1	B	230	GLN	2.8
1	B	41	SER	2.7
1	B	212	ASP	2.7
1	B	2	ASN	2.7
1	A	213	PRO	2.7
1	A	14	GLY	2.7
1	A	38	GLY	2.7
1	A	37	THR	2.7
1	B	43	CYS	2.7
1	A	133	LEU	2.7
1	B	13	THR	2.7
1	B	19	LEU	2.7
1	B	163	ASN	2.7
1	B	157	GLU	2.7
1	A	223	LEU	2.6
1	B	49	ILE	2.6
1	A	167	TRP	2.6
1	A	161	ARG	2.6
1	A	158	PHE	2.5
1	A	207	ARG	2.5
1	B	136	ALA	2.5
1	A	201	PHE	2.5
1	B	96	ARG	2.5
1	B	122	ASP	2.5
1	A	209	ASP	2.4
1	B	105	ASP	2.4
1	A	11	LYS	2.4
1	B	147	ALA	2.4
1	B	39	LYS	2.4
1	A	200	ILE	2.4
1	B	229	SER	2.4
1	A	178	ASP	2.4
1	B	98	TYR	2.4
1	B	38	GLY	2.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	72	LEU	2.4
1	B	148	ALA	2.4
1	B	221	LEU	2.4
1	A	164	PHE	2.3
1	B	24	ASP	2.3
1	A	154	ALA	2.3
1	A	196	LYS	2.3
1	B	76	PRO	2.3
1	B	56	GLU	2.3
1	B	55	SER	2.3
1	B	103	GLY	2.3
1	B	8	LYS	2.3
1	A	94	PHE	2.3
1	B	34	ASP	2.3
1	A	10	VAL	2.2
1	B	93	SER	2.2
1	B	58	GLY	2.2
1	A	155	LEU	2.2
1	B	207	ARG	2.2
1	A	13	THR	2.2
1	A	108	VAL	2.2
1	A	212	ASP	2.2
1	B	54	LEU	2.2
1	B	52	LYS	2.2
1	B	159	PHE	2.2
1	B	23	ASP	2.2
1	A	119	GLU	2.1
1	B	48	ALA	2.1
1	B	190	ASP	2.1
1	A	188	SER	2.1
1	B	71	THR	2.1
1	A	102	GLU	2.0
1	A	195	ARG	2.0
1	B	204	ASP	2.0
1	A	175	LEU	2.0
1	B	69	PRO	2.0
1	B	228	ASN	2.0
1	B	217	TYR	2.0
1	A	100	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](#)

There are no ligands in this entry.

## 6.5 Other polymers [i](#)

There are no such residues in this entry.