



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 9, 2024 – 03:35 pm GMT

PDB ID : 9FB1
Title : Crystal structure of Rv2242 regulator N-terminal fragment (1-160)
Authors : Megalizzi, V.; Tanina, A.; Grosse, C.; Mirgaux, M.; Legrand, P.; Dias Miranda, G.; Wohlkonig, A.; Bifani, P.; Wintjens, R.
Deposited on : 2024-05-11
Resolution : 3.59 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

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>.

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

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.13
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.003 (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

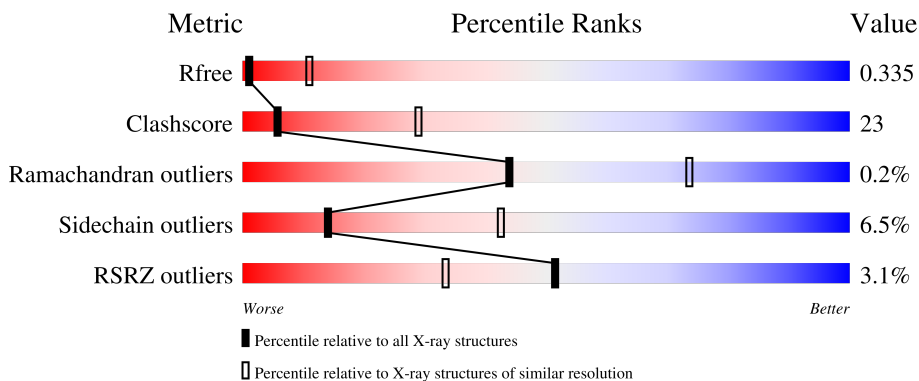
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION


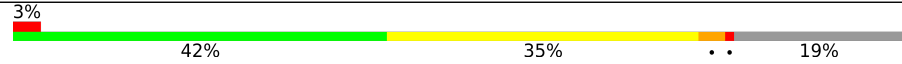
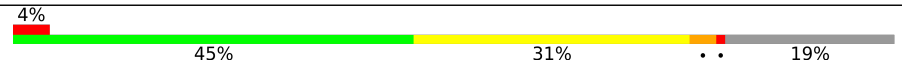

The reported resolution of this entry is 3.59 Å.

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	1563 (3.70-3.50)
Clashscore	180529	1665 (3.70-3.50)
Ramachandran outliers	177936	1641 (3.70-3.50)
Sidechain outliers	177891	1640 (3.70-3.50)
RSRZ outliers	164620	1562 (3.70-3.50)

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 $\leq 5\%$. 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	181	
1	B	181	
1	C	181	
1	D	181	

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 4575 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 Uncharacterized protein Rv2242.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	146	1146	728	195	219	4	0	0	0
1	B	146	1146	728	195	219	4	0	0	0
1	C	146	1137	720	195	218	4	0	0	0
1	D	146	1146	728	195	219	4	0	0	0

