Full wwPDB X-ray Structure Validation Report (i)

Jun 8, 2026 – 02:04 PM JST

PDB ID	:	9VEY / pdb_00009vey
Title	:	Ethanol dehydrogenase of Pseudomonas syringae pv. actinidiae
Authors	:	Li, X.Y.; Luo, X.; Zhang, S.Q.; Xing, Z.F.
Deposited on	:	2025-06-10
Resolution	:	2.29 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:

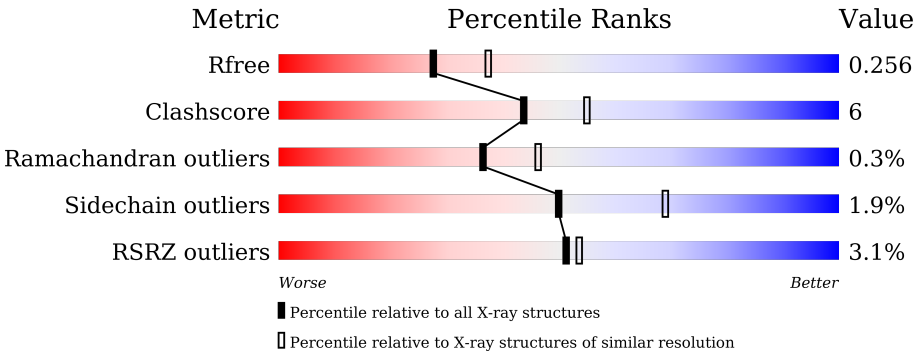
MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 2.29 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}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

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	336	3% 83% 16%
1	B	336	3% 85% 14%
1	C	336	4% 85% 14%
1	D	336	3% 85% 14%
1	E	336	4% 82% 17%
1	F	336	3% 81% 19%

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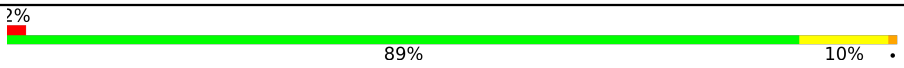
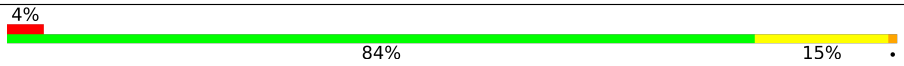
Mol	Chain	Length	Quality of chain
1	G	336	
1	H	336	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 20578 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 NAD(P)-dependent alcohol dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	B	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	C	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	D	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	E	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	F	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	G	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			
1	H	335	Total	C	N	O	S	0	0	0
			2500	1565	436	487	12			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	48	Total	O	0	0
			48	48		
2	B	84	Total	O	0	0
			84	84		
2	C	94	Total	O	0	0
			94	94		
2	D	97	Total	O	0	0
			97	97		
2	E	39	Total	O	0	0
			39	39		
2	F	64	Total	O	0	0
			64	64		

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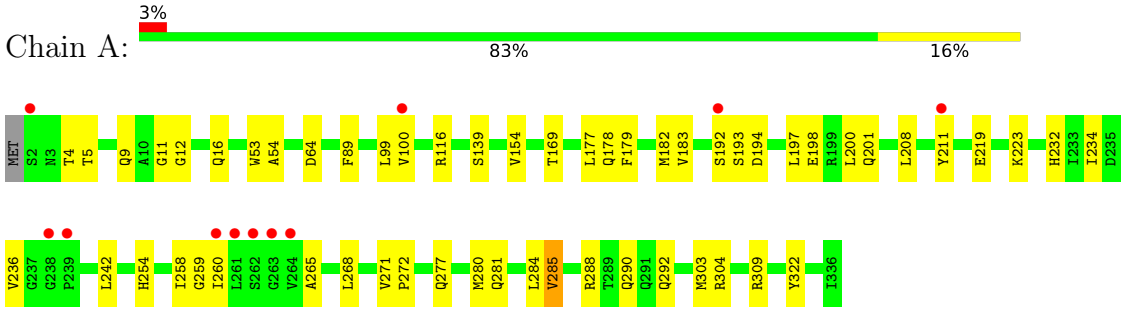
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	G	83	Total O 83 83	0	0
2	H	69	Total O 69 69	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

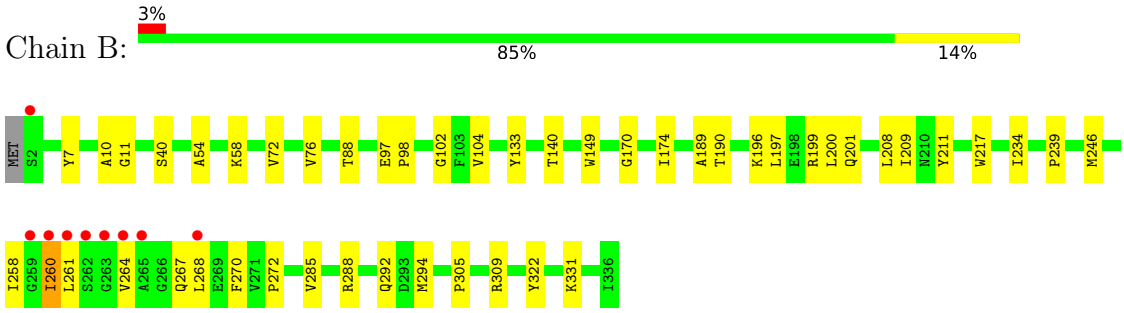
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase

