Full wwPDB X-ray Structure Validation Report (i)

Jun 12, 2025 – 04:06 pm BST

PDB ID	:	9F9R / pdb_00009f9r
Title	:	AimR 13952 with non cognate peptide
Authors	:	Gallego del Sol, F.; Marina, A.
Deposited on	:	2024-05-08
Resolution	:	2.50 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

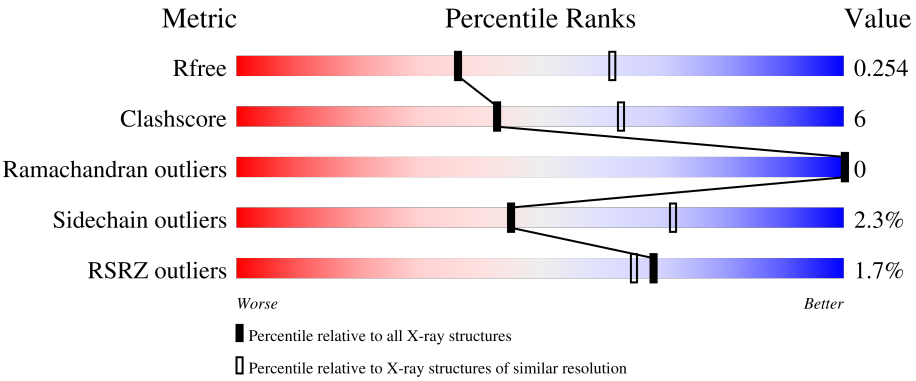
MolProbity	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 2.50 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	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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 <=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	386	2% 68% 19% • 12%
1	C	386	% 74% 14% 12%
1	E	386	70% 17% • 12%
1	G	386	3% 68% 19% • 12%
2	B	6	67% 33%

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Mol	Chain	Length	Quality of chain
2	D	6	83% 17%
2	F	6	83% 17%
2	H	6	17% 50% 50%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 11526 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 AimR 13952.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	341	Total	C	N	O	S	0	0	0
			2827	1822	457	539	9			
1	C	341	Total	C	N	O	S	0	0	0
			2827	1822	457	539	9			
1	E	341	Total	C	N	O	S	0	0	0
			2827	1822	457	539	9			
1	G	341	Total	C	N	O	S	0	0	0
			2827	1822	457	539	9			

- Molecule 2 is a protein called AimP Goe11.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	6	Total	C	N	O	0	0	0
			40	24	9	7			
2	D	6	Total	C	N	O	0	0	0
			40	24	9	7			
2	F	6	Total	C	N	O	0	0	0
			40	24	9	7			
2	H	6	Total	C	N	O	0	0	0
			40	24	9	7			

- Molecule 3 is water.

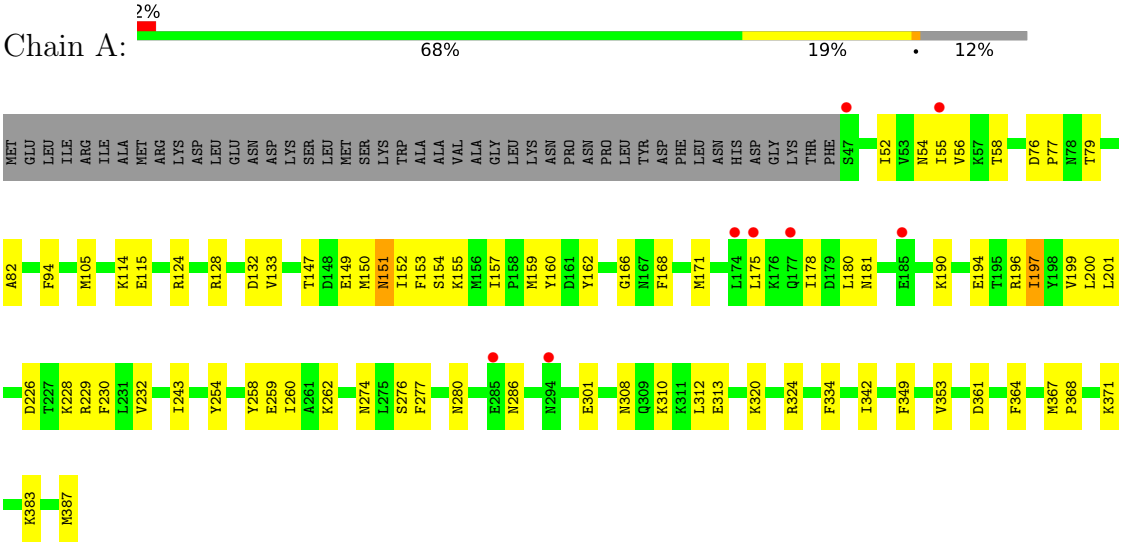
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	10	Total	O	0	0
			10	10		
3	C	24	Total	O	0	0
			24	24		
3	E	18	Total	O	0	0
			18	18		
3	G	6	Total	O	0	0
			6	6		

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.