There are 84 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-20	MET	-	initiating methionine	UNP P9WPH5
A	-19	GLY	-	expression tag	UNP P9WPH5
A	-18	SER	-	expression tag	UNP P9WPH5
A	-17	SER	-	expression tag	UNP P9WPH5
A	-16	HIS	-	expression tag	UNP P9WPH5
A	-15	HIS	-	expression tag	UNP P9WPH5
A	-14	HIS	-	expression tag	UNP P9WPH5
A	-13	HIS	-	expression tag	UNP P9WPH5
A	-12	HIS	-	expression tag	UNP P9WPH5
A	-11	HIS	-	expression tag	UNP P9WPH5
A	-10	SER	-	expression tag	UNP P9WPH5
A	-9	SER	-	expression tag	UNP P9WPH5
A	-8	GLY	-	expression tag	UNP P9WPH5
A	-7	LEU	-	expression tag	UNP P9WPH5
A	-6	VAL	-	expression tag	UNP P9WPH5
A	-5	PRO	-	expression tag	UNP P9WPH5
A	-4	ARG	-	expression tag	UNP P9WPH5
A	-3	GLY	-	expression tag	UNP P9WPH5
A	-2	SER	-	expression tag	UNP P9WPH5
A	-1	HIS	-	expression tag	UNP P9WPH5
A	1	VAL	-	insertion	UNP P9WPH5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-20	MET	-	initiating methionine	UNP P9WPH5
B	-19	GLY	-	expression tag	UNP P9WPH5
B	-18	SER	-	expression tag	UNP P9WPH5
B	-17	SER	-	expression tag	UNP P9WPH5
B	-16	HIS	-	expression tag	UNP P9WPH5
B	-15	HIS	-	expression tag	UNP P9WPH5
B	-14	HIS	-	expression tag	UNP P9WPH5
B	-13	HIS	-	expression tag	UNP P9WPH5
B	-12	HIS	-	expression tag	UNP P9WPH5
B	-11	HIS	-	expression tag	UNP P9WPH5
B	-10	SER	-	expression tag	UNP P9WPH5
B	-9	SER	-	expression tag	UNP P9WPH5
B	-8	GLY	-	expression tag	UNP P9WPH5
B	-7	LEU	-	expression tag	UNP P9WPH5
B	-6	VAL	-	expression tag	UNP P9WPH5
B	-5	PRO	-	expression tag	UNP P9WPH5
B	-4	ARG	-	expression tag	UNP P9WPH5
B	-3	GLY	-	expression tag	UNP P9WPH5
B	-2	SER	-	expression tag	UNP P9WPH5
B	-1	HIS	-	expression tag	UNP P9WPH5
B	1	VAL	-	insertion	UNP P9WPH5
C	-20	MET	-	initiating methionine	UNP P9WPH5
C	-19	GLY	-	expression tag	UNP P9WPH5
C	-18	SER	-	expression tag	UNP P9WPH5
C	-17	SER	-	expression tag	UNP P9WPH5
C	-16	HIS	-	expression tag	UNP P9WPH5
C	-15	HIS	-	expression tag	UNP P9WPH5
C	-14	HIS	-	expression tag	UNP P9WPH5
C	-13	HIS	-	expression tag	UNP P9WPH5
C	-12	HIS	-	expression tag	UNP P9WPH5
C	-11	HIS	-	expression tag	UNP P9WPH5
C	-10	SER	-	expression tag	UNP P9WPH5
C	-9	SER	-	expression tag	UNP P9WPH5
C	-8	GLY	-	expression tag	UNP P9WPH5
C	-7	LEU	-	expression tag	UNP P9WPH5
C	-6	VAL	-	expression tag	UNP P9WPH5
C	-5	PRO	-	expression tag	UNP P9WPH5
C	-4	ARG	-	expression tag	UNP P9WPH5
C	-3	GLY	-	expression tag	UNP P9WPH5
C	-2	SER	-	expression tag	UNP P9WPH5
C	-1	HIS	-	expression tag	UNP P9WPH5
C	1	VAL	-	insertion	UNP P9WPH5

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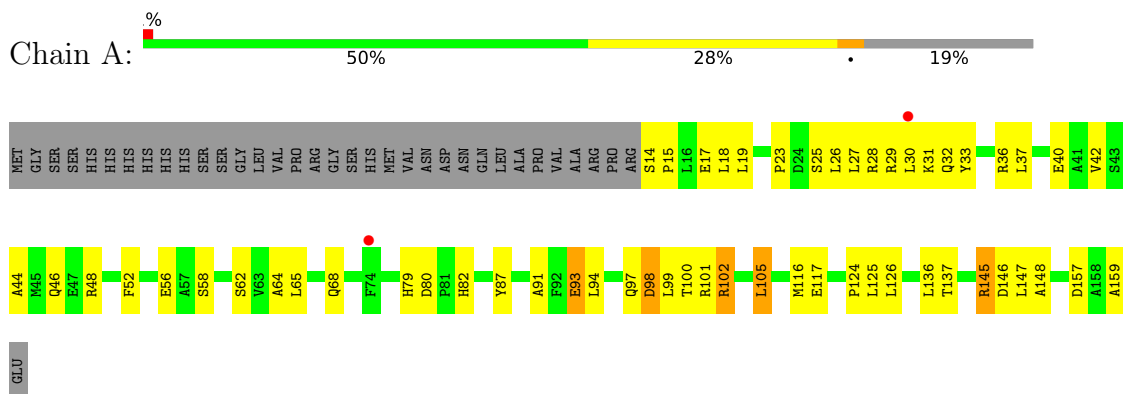
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Chain	Residue	Modelled	Actual	Comment	Reference
D	-20	MET	-	initiating methionine	UNP P9WPH5
D	-19	GLY	-	expression tag	UNP P9WPH5
D	-18	SER	-	expression tag	UNP P9WPH5
D	-17	SER	-	expression tag	UNP P9WPH5
D	-16	HIS	-	expression tag	UNP P9WPH5
D	-15	HIS	-	expression tag	UNP P9WPH5
D	-14	HIS	-	expression tag	UNP P9WPH5
D	-13	HIS	-	expression tag	UNP P9WPH5
D	-12	HIS	-	expression tag	UNP P9WPH5
D	-11	HIS	-	expression tag	UNP P9WPH5
D	-10	SER	-	expression tag	UNP P9WPH5
D	-9	SER	-	expression tag	UNP P9WPH5
D	-8	GLY	-	expression tag	UNP P9WPH5
D	-7	LEU	-	expression tag	UNP P9WPH5
D	-6	VAL	-	expression tag	UNP P9WPH5
D	-5	PRO	-	expression tag	UNP P9WPH5
D	-4	ARG	-	expression tag	UNP P9WPH5
D	-3	GLY	-	expression tag	UNP P9WPH5
D	-2	SER	-	expression tag	UNP P9WPH5
D	-1	HIS	-	expression tag	UNP P9WPH5
D	1	VAL	-	insertion	UNP P9WPH5