Chain A:



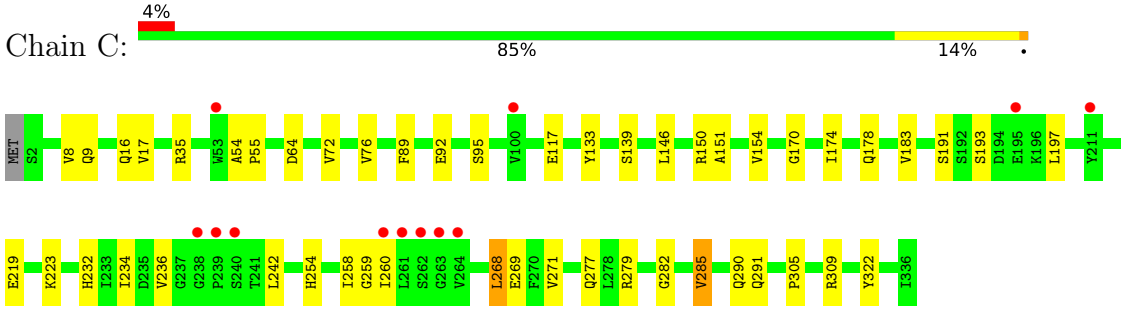
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase

Chain B:



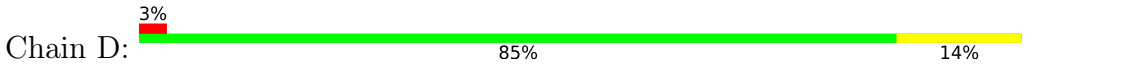
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase

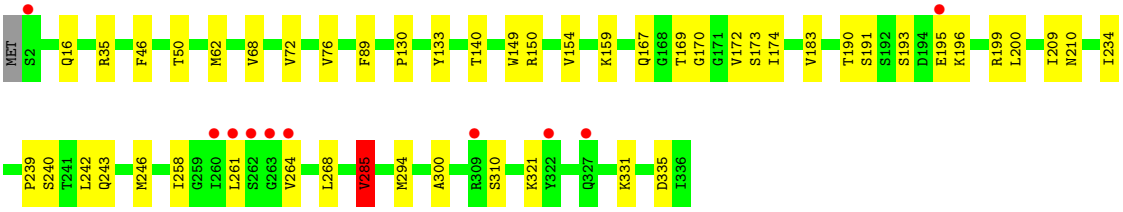
Chain C:



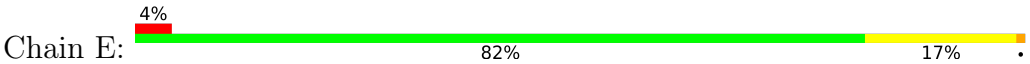
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase

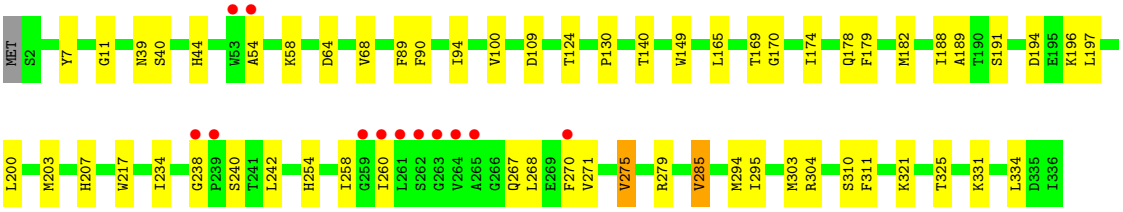
Chain D:



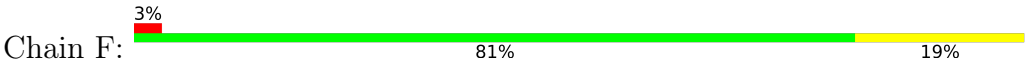


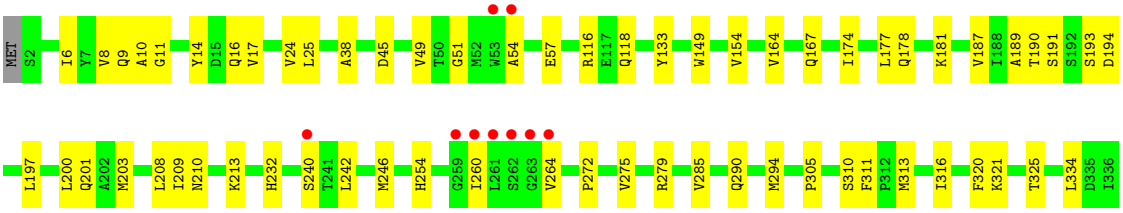
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase