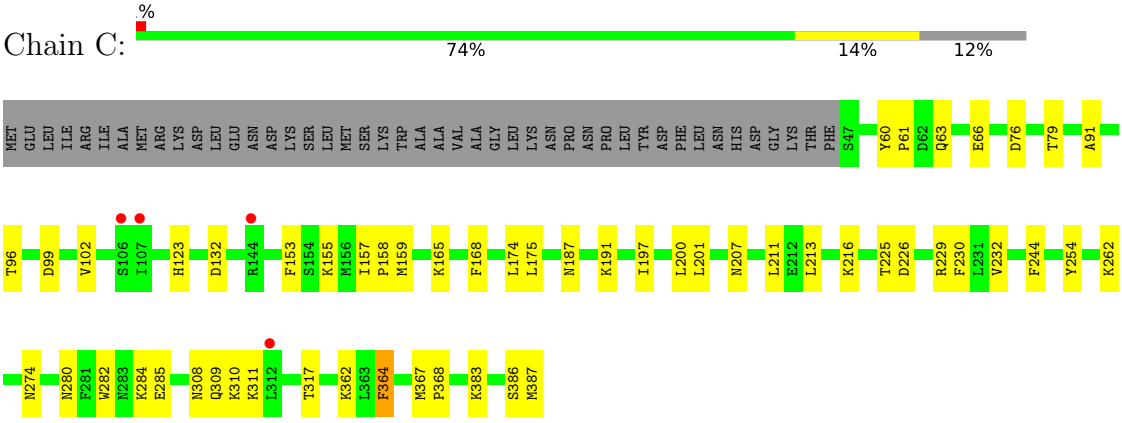
• Molecule 1: AimR 13952

Chain A:



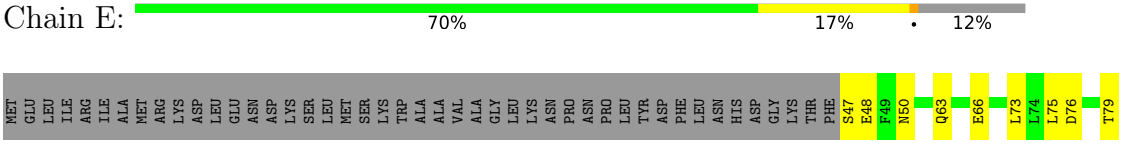
• Molecule 1: AimR 13952

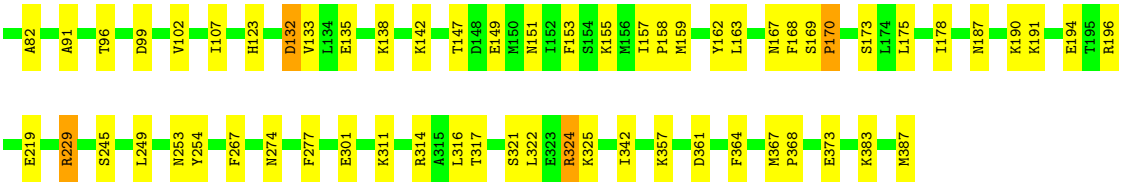
Chain C:



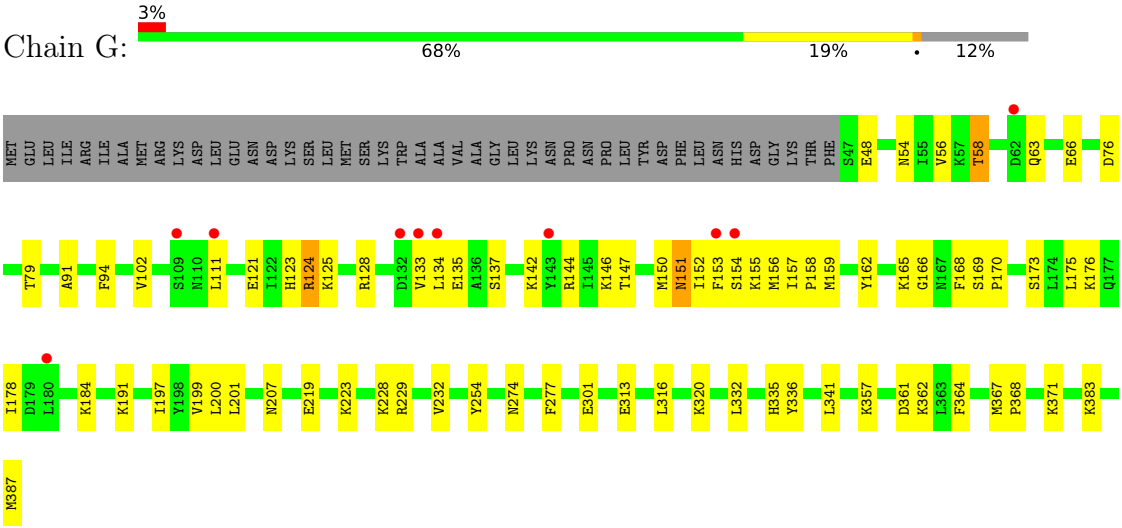
• Molecule 1: AimR 13952

Chain E:

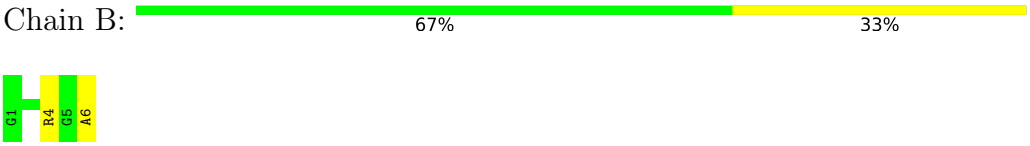




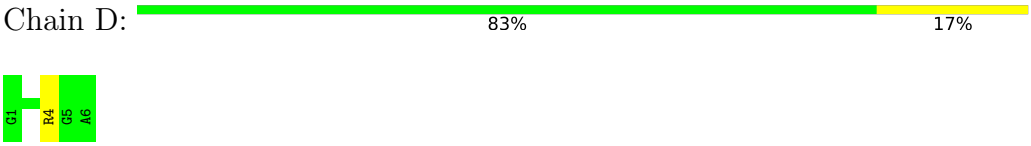
• Molecule 1: AimR 13952



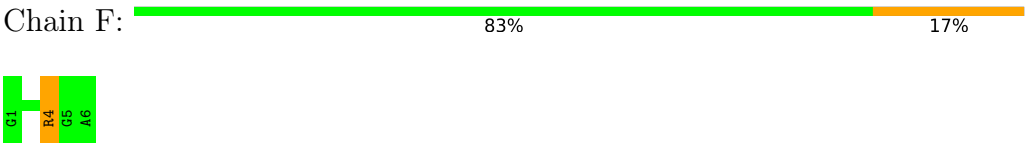
• Molecule 2: AimP Goe11



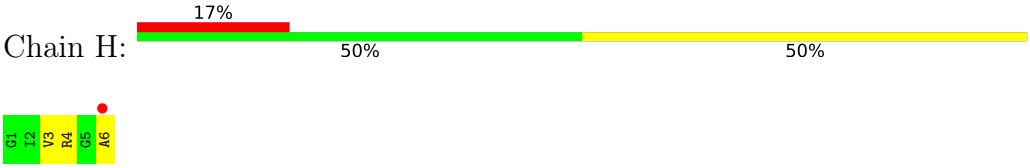
• Molecule 2: AimP Goe11



• Molecule 2: AimP Goe11



• Molecule 2: AimP Goe11



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	44.64Å 67.04Å 144.62Å 90.20° 94.25° 107.48°	Depositor
Resolution (Å)	144.17 – 2.50 144.17 – 2.50	Depositor EDS
% Data completeness (in resolution range)	62.3 (144.17-2.50) 62.4 (144.17-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.04 (at 2.52Å)	Xtriage
Refinement program	REFMAC 5.8.0430	Depositor
R, R_{free}	0.203 , 0.254 0.210 , 0.254	Depositor DCC
R_{free} test set	2651 reflections (4.67%)	wwPDB-VP
Wilson B-factor (Å^2)	37.3	Xtriage
Anisotropy	0.132	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.25 , 14.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.000 for -h,h+k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	11526	wwPDB-VP
Average B, all atoms (Å^2)	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.36% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	0.79	0/2881	1.39	9/3872 (0.2%)
1	C	0.74	0/2881	1.38	13/3872 (0.3%)
1	E	0.74	0/2881	1.39	14/3872 (0.4%)
1	G	0.68	0/2881	1.38	14/3872 (0.4%)
2	B	0.81	0/39	1.07	0/49
2	D	0.78	0/39	1.26	0/49
2	F	0.76	0/39	1.01	0/49
2	H	0.87	0/39	1.12	0/49
All	All	0.74	0/11680	1.38	50/15684 (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	E	0	3
1	G	0	2
2	F	0	1
All	All	0	7

There are no bond length outliers.

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	48	GLU	CB-CG-CD	8.75	127.47	112.60
1	G	219	GLU	CB-CG-CD	8.03	126.25	112.60
1	E	96	THR	CA-CB-OG1	-7.35	98.58	109.60
1	E	219	GLU	CB-CG-CD	7.33	125.05	112.60
1	E	48	GLU	CB-CG-CD	6.95	124.41	112.60
1	A	320	LYS	CG-CD-CE	6.77	126.88	111.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	170	PRO	N-CA-C	6.50	121.44	114.68
1	C	61	PRO	N-CA-CB	-6.48	97.29	103.51
1	C	285	GLU	CB-CA-C	6.43	119.00	110.06
1	C	226	ASP	N-CA-C	-6.41	103.76	113.89
1	E	168	PHE	N-CA-CB	-6.36	100.53	110.44
1	G	111	LEU	N-CA-CB	6.35	119.67	110.20
1	A	364	PHE	CA-CB-CG	-6.30	107.50	113.80
1	C	191	LYS	N-CA-CB	6.19	119.42	110.20
1	E	99	ASP	CA-CB-CG	6.15	118.75	112.60
1	G	313	GLU	N-CA-CB	5.85	118.49	110.01
1	A	371	LYS	N-CA-CB	5.83	118.70	110.12
1	E	364	PHE	CA-CB-CG	-5.78	108.02	113.80
1	G	364	PHE	CA-CB-CG	-5.77	108.03	113.80
1	G	58	THR	CA-CB-OG1	-5.68	101.08	109.60
1	C	364	PHE	CA-CB-CG	-5.61	108.19	113.80
1	A	94	PHE	CA-CB-CG	5.57	119.37	113.80
1	A	334	PHE	CA-CB-CG	5.55	119.35	113.80
1	E	267	PHE	CA-CB-CG	5.54	119.34	113.80
1	A	132	ASP	CA-CB-CG	5.53	118.13	112.60
1	A	226	ASP	N-CA-C	-5.51	105.19	113.89
1	C	96	THR	CA-CB-OG1	-5.39	101.51	109.60
1	E	253	ASN	CB-CA-C	5.38	121.36	110.38
1	A	181	ASN	N-CA-C	-5.35	106.75	113.28
1	E	311	LYS	CB-CA-C	5.33	120.00	111.73
1	G	184	LYS	N-CA-C	-5.32	107.45	114.31
1	G	146	LYS	CB-CG-CD	5.30	123.50	111.30
1	G	56	VAL	N-CA-CB	5.30	117.10	110.47
1	G	191	LYS	N-CA-CB	5.30	118.10	110.20
1	C	317	THR	CA-CB-OG1	-5.29	101.66	109.60
1	G	165	LYS	CB-CG-CD	5.29	123.46	111.30
1	E	317	THR	CA-CB-OG1	-5.25	101.73	109.60
1	E	132	ASP	CA-CB-CG	5.23	117.83	112.60
1	G	336	TYR	CA-CB-CG	-5.21	104.53	113.90
1	E	151	ASN	N-CA-C	-5.20	107.06	113.41
1	C	165	LYS	CG-CD-CE	5.17	123.19	111.30
1	G	207	ASN	CA-CB-CG	-5.14	107.46	112.60
1	C	211	LEU	N-CA-C	5.13	118.70	112.23
1	C	168	PHE	N-CA-CB	-5.13	102.44	110.44
1	A	56	VAL	N-CA-CB	5.12	116.87	110.47
1	C	99	ASP	CA-CB-CG	5.10	117.70	112.60
1	C	207	ASN	CA-CB-CG	-5.10	107.50	112.60
1	C	262	LYS	CB-CG-CD	5.08	122.98	111.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	196	ARG	CA-CB-CG	5.07	124.23	114.10
1	G	94	PHE	CA-CB-CG	5.06	118.86	113.80