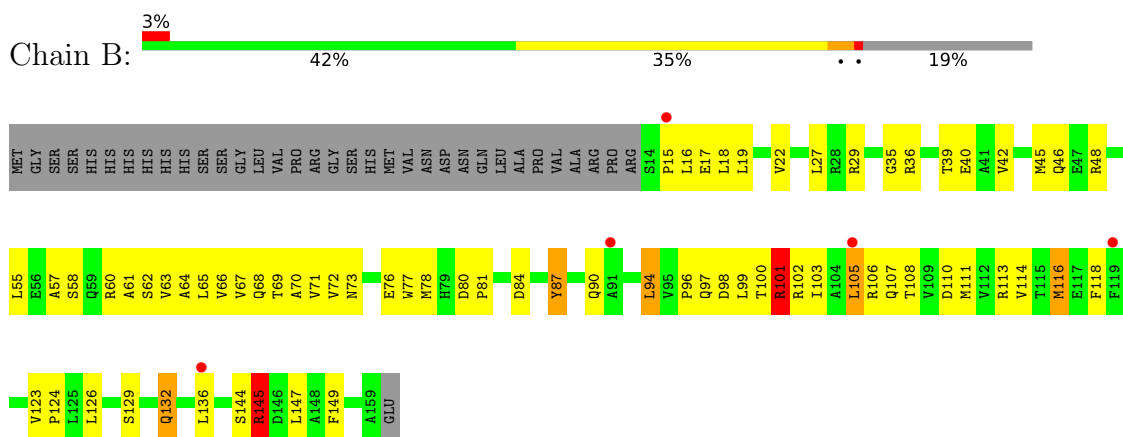
3 Residue-property plots [i](#)

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.

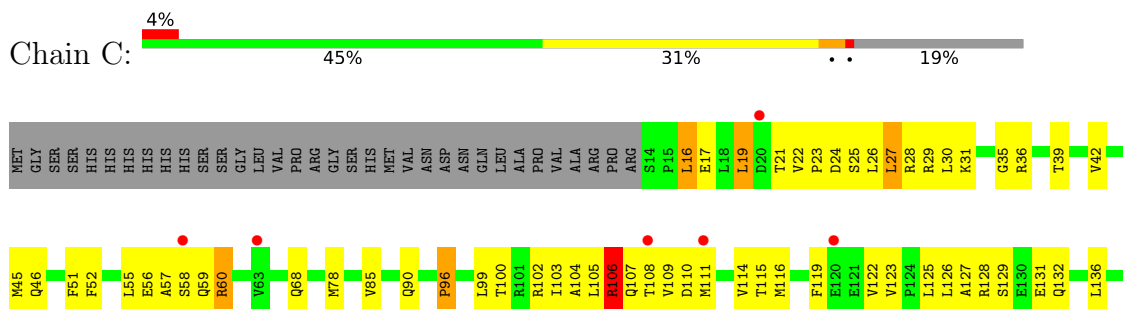
- Molecule 1: Uncharacterized protein Rv2242



- Molecule 1: Uncharacterized protein Rv2242

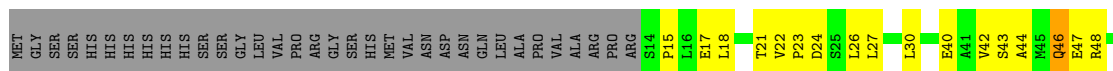


- Molecule 1: Uncharacterized protein Rv2242





- Molecule 1: Uncharacterized protein Rv2242



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 2 2	Depositor
Cell constants a, b, c, α , β , γ	107.19Å 107.19Å 176.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	57.57 – 3.59 57.57 – 3.59	Depositor EDS
% Data completeness (in resolution range)	87.2 (57.57-3.59) 87.2 (57.57-3.59)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.24 (at 3.57Å)	Xtrriage
Refinement program	REFMAC 5.8.0425	Depositor
R, R_{free}	0.250 , 0.325 0.247 , 0.335	Depositor DCC
R_{free} test set	616 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å ²)	129.6	Xtrriage
Anisotropy	0.024	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 178.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.28$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	4575	wwPDB-VP
Average B, all atoms (Å ²)	161.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.33% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 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	0.39	0/1166	1.04	5/1588 (0.3%)
1	B	0.38	0/1166	1.06	5/1588 (0.3%)
1	C	0.36	0/1155	1.02	7/1572 (0.4%)
1	D	0.37	0/1166	0.96	2/1588 (0.1%)
All	All	0.37	0/4653	1.02	19/6336 (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	A	0	1
1	B	0	1
1	C	0	2
All	All	0	4

There are no bond length outliers.