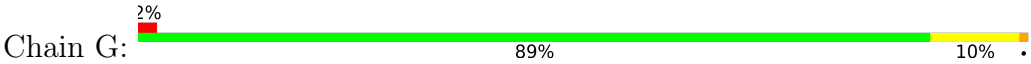


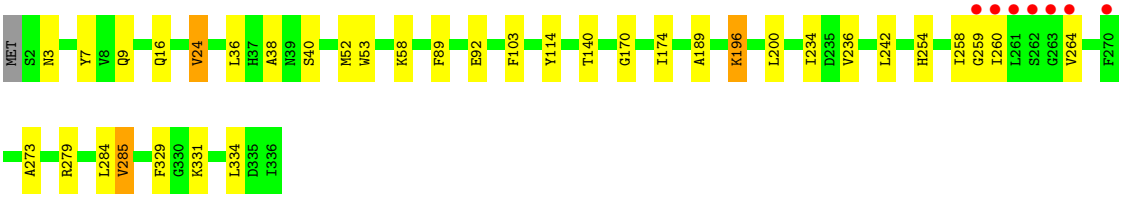
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase



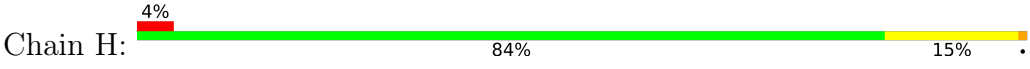


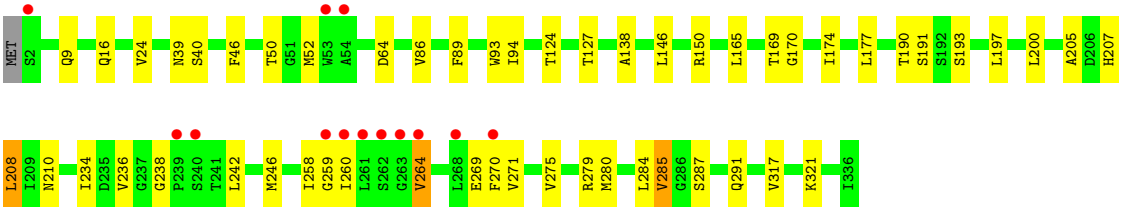
• Molecule 1: NAD(P)-dependent alcohol dehydrogenase





• Molecule 1: NAD(P)-dependent alcohol dehydrogenase





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 32	Depositor
Cell constants a, b, c, α, β, γ	184.28Å 184.28Å 77.26Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	35.63 – 2.29 35.63 – 2.29	Depositor EDS
% Data completeness (in resolution range)	99.6 (35.63-2.29) 99.5 (35.63-2.29)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.75 (at 2.29Å)	Xtriage
Refinement program	PHENIX (1.21.2_5419: ???)	Depositor
R, R_{free}	0.204 , 0.259 0.204 , 0.256	Depositor DCC
R_{free} test set	1982 reflections (1.50%)	wwPDB-VP
Wilson B-factor (Å^2)	23.5	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 31.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.45$, $< L^2 > = 0.28$	Xtriage
Estimated twinning fraction	0.119 for -h,-k,l 0.048 for h,-h-k,-l 0.046 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	20578	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.30% 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	0.34	0/2546	0.54	0/3454
1	B	0.34	0/2546	0.54	0/3454
1	C	0.34	0/2546	0.52	0/3454
1	D	0.32	0/2546	0.51	0/3454
1	E	0.34	0/2546	0.52	0/3454
1	F	0.33	0/2546	0.51	0/3454
1	G	0.33	0/2546	0.54	0/3454
1	H	0.33	0/2546	0.53	0/3454
All	All	0.33	0/20368	0.53	0/27632

There are no bond length outliers.

There are no bond angle outliers.

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	2500	0	2458	38	0
1	B	2500	0	2458	32	0
1	C	2500	0	2458	28	0
1	D	2500	0	2458	31	0
1	E	2500	0	2458	39	0
1	F	2500	0	2458	34	0
1	G	2500	0	2458	21	0
1	H	2500	0	2458	36	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	48	0	0	0	0
2	B	84	0	0	0	0
2	C	94	0	0	0	0
2	D	97	0	0	6	0
2	E	39	0	0	0	0
2	F	64	0	0	1	0
2	G	83	0	0	3	0
2	H	69	0	0	1	0
All	All	20578	0	19664	243	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 6.