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	229	ARG	Sidechain
1	E	229	ARG	Sidechain
1	E	314	ARG	Sidechain
1	E	324	ARG	Sidechain
2	F	4	ARG	Sidechain
1	G	124	ARG	Sidechain
1	G	144	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	2827	0	2846	40	0
1	C	2827	0	2846	24	1
1	E	2827	0	2846	36	1
1	G	2827	0	2846	45	0
2	B	40	0	46	4	0
2	D	40	0	46	1	0
2	F	40	0	46	1	0
2	H	40	0	46	5	0
3	A	10	0	0	0	0
3	C	24	0	0	1	0
3	E	18	0	0	0	0
3	G	6	0	0	1	0
All	All	11526	0	11568	141	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 6.

All (141) 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:A:76:ASP:O	1:A:79:THR:HG22	1.64	0.97
1:G:169:SER:HB3	1:G:170:PRO:HD3	1.52	0.92
1:A:54:ASN:O	1:A:58:THR:HG22	1.74	0.85
1:G:54:ASN:O	1:G:58:THR:HG22	1.76	0.84
1:G:159:MET:HE1	1:G:175:LEU:HD13	1.57	0.84
1:A:200:LEU:HD12	2:B:6:ALA:HB1	1.60	0.83
1:C:383:LYS:HE2	1:C:387:MET:HE3	1.64	0.78
1:G:175:LEU:HD23	1:G:201:LEU:HD13	1.67	0.76
1:E:79:THR:HG23	1:E:82:ALA:H	1.56	0.70
1:G:91:ALA:O	1:G:229:ARG:HD3	1.93	0.69
1:E:173:SER:HB2	1:G:173:SER:HB2	1.76	0.68
1:G:155:LYS:HB2	1:G:178:ILE:HD11	1.79	0.64
1:A:79:THR:HG23	1:A:82:ALA:H	1.64	0.63
1:G:223:LYS:HG3	3:G:401:HOH:O	1.99	0.63
1:G:159:MET:CE	1:G:175:LEU:HD13	2.30	0.60
1:A:159:MET:HE3	1:A:200:LEU:HD23	1.83	0.60
1:G:199:VAL:HG12	2:H:6:ALA:HA	1.84	0.59
1:A:147:THR:OG1	1:A:150:MET:HB2	2.02	0.59
1:A:254:TYR:CZ	1:A:274:ASN:HB3	2.38	0.59
1:A:155:LYS:HB2	1:A:178:ILE:HD11	1.84	0.58
1:G:383:LYS:HG2	1:G:387:MET:HE2	1.84	0.58
1:E:135:GLU:HA	1:E:138:LYS:HE2	1.85	0.58
1:G:254:TYR:CZ	1:G:274:ASN:HB3	2.39	0.58
1:C:91:ALA:O	1:C:229:ARG:HD3	2.04	0.57
1:C:159:MET:HE2	1:C:200:LEU:HD22	1.86	0.56
1:C:213:LEU:HD23	1:C:216:LYS:HE2	1.87	0.56
1:A:152:ILE:HD13	1:A:180:LEU:HD23	1.89	0.55
1:E:159:MET:HE1	1:E:175:LEU:HD13	1.89	0.55
1:A:196:ARG:O	1:A:200:LEU:HD13	2.06	0.55
1:C:254:TYR:CZ	1:C:274:ASN:HB3	2.42	0.55
1:A:280:ASN:O	1:A:308:ASN:ND2	2.38	0.55
1:G:169:SER:HB3	1:G:170:PRO:CD	2.33	0.55
1:G:316:LEU:O	1:G:320:LYS:HG2	2.06	0.54
1:E:76:ASP:O	1:E:79:THR:HG22	2.08	0.54
1:E:322:LEU:HD12	1:E:325:LYS:HD3	1.90	0.54
1:C:159:MET:HE1	1:C:175:LEU:HD13	1.91	0.53
1:E:91:ALA:O	1:E:229:ARG:HD3	2.08	0.53
1:E:321:SER:HA	1:E:324:ARG:HE	1.72	0.53
1:E:383:LYS:O	1:E:387:MET:HG2	2.09	0.53
1:C:76:ASP:HB3	1:C:79:THR:HG23	1.90	0.53
1:A:151:ASN:O	1:A:154:SER:OG	2.28	0.52
1:E:254:TYR:CZ	1:E:274:ASN:HB3	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:159:MET:HE2	1:G:200:LEU:HD22	1.93	0.51
1:A:160:TYR:CE1	1:A:200:LEU:HD11	2.46	0.51
1:G:152:ILE:HG23	1:G:178:ILE:HG23	1.92	0.51
1:G:361:ASP:OD2	2:H:4:ARG:NH2	2.42	0.51
1:G:121:GLU:O	1:G:125:LYS:HG3	2.10	0.51
1:C:386:SER:OG	1:C:387:MET:HE2	2.12	0.50
1:G:133:VAL:HG21	1:G:162:TYR:CE1	2.47	0.50
1:E:147:THR:HB	1:E:149:GLU:OE1	2.12	0.50
1:A:178:ILE:HG21	1:A:197:ILE:HD11	1.94	0.49
1:C:367:MET:HB2	1:C:368:PRO:CD	2.43	0.49
1:E:316:LEU:HB2	1:E:342:ILE:HG21	1.94	0.49
1:G:341:LEU:HD21	1:G:371:LYS:HE3	1.94	0.49
1:E:357:LYS:HZ1	1:G:357:LYS:NZ	2.10	0.49
1:A:200:LEU:HD12	2:B:6:ALA:CB	2.39	0.49
1:E:190:LYS:O	1:E:194:GLU:HB2	2.13	0.49
1:G:76:ASP:HB3	1:G:79:THR:HG23	1.95	0.49
1:A:367:MET:HB2	1:A:368:PRO:CD	2.43	0.49
1:E:367:MET:HB2	1:E:368:PRO:CD	2.43	0.49
1:A:105:MET:O	1:A:114:LYS:HA	2.13	0.48
1:A:383:LYS:O	1:A:387:MET:HG2	2.12	0.48
1:E:277:PHE:HA	1:E:301:GLU:OE1	2.14	0.48
1:E:79:THR:CG2	1:E:82:ALA:H	2.25	0.48
1:E:357:LYS:NZ	1:G:357:LYS:HZ3	2.10	0.48