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	116	MET	CB-CG-SD	7.86	135.97	112.40
1	C	116	MET	CG-SD-CE	7.25	111.81	100.20
1	B	116	MET	CG-SD-CE	7.20	111.72	100.20
1	A	145	ARG	NE-CZ-NH1	7.08	123.84	120.30
1	C	106	ARG	NE-CZ-NH1	-7.08	116.76	120.30
1	C	96	PRO	N-CA-CB	6.57	111.19	103.30
1	B	113	ARG	CD-NE-CZ	5.72	131.61	123.60
1	C	145	ARG	NE-CZ-NH2	5.58	123.09	120.30
1	A	136	LEU	CB-CG-CD2	5.47	120.30	111.00
1	C	145	ARG	NE-CZ-NH1	-5.44	117.58	120.30
1	A	145	ARG	CD-NE-CZ	5.43	131.21	123.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	145	ARG	CG-CD-NE	5.43	123.21	111.80
1	D	126	LEU	CB-CG-CD1	5.39	120.17	111.00
1	A	19	LEU	CB-CG-CD1	-5.31	101.98	111.00
1	B	145	ARG	NE-CZ-NH1	-5.18	117.71	120.30
1	C	36	ARG	CA-CB-CG	5.17	124.78	113.40
1	C	27	LEU	CB-CG-CD1	5.12	119.71	111.00
1	D	145	ARG	NE-CZ-NH2	5.05	122.82	120.30
1	B	113	ARG	NE-CZ-NH2	5.01	122.81	120.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	101	ARG	Sidechain
1	B	101	ARG	Sidechain
1	C	106	ARG	Sidechain
1	C	60	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	1146	0	1147	57	0
1	B	1146	0	1147	74	0
1	C	1137	0	1134	46	1
1	D	1146	0	1147	44	1
All	All	4575	0	4575	209	1

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 23.

All (209) 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:68:GLN:HA	1:B:71:VAL:HG22	1.26	1.15