All (243) 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:E:178:GLN:HB3	1:E:303:MET:HE2	1.58	0.83
1:C:279:ARG:NH1	1:G:279:ARG:HE	1.77	0.82
1:A:178:GLN:HB3	1:A:303:MET:HE2	1.65	0.79
1:D:190:THR:HG22	1:D:209:ILE:HB	1.66	0.77
1:A:182:MET:HE3	1:A:303:MET:HE3	1.67	0.77
1:D:261:LEU:HD12	1:D:264:VAL:HG13	1.66	0.76
1:B:97:GLU:HG3	1:B:98:PRO:HD2	1.68	0.75
1:E:271:VAL:O	1:E:275:VAL:HG12	1.90	0.72
1:C:242:LEU:HD23	1:C:268:LEU:HD21	1.71	0.72
1:H:9:GLN:HB2	1:H:16:GLN:HB3	1.73	0.70
1:G:9:GLN:HB2	1:G:16:GLN:HB3	1.74	0.69
1:B:140:THR:HB	1:B:331:LYS:HG3	1.78	0.65
1:C:279:ARG:HH12	1:G:279:ARG:HE	1.46	0.64
1:A:201:GLN:HB2	1:A:208:LEU:HD11	1.78	0.63
1:C:269:GLU:HG2	1:C:271:VAL:HG23	1.79	0.63
1:F:9:GLN:HB2	1:F:16:GLN:HG3	1.80	0.63
1:A:265:ALA:HB2	1:H:269:GLU:HG3	1.81	0.62
1:H:269:GLU:HG2	1:H:271:VAL:HG23	1.80	0.61
1:A:11:GLY:HA2	1:A:54:ALA:HB1	1.83	0.61
1:E:44:HIS:HE1	1:E:109:ASP:OD2	1.84	0.60
1:A:182:MET:CE	1:A:303:MET:HE3	2.31	0.60
1:B:190:THR:HG22	1:B:209:ILE:HB	1.83	0.60
1:G:7:TYR:CD1	1:G:58:LYS:HD2	2.38	0.59
1:C:146:LEU:HD22	1:C:291:GLN:HB2	1.85	0.59
1:F:201:GLN:HB2	1:F:208:LEU:HD11	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:194:ASP:HA	1:E:197:LEU:HD12	1.84	0.58
1:E:242:LEU:HD23	1:E:268:LEU:HD21	1.86	0.57
1:D:169:THR:HG22	1:D:200:LEU:HD11	1.85	0.57
1:F:8:VAL:HG22	1:F:17:VAL:HG22	1.86	0.57
1:B:189:ALA:HB1	1:B:200:LEU:HD13	1.86	0.57
1:A:271:VAL:HG22	1:H:264:VAL:HG21	1.86	0.56
1:H:169:THR:HG22	1:H:200:LEU:HD11	1.87	0.56
1:A:242:LEU:HD21	1:A:280:MET:HE3	1.85	0.56
1:F:11:GLY:HA2	1:F:54:ALA:HB1	1.87	0.56
1:C:72:VAL:HG13	1:C:76:VAL:HB	1.87	0.56
1:C:191:SER:HB3	1:C:197:LEU:HG	1.87	0.56
1:B:201:GLN:HB2	1:B:208:LEU:HD11	1.88	0.55
1:B:309:ARG:HD3	1:B:322:TYR:CZ	2.42	0.55
1:D:172:VAL:HG12	2:D:509:HOH:O	2.05	0.55
1:A:179:PHE:CE1	1:A:303:MET:HE1	2.42	0.55
1:E:11:GLY:HA2	1:E:54:ALA:HB1	1.89	0.55
1:H:146:LEU:HD23	1:H:285:VAL:HG12	1.89	0.55
1:D:234:ILE:HG21	2:D:509:HOH:O	2.06	0.54
1:A:9:GLN:HB2	1:A:16:GLN:HB3	1.88	0.54
1:F:246:MET:HB3	1:F:272:PRO:HB2	1.90	0.54
1:H:197:LEU:HD22	1:H:208:LEU:HB3	1.90	0.54
1:E:94:ILE:HD11	1:E:124:THR:HB	1.90	0.53
1:B:88:THR:HG21	1:B:288:ARG:HG3	1.90	0.53
1:H:16:GLN:HA	1:H:16:GLN:HE21	1.73	0.53
1:C:219:GLU:O	1:C:223:LYS:HG2	2.07	0.53
1:F:177:LEU:HG	1:F:187:VAL:HG11	1.90	0.53
1:F:200:LEU:HA	1:F:203:MET:HE2	1.91	0.53
1:B:268:LEU:HD22	1:E:270:PHE:CE2	2.44	0.53
1:G:53:TRP:HZ3	1:G:103:PHE:CE2	2.26	0.53
1:A:234:ILE:HG23	1:A:258:ILE:HD12	1.91	0.53
1:B:149:TRP:CG	1:B:294:MET:HB2	2.44	0.52
1:F:260:ILE:HG23	1:F:264:VAL:HG23	1.90	0.52
1:A:303:MET:HG2	1:A:304:ARG:N	2.24	0.52
1:A:219:GLU:O	1:A:223:LYS:HG3	2.09	0.52
1:E:303:MET:HG2	1:E:304:ARG:N	2.24	0.52
1:F:45:ASP:O	1:F:49:VAL:HG23	2.09	0.52
1:A:236:VAL:O	1:A:259:GLY:HA3	2.10	0.52