1:A:228:LYS:HG3	1:A:260:ILE:HG22	1.96	0.48
1:A:124:ARG:HB3	1:A:128:ARG:HH12	1.79	0.48
1:A:361:ASP:OD2	2:B:4:ARG:NH2	2.47	0.48
1:E:123:HIS:HB2	1:E:157:ILE:HG12	1.95	0.48
1:E:47:SER:HB3	1:E:50:ASN:HB2	1.96	0.47
1:C:280:ASN:O	1:C:308:ASN:ND2	2.43	0.47
1:A:153:PHE:O	1:A:157:ILE:HG13	2.14	0.47
1:E:132:ASP:OD1	1:E:133:VAL:N	2.47	0.47
1:A:312:LEU:HB3	1:A:342:ILE:HG23	1.97	0.47
1:E:162:TYR:HB3	1:E:167:ASN:O	2.14	0.46
1:C:175:LEU:HD23	1:C:201:LEU:HD13	1.96	0.46
1:A:152:ILE:HG12	1:A:178:ILE:HG23	1.97	0.46
1:E:357:LYS:NZ	1:G:357:LYS:NZ	2.64	0.46
1:E:361:ASP:OD2	2:F:4:ARG:NH2	2.48	0.46
1:A:190:LYS:O	1:A:194:GLU:HB2	2.16	0.46
1:A:367:MET:HB2	1:A:368:PRO:HD3	1.98	0.46
1:A:276:SER:O	1:A:286:ASN:ND2	2.47	0.45
1:E:169:SER:HB2	1:E:170:PRO:HD3	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:310:LYS:HE3	1:C:310:LYS:HB2	1.77	0.45
1:G:367:MET:HB2	1:G:368:PRO:CD	2.47	0.45
1:A:52:ILE:O	1:A:55:ILE:HG13	2.16	0.45
1:A:277:PHE:HA	1:A:301:GLU:OE1	2.17	0.45
1:C:282:TRP:HB3	1:C:284:LYS:HE3	1.99	0.45
1:A:115:GLU:OE2	1:A:147:THR:OG1	2.27	0.45
1:A:175:LEU:HD21	1:A:201:LEU:HD22	1.98	0.45
1:E:142:LYS:HB2	1:E:142:LYS:HE3	1.80	0.44
1:C:153:PHE:O	1:C:157:ILE:HG13	2.16	0.44
1:E:153:PHE:O	1:E:157:ILE:HG13	2.16	0.44
1:E:155:LYS:O	1:E:158:PRO:HD2	2.16	0.44
1:G:123:HIS:HB2	1:G:157:ILE:HG12	2.00	0.44
1:G:159:MET:SD	1:G:175:LEU:HD13	2.58	0.44
1:E:79:THR:HG23	1:E:82:ALA:N	2.29	0.43
1:G:277:PHE:HA	1:G:301:GLU:OE1	2.18	0.43
1:A:76:ASP:O	1:A:77:PRO:C	2.60	0.43
1:C:123:HIS:HB2	1:C:157:ILE:HG12	2.00	0.43
1:G:199:VAL:CG1	2:H:6:ALA:HA	2.47	0.43
1:C:364:PHE:HD1	2:D:4:ARG:HH12	1.65	0.43
1:G:332:LEU:HA	1:G:335:HIS:HB3	2.00	0.43
1:C:225:THR:HG21	1:C:230:PHE:HB2	2.00	0.43
1:C:309:GLN:HB3	1:C:311:LYS:HE2	2.00	0.43
1:G:166:GLY:HA2	1:G:168:PHE:CE1	2.54	0.43
1:E:138:LYS:HE2	1:E:138:LYS:HB3	1.78	0.43
1:E:367:MET:HB2	1:E:368:PRO:HD3	1.99	0.43
1:G:147:THR:OG1	1:G:150:MET:HB2	2.19	0.43
1:C:367:MET:HB2	1:C:368:PRO:HD3	2.01	0.43
1:G:142:LYS:HB2	1:G:142:LYS:HE2	1.82	0.43
1:A:258:TYR:O	1:A:262:LYS:HG3	2.18	0.43
1:G:134:LEU:HA	1:G:137:SER:HB2	2.01	0.43
1:E:162:TYR:CD2	1:E:170:PRO:HG2	2.54	0.42
1:C:157:ILE:N	1:C:158:PRO:CD	2.82	0.42
1:A:199:VAL:HG12	2:B:6:ALA:HA	2.02	0.42
1:C:155:LYS:O	1:C:158:PRO:HD2	2.20	0.42
1:E:63:GLN:HA	1:E:66:GLU:OE1	2.20	0.42
1:A:133:VAL:HG21	1:A:162:TYR:CE1	2.55	0.42
1:E:163:LEU:HA	1:E:163:LEU:HD12	1.84	0.42
1:G:63:GLN:HA	1:G:66:GLU:OE1	2.20	0.42
1:C:63:GLN:HA	1:C:66:GLU:OE1	2.20	0.42
1:G:153:PHE:HA	1:G:156:MET:HE2	2.01	0.41
1:A:349:PHE:O	1:A:353:VAL:HG23	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:134:LEU:O	1:G:135:GLU:C	2.63	0.41
1:G:274:ASN:OD1	2:H:3:VAL:HG22	2.20	0.41
1:A:166:GLY:HA2	1:A:168:PHE:CE1	2.56	0.41
1:G:124:ARG:HB3	1:G:128:ARG:NH1	2.36	0.41
1:G:176:LYS:HD3	1:G:176:LYS:HA	1.64	0.41
1:E:73:LEU:HD23	1:E:73:LEU:HA	1.96	0.41
1:C:175:LEU:HD12	1:C:175:LEU:HA	1.89	0.41
1:G:199:VAL:HG12	2:H:6:ALA:CA	2.51	0.41
1:G:151:ASN:O	1:G:154:SER:OG	2.38	0.40
1:A:171:MET:HE2	1:A:171:MET:HB3	1.95	0.40
1:G:316:LEU:HG	1:G:320:LYS:HE2	2.03	0.40
1:A:124:ARG:HB3	1:A:128:ARG:NH1	2.37	0.40
1:C:244:PHE:HB2	3:C:415:HOH:O	2.21	0.40
1:E:249:LEU:HD23	1:E:249:LEU:HA	1.84	0.40
1:G:157:ILE:N	1:G:158:PRO:CD	2.84	0.40
1:G:367:MET:HB2	1:G:368:PRO:HD3	2.03	0.40
1:A:196:ARG:HG3	1:A:230:PHE:CZ	2.57	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:60:TYR:OH	1:E:75:LEU:CD2[1_565]	1.98	0.22