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:TYR:CD2	1:A:37:LEU:HG	1.82	1.14
1:B:123:VAL:HG12	1:B:136:LEU:HD21	1.36	1.08
1:B:103:ILE:HG21	1:B:111:MET:CE	1.85	1.07
1:B:65:LEU:HA	1:B:68:GLN:HB3	1.37	1.06
1:B:65:LEU:O	1:B:69:THR:N	1.89	1.04
1:A:33:TYR:HE2	1:A:37:LEU:HD23	1.34	0.93
1:B:55:LEU:HD22	1:B:101:ARG:HD3	1.51	0.92
1:B:67:VAL:O	1:B:71:VAL:HG13	1.69	0.92
1:B:68:GLN:HA	1:B:71:VAL:CG2	2.00	0.91
1:A:33:TYR:HE2	1:A:37:LEU:CD2	1.84	0.90
1:B:68:GLN:CA	1:B:71:VAL:HG22	2.01	0.90
1:B:103:ILE:HG21	1:B:111:MET:HE2	1.49	0.90
1:B:65:LEU:HD12	1:B:68:GLN:HG2	1.53	0.90
1:C:30:LEU:HD23	1:C:126:LEU:HD12	1.53	0.90
1:A:48:ARG:NH1	1:A:117:GLU:OE1	2.04	0.89
1:A:14:SER:O	1:A:17:GLU:HG2	1.74	0.87
1:A:33:TYR:HD2	1:A:37:LEU:HG	1.38	0.86
1:A:116:MET:CE	1:A:147:LEU:HD22	2.06	0.85
1:B:65:LEU:CD1	1:B:68:GLN:HG2	2.07	0.84
1:A:33:TYR:CE2	1:A:37:LEU:HG	2.13	0.83
1:B:124:PRO:HA	1:B:136:LEU:HD22	1.63	0.81
1:D:98:ASP:HA	1:D:102:ARG:HA	1.62	0.80
1:A:33:TYR:CE2	1:A:37:LEU:CD2	2.64	0.79
1:A:97:GLN:HB3	1:A:100:THR:HA	1.66	0.78
1:C:111:MET:O	1:C:115:THR:HG23	1.84	0.78
1:D:18:LEU:HB3	1:D:135:ALA:HB2	1.66	0.76
1:B:29:ARG:HH11	1:B:126:LEU:HD22	1.51	0.75
1:C:129:SER:HB3	1:C:131:GLU:OE1	1.88	0.74
1:B:65:LEU:HA	1:B:68:GLN:CB	2.16	0.74
1:C:26:LEU:HD11	1:C:136:LEU:HD11	1.69	0.74
1:B:65:LEU:CA	1:B:68:GLN:HB3	2.15	0.73
1:D:44:ALA:O	1:D:47:GLU:HG2	1.90	0.72
1:B:65:LEU:HD12	1:B:68:GLN:CG	2.20	0.71
1:D:86:GLY:O	1:D:90:GLN:HG2	1.89	0.71
1:B:94:LEU:HD12	1:B:96:PRO:HD2	1.71	0.71
1:C:122:VAL:O	1:C:125:LEU:HB2	1.90	0.71
1:A:33:TYR:CD2	1:A:37:LEU:CG	2.71	0.70
1:C:59:GLN:HB2	1:C:99:LEU:HB2	1.75	0.69
1:A:116:MET:HE3	1:A:147:LEU:HD22	1.74	0.69
1:A:33:TYR:CE1	1:A:36:ARG:CB	2.76	0.69
1:A:42:VAL:HG21	1:A:64:ALA:HB2	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:97:GLN:HG2	1:D:99:LEU:O	1.95	0.67
1:B:103:ILE:HG21	1:B:111:MET:HE1	1.72	0.67
1:B:42:VAL:HA	1:B:45:MET:HE3	1.77	0.67
1:B:129:SER:HB3	1:B:132:GLN:HB2	1.76	0.66
1:A:33:TYR:CE2	1:A:37:LEU:CG	2.79	0.66
1:B:68:GLN:O	1:B:71:VAL:HG22	1.95	0.66
1:B:63:VAL:HA	1:B:66:VAL:HB	1.77	0.65
1:C:109:VAL:HG23	1:C:155:TYR:OH	1.96	0.65
1:B:116:MET:CE	1:B:144:SER:HA	2.27	0.65
1:D:30:LEU:HD21	1:D:123:VAL:HG13	1.78	0.64
1:B:123:VAL:HG12	1:B:136:LEU:CD2	2.23	0.64
1:B:57:ALA:HA	1:B:60:ARG:HD3	1.79	0.64
1:B:116:MET:HE2	1:B:144:SER:HA	1.79	0.63
1:B:61:ALA:O	1:B:64:ALA:HB3	1.97	0.63
1:B:124:PRO:CA	1:B:136:LEU:HD22	2.29	0.63
1:A:33:TYR:CE1	1:A:36:ARG:HB2	2.34	0.63
1:B:84:ASP:HA	1:B:87:TYR:HD2	1.64	0.62
1:A:147:LEU:HD23	1:A:147:LEU:C	2.20	0.62
1:C:16:LEU:HA	1:C:19:LEU:HB3	1.81	0.61
1:C:42:VAL:HA	1:C:45:MET:HE2	1.82	0.61
1:B:123:VAL:CG1	1:B:136:LEU:HD21	2.22	0.61
1:D:96:PRO:HG2	1:D:101:ARG:HD2	1.81	0.61
1:A:40:GLU:HG2	1:D:61:ALA:HB2	1.83	0.59
1:B:35:GLY:HA2	1:B:68:GLN:OE1	2.02	0.59
1:C:19:LEU:O	1:C:22:VAL:N	2.34	0.59
1:A:33:TYR:CE2	1:A:37:LEU:HD23	2.26	0.59
1:B:68:GLN:C	1:B:71:VAL:HG22	2.23	0.59
1:C:51:PHE:O	1:C:55:LEU:HD13	2.03	0.58
1:D:59:GLN:HG2	1:D:96:PRO:HD3	1.84	0.58