1:A:194:ASP:O	1:A:198:GLU:HG3	2.10	0.51
1:C:9:GLN:HB2	1:C:16:GLN:HB3	1.92	0.51
1:D:149:TRP:CG	1:D:294:MET:HB2	2.45	0.51
1:D:243:GLN:HA	1:D:246:MET:HE3	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:284:LEU:HD11	1:H:275:VAL:HA	1.92	0.51
1:G:189:ALA:HB1	1:G:200:LEU:HD13	1.91	0.51
1:C:254:HIS:CE1	1:C:279:ARG:HE	2.29	0.51
1:A:309:ARG:HD3	1:A:322:TYR:CZ	2.46	0.51
1:B:102:GLY:CA	1:E:275:VAL:HG23	2.41	0.51
1:A:281:GLN:OE1	1:H:279:ARG:HD2	2.10	0.51
1:E:234:ILE:HG23	1:E:258:ILE:HD12	1.93	0.50
1:H:264:VAL:HG23	2:H:431:HOH:O	2.11	0.50
1:A:89:PHE:CD2	1:A:285:VAL:HG21	2.46	0.50
1:H:260:ILE:HG22	1:H:264:VAL:HG23	1.94	0.50
1:B:133:TYR:CZ	1:B:305:PRO:HD3	2.47	0.50
1:H:207:HIS:C	1:H:208:LEU:HG	2.37	0.49
1:H:39:ASN:HA	1:H:64:ASP:O	2.12	0.49
1:H:86:VAL:HG21	1:H:138:ALA:O	2.12	0.49
1:F:133:TYR:CZ	1:F:305:PRO:HD3	2.47	0.49
1:F:164:VAL:HA	1:F:232:HIS:O	2.13	0.49
1:E:311:PHE:O	1:E:334:LEU:HA	2.13	0.49
1:H:127:THR:HG21	1:H:291:GLN:HG2	1.94	0.49
1:H:242:LEU:O	1:H:246:MET:HG3	2.13	0.49
1:B:260:ILE:O	1:B:261:LEU:HD23	2.12	0.49
1:B:268:LEU:HD22	1:E:270:PHE:HE2	1.77	0.48
1:H:238:GLY:O	1:H:242:LEU:HB2	2.13	0.48
1:A:5:THR:HG23	1:A:116:ARG:HB3	1.94	0.48
1:D:89:PHE:CD2	1:D:285:VAL:HG21	2.48	0.48
1:A:242:LEU:HD23	1:A:268:LEU:HD21	1.95	0.48
1:F:264:VAL:HG22	2:F:409:HOH:O	2.13	0.48
1:B:10:ALA:O	1:D:68:VAL:HG21	2.13	0.48
1:D:89:PHE:CG	1:D:285:VAL:HG21	2.48	0.48
1:G:140:THR:HB	1:G:331:LYS:HG3	1.95	0.48
1:H:270:PHE:CE1	1:H:280:MET:HE1	2.48	0.48
1:D:193:SER:OG	1:D:195:GLU:HG2	2.14	0.48
1:C:89:PHE:CD2	1:C:285:VAL:HG21	2.49	0.47
1:C:236:VAL:O	1:C:259:GLY:HA3	2.14	0.47
1:E:140:THR:HB	1:E:331:LYS:HG3	1.96	0.47
1:E:174:ILE:HG23	1:E:203:MET:HE1	1.96	0.47
1:F:24:VAL:HG21	1:F:118:GLN:HB2	1.96	0.47
1:A:154:VAL:HG11	1:A:290:GLN:NE2	2.29	0.47
1:G:236:VAL:C	1:G:259:GLY:HA3	2.39	0.47
1:B:133:TYR:OH	1:B:305:PRO:HD3	2.14	0.47
1:E:165:LEU:HD21	1:E:217:TRP:HZ3	1.78	0.47
1:F:6:ILE:HG12	1:F:313:MET:HE3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:7:TYR:CG	1:B:58:LYS:HE2	2.50	0.47
1:B:246:MET:HB3	1:B:272:PRO:HB2	1.97	0.47
1:H:284:LEU:HA	1:H:284:LEU:HD23	1.74	0.47
1:C:8:VAL:HG22	1:C:17:VAL:HG22	1.97	0.47
1:C:133:TYR:CZ	1:C:305:PRO:HD3	2.49	0.47
1:C:234:ILE:HG23	1:C:258:ILE:HD12	1.97	0.47
1:G:38:ALA:HA	1:G:334:LEU:O	2.15	0.47
1:G:196:LYS:HG2	1:G:329:PHE:HD2	1.80	0.47
1:B:239:PRO:HB3	1:B:267:GLN:O	2.14	0.46
1:E:189:ALA:HB1	1:E:200:LEU:HD13	1.97	0.46
1:H:46:PHE:CE1	1:H:50:THR:HG21	2.50	0.46
1:D:167:GLN:HA	1:D:190:THR:OG1	2.16	0.46
1:B:270:PHE:HE2	1:E:268:LEU:CD2	2.28	0.46
1:B:72:VAL:HG13	1:B:76:VAL:HB	1.98	0.46
1:D:35:ARG:HB2	2:D:574:HOH:O	2.16	0.46
1:F:194:ASP:HA	1:F:197:LEU:HD12	1.97	0.46
1:D:16:GLN:HE21	1:D:16:GLN:HA	1.81	0.46
1:E:7:TYR:CG	1:E:58:LYS:HE2	2.51	0.46
1:C:309:ARG:HD3	1:C:322:TYR:CZ	2.51	0.45