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	339/386 (88%)	330 (97%)	9 (3%)	0	100	100
1	C	339/386 (88%)	334 (98%)	5 (2%)	0	100	100
1	E	339/386 (88%)	333 (98%)	6 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	G	339/386 (88%)	331 (98%)	8 (2%)	0	100	100
2	B	4/6 (67%)	3 (75%)	1 (25%)	0	100	100
2	D	4/6 (67%)	4 (100%)	0	0	100	100
2	F	4/6 (67%)	4 (100%)	0	0	100	100
2	H	4/6 (67%)	4 (100%)	0	0	100	100
All	All	1372/1568 (88%)	1343 (98%)	29 (2%)	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	317/356 (89%)	308 (97%)	9 (3%)	38	65
1	C	317/356 (89%)	310 (98%)	7 (2%)	47	73
1	E	317/356 (89%)	310 (98%)	7 (2%)	47	73
1	G	317/356 (89%)	311 (98%)	6 (2%)	52	77
2	B	3/3 (100%)	3 (100%)	0	100	100
2	D	3/3 (100%)	3 (100%)	0	100	100
2	F	3/3 (100%)	3 (100%)	0	100	100
2	H	3/3 (100%)	3 (100%)	0	100	100
All	All	1280/1436 (89%)	1251 (98%)	29 (2%)	45	72