1:A:33:TYR:CE1	1:A:36:ARG:HB3	2.38	0.58
1:C:26:LEU:HD22	1:C:132:GLN:HB3	1.85	0.57
1:B:70:ALA:HA	1:B:90:GLN:CG	2.35	0.57
1:B:36:ARG:O	1:B:39:THR:OG1	2.20	0.57
1:D:70:ALA:HA	1:D:90:GLN:HE22	1.70	0.56
1:A:99:LEU:O	1:A:102:ARG:N	2.38	0.56
1:A:26:LEU:HB3	1:A:126:LEU:CD1	2.36	0.56
1:A:68:GLN:HG2	1:B:65:LEU:HD21	1.87	0.55
1:B:67:VAL:O	1:B:71:VAL:N	2.33	0.55
1:B:67:VAL:HG12	1:B:71:VAL:HG13	1.89	0.55
1:C:56:GLU:O	1:C:57:ALA:HB3	2.06	0.55
1:C:35:GLY:HA2	1:C:68:GLN:OE1	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:65:LEU:HD12	1:B:68:GLN:HB3	1.89	0.54
1:D:59:GLN:NE2	1:D:101:ARG:HB3	2.23	0.54
1:A:80:ASP:C	1:A:82:HIS:H	2.11	0.53
1:A:159:ALA:C	1:C:128:ARG:CZ	2.76	0.53
1:B:55:LEU:O	1:B:60:ARG:HD2	2.09	0.53
1:A:94:LEU:HD22	1:A:100:THR:H	1.73	0.53
1:B:67:VAL:HG12	1:B:71:VAL:CG1	2.39	0.53
1:D:87:TYR:HA	1:D:90:GLN:CG	2.39	0.53
1:A:125:LEU:HD21	1:D:93:GLU:O	2.09	0.52
1:D:22:VAL:HG21	1:D:78:MET:HE1	1.90	0.52
1:A:29:ARG:HH21	1:D:69:THR:HG22	1.74	0.52
1:B:40:GLU:HB3	1:B:118:PHE:HZ	1.73	0.52
1:D:66:VAL:HG11	1:D:92:PHE:CD2	2.44	0.52
1:D:98:ASP:CA	1:D:102:ARG:HA	2.36	0.52
1:A:44:ALA:HB2	1:D:57:ALA:HB3	1.91	0.52
1:B:15:PRO:HA	1:B:18:LEU:HD12	1.91	0.52
1:D:67:VAL:O	1:D:70:ALA:HB3	2.09	0.52
1:C:78:MET:HE1	1:C:139:GLY:HA3	1.92	0.52
1:B:110:ASP:O	1:B:114:VAL:HG23	2.10	0.51
1:C:127:ALA:HB2	1:C:136:LEU:HD12	1.91	0.51
1:D:22:VAL:HG13	1:D:26:LEU:HD23	1.93	0.51
1:D:24:ASP:HA	1:D:27:LEU:HD12	1.92	0.51
1:A:91:ALA:HA	1:A:93:GLU:OE1	2.11	0.51
1:B:77:TRP:HE3	1:B:78:MET:HE1	1.76	0.51
1:B:65:LEU:HD12	1:B:68:GLN:CB	2.40	0.51
1:A:33:TYR:CZ	1:A:36:ARG:HB3	2.46	0.51
1:A:80:ASP:CG	1:A:82:HIS:HB2	2.32	0.51
1:B:36:ARG:NH2	1:C:39:THR:OG1	2.43	0.51
1:C:59:GLN:HG2	1:C:100:THR:HB	1.92	0.50
1:D:15:PRO:HA	1:D:18:LEU:HD12	1.93	0.50
1:C:30:LEU:HD11	1:C:136:LEU:HD21	1.93	0.50
1:D:47:GLU:HG3	1:D:48:ARG:HG3	1.93	0.50
1:C:52:PHE:HA	1:C:55:LEU:HD22	1.93	0.50
1:C:78:MET:CE	1:C:139:GLY:HA3	2.42	0.49
1:D:87:TYR:HA	1:D:90:GLN:HG3	1.95	0.49
1:B:19:LEU:HD22	1:B:81:PRO:HB3	1.94	0.49
1:A:124:PRO:HG2	1:A:137:THR:HG22	1.94	0.49
1:D:117:GLU:O	1:D:121:GLU:HG3	2.12	0.49
1:C:26:LEU:HD21	1:C:136:LEU:HG	1.94	0.48
1:A:33:TYR:CD1	1:A:36:ARG:HB2	2.48	0.48
1:C:108:THR:HG1	1:C:155:TYR:HH	1.61	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:15:PRO:HA	1:A:18:LEU:HD12	1.96	0.48
1:B:29:ARG:NH1	1:B:126:LEU:O	2.41	0.48
1:A:93:GLU:O	1:A:93:GLU:HG2	2.14	0.48
1:B:48:ARG:HD3	1:B:114:VAL:HG13	1.96	0.48
1:D:108:THR:O	1:D:112:VAL:HG23	2.14	0.48
1:B:77:TRP:CE3	1:B:78:MET:HE1	2.49	0.48
1:D:117:GLU:O	1:D:120:GLU:HB3	2.14	0.48
1:C:46:GLN:HA	1:C:52:PHE:HD2	1.79	0.47
1:C:102:ARG:HG2	1:C:103:ILE:H	1.78	0.47
1:D:87:TYR:O	1:D:90:GLN:HB2	2.14	0.47
1:C:46:GLN:HA	1:C:52:PHE:CD2	2.50	0.47
1:A:28:ARG:O	1:A:32:GLN:HG2	2.14	0.47
1:B:68:GLN:O	1:B:72:VAL:N	2.39	0.47
1:C:123:VAL:O	1:C:136:LEU:HD13	2.15	0.47
1:C:119:PHE:HB3	1:C:140:ILE:HD11	1.96	0.47
1:D:80:ASP:HB2	1:D:82:HIS:CE1	2.50	0.46
1:A:33:TYR:HD2	1:A:37:LEU:CG	2.16	0.46