1:E:254:HIS:HB2	1:E:279:ARG:NH2	2.31	0.45
1:D:72:VAL:HG13	1:D:76:VAL:HB	1.98	0.45
1:D:239:PRO:HD2	2:D:539:HOH:O	2.16	0.45
1:E:90:PHE:CD1	1:E:100:VAL:HG21	2.51	0.45
1:B:11:GLY:HA2	1:B:54:ALA:HB1	1.97	0.45
1:G:52:MET:O	1:G:53:TRP:HD1	1.99	0.45
1:A:169:THR:HG22	1:A:200:LEU:HD11	1.98	0.45
1:H:170:GLY:O	1:H:174:ILE:HG12	2.16	0.45
1:F:10:ALA:HB2	1:F:57:GLU:HA	1.98	0.45
1:F:189:ALA:HB1	1:F:200:LEU:HD13	1.99	0.45
1:F:191:SER:HB3	1:F:197:LEU:HG	1.99	0.45
1:G:170:GLY:O	1:G:174:ILE:HG12	2.16	0.45
1:A:179:PHE:CD1	1:A:303:MET:HE1	2.52	0.45
1:E:179:PHE:CD1	1:E:303:MET:HE1	2.52	0.45
1:A:197:LEU:HD23	1:A:200:LEU:HD12	1.99	0.44
1:D:300:ALA:HB1	2:G:435:HOH:O	2.16	0.44
1:F:174:ILE:O	1:F:178:GLN:HG3	2.17	0.44
1:A:89:PHE:CG	1:A:285:VAL:HG21	2.52	0.44
1:F:203:MET:HE3	1:F:203:MET:HB2	1.69	0.44
1:B:211:TYR:HB2	1:B:217:TRP:CD1	2.52	0.44
1:C:174:ILE:O	1:C:178:GLN:HG3	2.17	0.44
1:D:140:THR:HB	1:D:331:LYS:HG3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:271:VAL:HB	1:A:272:PRO:HD3	2.00	0.44
1:G:52:MET:HE2	1:G:52:MET:HB2	1.70	0.44
1:H:317:VAL:O	1:H:321:LYS:HG3	2.18	0.44
1:D:159:LYS:HE3	2:G:470:HOH:O	2.18	0.44
1:G:36:LEU:HD13	1:G:114:TYR:HB3	1.98	0.44
1:D:234:ILE:HG23	1:D:258:ILE:HD12	2.00	0.44
1:E:321:LYS:O	1:E:325:THR:HG23	2.18	0.44
1:B:260:ILE:H	1:B:260:ILE:HG13	1.74	0.44
1:D:195:GLU:O	1:D:199:ARG:HG3	2.18	0.44
1:E:7:TYR:CD1	1:E:58:LYS:HE2	2.53	0.44
1:A:197:LEU:HD22	1:A:208:LEU:HD22	2.00	0.43
1:C:150:ARG:HD3	1:C:150:ARG:C	2.43	0.43
1:D:46:PHE:CE1	1:D:50:THR:HG21	2.53	0.43
1:G:234:ILE:HG23	1:G:258:ILE:HD12	2.00	0.43
1:H:234:ILE:HG23	1:H:258:ILE:HD12	2.00	0.43
1:A:288:ARG:O	1:A:292:GLN:HG3	2.19	0.43
1:C:151:ALA:O	1:C:232:HIS:HE1	2.01	0.43
1:C:154:VAL:HG21	1:C:290:GLN:HG2	1.99	0.43
1:E:89:PHE:CG	1:E:285:VAL:HG21	2.53	0.43
1:A:53:TRP:CZ2	1:A:260:ILE:HD13	2.54	0.43
1:B:264:VAL:HB	1:E:271:VAL:CG2	2.48	0.43
1:A:277:GLN:CD	1:H:284:LEU:HB2	2.44	0.43
1:B:170:GLY:O	1:B:174:ILE:HG12	2.17	0.43
1:F:167:GLN:HA	1:F:190:THR:OG1	2.18	0.43
1:D:154:VAL:N	2:D:501:HOH:O	2.52	0.43
1:E:191:SER:N	1:E:197:LEU:HD21	2.33	0.43
1:H:89:PHE:CD2	1:H:285:VAL:HG21	2.54	0.43
1:F:190:THR:HG22	1:F:209:ILE:HB	1.99	0.42
1:D:310:SER:HB3	1:D:335:ASP:OD2	2.19	0.42
1:E:238:GLY:O	1:E:242:LEU:HB2	2.19	0.42
1:C:170:GLY:O	1:C:174:ILE:HG12	2.19	0.42
1:H:89:PHE:CG	1:H:285:VAL:HG21	2.54	0.42
1:C:89:PHE:CG	1:C:285:VAL:HG21	2.55	0.42
1:A:232:HIS:HA	1:A:254:HIS:O	2.19	0.42
1:C:54:ALA:HA	1:C:55:PRO:HD3	1.91	0.42
1:H:94:ILE:HD11	1:H:124:THR:HB	2.01	0.42
1:B:102:GLY:N	1:E:275:VAL:HG23	2.35	0.42
1:G:89:PHE:CD2	1:G:285:VAL:HG21	2.54	0.42
1:B:288:ARG:O	1:B:292:GLN:HG3	2.20	0.42
1:D:170:GLY:O	1:D:174:ILE:HG12	2.20	0.42
1:E:191:SER:H	1:E:197:LEU:HD21	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:38:ALA:HA	1:F:334:LEU:O	2.18	0.42