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	149	GLU
1	A	151	ASN
1	A	197	ILE
1	A	232	VAL
1	A	243	ILE

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Mol	Chain	Res	Type
1	A	259	GLU
1	A	310	LYS
1	A	313	GLU
1	A	324	ARG
1	C	102	VAL
1	C	132	ASP
1	C	174	LEU
1	C	187	ASN
1	C	197	ILE
1	C	232	VAL
1	C	362	LYS
1	E	102	VAL
1	E	107	ILE
1	E	178	ILE
1	E	187	ASN
1	E	191	LYS
1	E	245	SER
1	E	373	GLU
1	G	102	VAL
1	G	151	ASN
1	G	197	ILE
1	G	228	LYS
1	G	232	VAL
1	G	362	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	54	ASN
1	A	252	GLN
1	A	327	GLN
1	C	54	ASN
1	C	123	HIS
1	C	177	GLN
1	C	309	GLN
1	C	327	GLN
1	E	294	ASN
1	E	300	GLN
1	E	330	ASN
1	G	63	GLN
1	G	123	HIS
1	G	167	ASN

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Mol	Chain	Res	Type
1	G	252	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

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

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^{th} 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	341/386 (88%)	0.01	8 (2%) 61 58	13, 35, 69, 129	0
1	C	341/386 (88%)	-0.33	4 (1%) 76 73	12, 30, 63, 102	0
1	E	341/386 (88%)	-0.27	0 100 100	13, 30, 60, 81	0
1	G	341/386 (88%)	0.18	10 (2%) 54 50	19, 42, 93, 119	0
2	B	6/6 (100%)	-0.31	0 100 100	26, 31, 33, 46	0
2	D	6/6 (100%)	-0.26	0 100 100	17, 27, 30, 37	0
2	F	6/6 (100%)	0.25	0 100 100	22, 25, 31, 41	0
2	H	6/6 (100%)	0.63	1 (16%) 5 5	23, 30, 53, 54	0
All	All	1388/1568 (88%)	-0.10	23 (1%) 69 65	12, 34, 73, 129	0

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	153	PHE	3.7
1	A	175	LEU	3.6
1	G	143	TYR	3.0
1	A	47	SER	2.9
1	A	174	LEU	2.8
2	H	6	ALA	2.8
1	C	107	ILE	2.6
1	A	185	GLU	2.5
1	G	133	VAL	2.4
1	G	62	ASP	2.4
1	G	134	LEU	2.3
1	G	132	ASP	2.3
1	C	144	ARG	2.3
1	G	180	LEU	2.2
1	G	154	SER	2.2
1	C	106	SER	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	294	ASN	2.1
1	G	111	LEU	2.1
1	A	177	GLN	2.1
1	A	285	GLU	2.1
1	A	55	ILE	2.0
1	C	312	LEU	2.0
1	G	109	SER	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.