1:D:102:ARG:O	1:D:102:ARG:HG3	2.15	0.46
1:A:56:GLU:HG2	1:A:58:SER:OG	2.14	0.46
1:B:105:LEU:O	1:B:106:ARG:C	2.53	0.46
1:B:77:TRP:O	1:B:80:ASP:O	2.33	0.46
1:B:65:LEU:HD13	1:B:68:GLN:HG2	1.94	0.46
1:A:46:GLN:HG3	1:A:52:PHE:CD2	2.51	0.46
1:B:19:LEU:HA	1:B:22:VAL:HG23	1.98	0.46
1:C:58:SER:C	1:C:60:ARG:N	2.69	0.46
1:D:113:ARG:O	1:D:114:VAL:C	2.54	0.46
1:C:52:PHE:O	1:C:55:LEU:HB2	2.16	0.45
1:B:94:LEU:HB2	1:B:102:ARG:HD2	1.98	0.45
1:D:104:ALA:HB3	1:D:107:GLN:HG3	1.97	0.45
1:D:23:PRO:HG2	1:D:26:LEU:HB2	1.97	0.45
1:A:58:SER:HA	1:B:58:SER:CB	2.47	0.45
1:B:73:ASN:HD22	1:B:90:GLN:HG3	1.82	0.45
1:B:108:THR:HA	1:B:111:MET:HE2	1.98	0.45
1:C:55:LEU:HG	1:C:100:THR:OG1	2.16	0.45
1:A:23:PRO:HB2	1:A:25:SER:HB2	1.99	0.44
1:C:104:ALA:HA	1:C:107:GLN:HG3	1.99	0.44
1:A:42:VAL:HG13	1:A:52:PHE:CE2	2.52	0.44
1:C:22:VAL:HB	1:C:23:PRO:HD3	2.00	0.44
1:A:105:LEU:HD22	1:A:105:LEU:HA	1.67	0.44
1:D:42:VAL:HG13	1:D:52:PHE:CE2	2.53	0.44
1:A:29:ARG:HE	1:D:68:GLN:HE21	1.64	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:106:ARG:O	1:B:107:GLN:C	2.54	0.43
1:C:25:SER:HA	1:C:28:ARG:HE	1.83	0.43
1:B:90:GLN:NE2	1:B:147:LEU:HD11	2.33	0.43
1:A:65:LEU:HD13	1:B:62:SER:HA	2.00	0.43
1:B:42:VAL:HG12	1:B:46:GLN:NE2	2.33	0.43
1:C:22:VAL:O	1:C:24:ASP:N	2.48	0.43
1:C:27:LEU:O	1:C:31:LYS:HG3	2.19	0.43
1:B:40:GLU:HB3	1:B:118:PHE:CZ	2.53	0.43
1:B:70:ALA:HA	1:B:90:GLN:HG3	2.00	0.43
1:B:67:VAL:C	1:B:71:VAL:HG13	2.38	0.43
1:B:145:ARG:HE	1:B:149:PHE:HE2	1.67	0.42
1:C:57:ALA:HA	1:C:60:ARG:HH21	1.84	0.42
1:C:85:VAL:HG12	1:C:85:VAL:O	2.19	0.42
1:A:145:ARG:NH1	1:A:146:ASP:OD1	2.51	0.42
1:B:29:ARG:NH1	1:B:126:LEU:HD22	2.28	0.42
1:D:59:GLN:HE21	1:D:96:PRO:CD	2.33	0.42
1:C:56:GLU:HG2	1:C:59:GLN:HB3	2.00	0.42
1:B:16:LEU:HD12	1:B:17:GLU:N	2.35	0.42
1:A:157:ASP:HB3	1:C:29:ARG:HD2	2.01	0.42
1:A:28:ARG:HA	1:A:31:LYS:HE2	2.01	0.42
1:C:111:MET:HE2	1:C:111:MET:HB3	1.78	0.41
1:C:56:GLU:HB2	1:C:100:THR:CB	2.50	0.41
1:D:98:ASP:O	1:D:102:ARG:N	2.53	0.41
1:D:105:LEU:HD13	1:D:155:TYR:HE2	1.84	0.41
1:C:110:ASP:O	1:C:114:VAL:HG23	2.20	0.41
1:D:46:GLN:HE21	1:D:46:GLN:HB2	1.72	0.41
1:D:116:MET:HE2	1:D:116:MET:HA	2.01	0.41
1:B:77:TRP:HE3	1:B:78:MET:CE	2.32	0.41
1:C:16:LEU:CD2	1:C:19:LEU:HD22	2.50	0.41
1:B:40:GLU:CB	1:B:118:PHE:HZ	2.33	0.41
1:D:17:GLU:O	1:D:21:THR:HG23	2.21	0.41
1:D:27:LEU:HD13	1:D:79:HIS:CD2	2.56	0.41
1:A:42:VAL:HG13	1:A:52:PHE:HE2	1.86	0.41
1:A:102:ARG:HA	1:A:102:ARG:HD3	1.62	0.41
1:A:147:LEU:HD23	1:A:148:ALA:N	2.35	0.41
1:B:36:ARG:NH1	1:C:68:GLN:OE1	2.53	0.41
1:A:27:LEU:HD13	1:A:79:HIS:CD2	2.56	0.41
1:B:99:LEU:HD13	1:B:99:LEU:HA	1.82	0.41
1:A:62:SER:O	1:A:65:LEU:HB3	2.21	0.41
1:D:40:GLU:O	1:D:43:SER:OG	2.27	0.41
1:A:98:ASP:O	1:A:99:LEU:C	2.60	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:46:GLN:CG	1:A:52:PHE:HD2	2.34	0.40
1:D:69:THR:O	1:D:73:ASN:ND2	2.38	0.40
1:A:30:LEU:HD13	1:A:126:LEU:CD2	2.50	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:149:PHE:CE1	1:D:113:ARG:CD[8_655]	2.12	0.08