1:F:316:ILE:HD11	1:F:320:PHE:HE2	1.85	0.42
1:D:150:ARG:C	1:D:150:ARG:HD3	2.44	0.42
1:D:193:SER:HB3	1:D:196:LYS:HB2	2.02	0.42
1:D:321:LYS:HA	2:D:502:HOH:O	2.20	0.42
1:E:169:THR:HG21	1:E:196:LYS:HD2	2.02	0.42
1:E:170:GLY:O	1:E:174:ILE:HG12	2.19	0.42
1:F:149:TRP:CG	1:F:294:MET:HB2	2.55	0.42
1:F:210:ASN:CG	1:F:213:LYS:HD3	2.45	0.41
1:C:35:ARG:HD2	1:C:117:GLU:O	2.20	0.41
1:D:242:LEU:HD23	1:D:268:LEU:HD21	2.02	0.41
1:H:191:SER:O	1:H:210:ASN:HA	2.20	0.41
1:A:4:THR:O	1:A:116:ARG:HA	2.20	0.41
1:B:7:TYR:CD1	1:B:58:LYS:HE2	2.56	0.41
1:F:311:PHE:O	1:F:334:LEU:HA	2.20	0.41
1:G:3:ASN:ND2	1:G:24:VAL:HG22	2.36	0.41
1:H:165:LEU:HD11	1:H:190:THR:HG23	2.03	0.41
1:A:64:ASP:HB3	1:A:139:SER:O	2.21	0.41
1:E:179:PHE:CE1	1:E:303:MET:HE1	2.54	0.41
1:H:177:LEU:HD11	1:H:205:ALA:HB2	2.02	0.41
1:H:260:ILE:HG22	1:H:264:VAL:CG2	2.50	0.41
1:F:116:ARG:HD2	1:F:118:GLN:O	2.21	0.41
1:F:154:VAL:HG21	1:F:290:GLN:HG2	2.00	0.41
1:H:236:VAL:HA	1:H:259:GLY:HA3	2.03	0.41
1:F:181:LYS:HA	1:F:181:LYS:HD2	1.78	0.41
1:A:99:LEU:HD23	1:A:99:LEU:HA	1.76	0.41
1:B:196:LYS:O	1:B:200:LEU:HG	2.20	0.41
1:C:232:HIS:HA	1:C:254:HIS:O	2.20	0.41
1:D:191:SER:O	1:D:210:ASN:HA	2.21	0.41
1:E:39:ASN:HA	1:E:64:ASP:O	2.21	0.41
1:H:93:TRP:CE2	1:H:287:SER:HB3	2.55	0.41
1:B:234:ILE:HG23	1:B:258:ILE:HD12	2.02	0.41
1:E:182:MET:CE	1:E:303:MET:HE3	2.51	0.41
1:G:92:GLU:HG2	2:G:412:HOH:O	2.21	0.41
1:A:192:SER:HB3	1:A:211:TYR:CE1	2.55	0.41
1:B:199:ARG:HE	1:B:199:ARG:HB3	1.71	0.41
1:C:282:GLY:HA3	1:G:273:ALA:O	2.21	0.41
1:F:14:TYR:CD2	1:F:321:LYS:HE3	2.56	0.41
1:C:64:ASP:HB3	1:C:139:SER:O	2.20	0.41
1:A:177:LEU:HD23	1:A:177:LEU:C	2.46	0.40
1:D:130:PRO:HG2	1:D:133:TYR:CE2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:130:PRO:HG3	1:E:295:ILE:HG23	2.04	0.40
1:E:254:HIS:HB2	1:E:279:ARG:HH21	1.85	0.40
1:F:49:VAL:HG21	1:F:320:PHE:CE2	2.56	0.40
1:A:12:GLY:O	1:A:16:GLN:HG3	2.21	0.40
1:F:254:HIS:HB2	1:F:279:ARG:HH21	1.86	0.40
1:G:254:HIS:ND1	1:G:279:ARG:HD2	2.36	0.40
1:E:188:ILE:HG12	1:E:207:HIS:HB2	2.03	0.40
1:F:51:GLY:HA2	1:F:54:ALA:HA	2.03	0.40
1:H:52:MET:HB2	1:H:52:MET:HE3	1.65	0.40
1:B:197:LEU:HD23	1:B:200:LEU:HD12	2.03	0.40
1:C:277:GLN:CD	1:G:284:LEU:HB2	2.46	0.40
1:E:149:TRP:CG	1:E:294:MET:HB2	2.56	0.40
1:H:150:ARG:HD3	1:H:150:ARG:C	2.47	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	333/336 (99%)	319 (96%)	13 (4%)	1 (0%)	36	46
1	B	333/336 (99%)	317 (95%)	15 (4%)	1 (0%)	36	46
1	C	333/336 (99%)	320 (96%)	12 (4%)	1 (0%)	36	46
1	D	333/336 (99%)	317 (95%)	14 (4%)	2 (1%)	21	27
1	E	333/336 (99%)	319 (96%)	13 (4%)	1 (0%)	36	46
1	F	333/336 (99%)	320 (96%)	12 (4%)	1 (0%)	36	46
1	G	333/336 (99%)	320 (96%)	12 (4%)	1 (0%)	36	46
1	H	333/336 (99%)	321 (96%)	11 (3%)	1 (0%)	36	46
All	All	2664/2688 (99%)	2553 (96%)	102 (4%)	9 (0%)	36	46