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	144/181 (80%)	137 (95%)	7 (5%)	0	100	100
1	B	144/181 (80%)	136 (94%)	8 (6%)	0	100	100
1	C	144/181 (80%)	131 (91%)	12 (8%)	1 (1%)	19	53
1	D	144/181 (80%)	136 (94%)	8 (6%)	0	100	100
All	All	576/724 (80%)	540 (94%)	35 (6%)	1 (0%)	44	73

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	96	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	123/153 (80%)	118 (96%)	5 (4%)	26	55
1	B	123/153 (80%)	112 (91%)	11 (9%)	8	32
1	C	121/153 (79%)	113 (93%)	8 (7%)	14	42
1	D	123/153 (80%)	115 (94%)	8 (6%)	14	42
All	All	490/612 (80%)	458 (94%)	32 (6%)	14	42

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	87	TYR
1	A	93	GLU
1	A	98	ASP
1	A	102	ARG
1	A	105	LEU
1	B	27	LEU
1	B	76	GLU
1	B	87	TYR
1	B	94	LEU
1	B	97	GLN
1	B	98	ASP
1	B	100	THR
1	B	101	ARG
1	B	105	LEU
1	B	132	GLN
1	B	145	ARG
1	C	16	LEU
1	C	17	GLU
1	C	19	LEU
1	C	21	THR
1	C	90	GLN
1	C	105	LEU
1	C	106	ARG
1	C	149	PHE
1	D	46	GLN
1	D	93	GLU
1	D	94	LEU
1	D	95	VAL
1	D	97	GLN
1	D	98	ASP

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Mol	Chain	Res	Type
1	D	99	LEU
1	D	145	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	GLN
1	A	79	HIS
1	B	73	ASN
1	C	82	HIS
1	D	79	HIS
1	D	90	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 [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	146/181 (80%)	-0.07	2 (1%) 73 52	61, 127, 256, 318	0
1	B	146/181 (80%)	0.13	5 (3%) 48 31	64, 165, 252, 328	0
1	C	146/181 (80%)	0.05	8 (5%) 32 21	79, 183, 253, 293	0
1	D	146/181 (80%)	-0.09	3 (2%) 63 42	74, 145, 224, 316	0
All	All	584/724 (80%)	0.01	18 (3%) 51 33	61, 157, 253, 328	0

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	109	VAL	3.8
1	D	90	GLN	3.5
1	B	91	ALA	3.1
1	C	152	ALA	2.9
1	B	119	PHE	2.7
1	C	20	ASP	2.7
1	C	108	THR	2.5
1	C	111	MET	2.5
1	B	136	LEU	2.4
1	C	151	ALA	2.3
1	B	105	LEU	2.3
1	C	58	SER	2.3
1	C	120	GLU	2.2
1	B	15	PRO	2.1
1	C	63	VAL	2.1
1	A	30	LEU	2.1
1	D	136	LEU	2.1
1	A	74	PHE	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.