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	285	VAL
1	G	285	VAL
1	H	285	VAL
1	A	285	VAL
1	B	285	VAL
1	C	285	VAL
1	E	285	VAL
1	F	285	VAL
1	D	62	MET

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	263/264 (100%)	260 (99%)	3 (1%)	65	81
1	B	263/264 (100%)	260 (99%)	3 (1%)	65	81
1	C	263/264 (100%)	257 (98%)	6 (2%)	44	63
1	D	263/264 (100%)	259 (98%)	4 (2%)	57	75
1	E	263/264 (100%)	256 (97%)	7 (3%)	39	58
1	F	263/264 (100%)	256 (97%)	7 (3%)	39	58
1	G	263/264 (100%)	257 (98%)	6 (2%)	44	63
1	H	263/264 (100%)	258 (98%)	5 (2%)	50	69
All	All	2104/2112 (100%)	2063 (98%)	41 (2%)	50	69

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	100	VAL
1	A	183	VAL
1	A	193	SER
1	B	40	SER
1	B	104	VAL

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Mol	Chain	Res	Type
1	B	260	ILE
1	C	92	GLU
1	C	95	SER
1	C	183	VAL
1	C	193	SER
1	C	260	ILE
1	C	268	LEU
1	D	173	SER
1	D	183	VAL
1	D	240	SER
1	D	285	VAL
1	E	40	SER
1	E	68	VAL
1	E	240	SER
1	E	260	ILE
1	E	267	GLN
1	E	275	VAL
1	E	310	SER
1	F	25	LEU
1	F	193	SER
1	F	240	SER
1	F	242	LEU
1	F	275	VAL
1	F	310	SER
1	F	325	THR
1	G	24	VAL
1	G	40	SER
1	G	196	LYS
1	G	242	LEU
1	G	260	ILE
1	G	264	VAL
1	H	24	VAL
1	H	40	SER
1	H	193	SER
1	H	208	LEU
1	H	264	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	267	GLN
1	B	39	ASN

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Mol	Chain	Res	Type
1	B	291	GLN
1	B	292	GLN
1	B	326	ASN
1	C	207	HIS
1	D	16	GLN
1	D	28	GLN
1	D	118	GLN
1	D	128	HIS
1	D	178	GLN
1	D	292	GLN
1	E	44	HIS
1	E	178	GLN
1	E	323	GLN
1	E	328	HIS
1	F	178	GLN
1	F	323	GLN
1	G	16	GLN
1	G	267	GLN
1	H	9	GLN
1	H	16	GLN
1	H	178	GLN
1	H	326	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

There are no 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, 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	335/336 (99%)	-0.02	11 (3%) 49 51	14, 23, 47, 66	0
1	B	335/336 (99%)	0.05	9 (2%) 56 58	16, 24, 48, 89	0
1	C	335/336 (99%)	-0.03	12 (3%) 46 48	14, 23, 45, 68	0
1	D	335/336 (99%)	-0.02	10 (2%) 52 54	16, 24, 45, 110	0
1	E	335/336 (99%)	0.06	12 (3%) 46 48	13, 25, 52, 87	0
1	F	335/336 (99%)	0.06	9 (2%) 56 58	15, 25, 45, 95	0
1	G	335/336 (99%)	-0.00	7 (2%) 63 65	14, 24, 45, 83	0
1	H	335/336 (99%)	0.06	13 (3%) 43 45	15, 24, 49, 92	0
All	All	2680/2688 (99%)	0.02	83 (3%) 51 53	13, 24, 47, 110	0

All (83) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	261	LEU	10.5
1	H	261	LEU	9.4
1	G	263	GLY	7.7
1	E	261	LEU	6.2
1	F	263	GLY	6.2
1	A	262	SER	6.2
1	B	261	LEU	6.2
1	H	262	SER	6.1
1	H	260	ILE	6.0
1	F	262	SER	5.8
1	G	260	ILE	5.7
1	B	264	VAL	5.7
1	C	263	GLY	5.7
1	G	262	SER	5.6
1	D	261	LEU	5.5
1	D	263	GLY	5.4

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Mol	Chain	Res	Type	RSRZ
1	A	264	VAL	5.4
1	G	261	LEU	5.3
1	E	260	ILE	5.2
1	E	262	SER	5.2
1	G	264	VAL	5.1
1	D	262	SER	5.1
1	H	264	VAL	5.1
1	C	264	VAL	5.0
1	B	263	GLY	5.0
1	B	260	ILE	4.8
1	F	260	ILE	4.6
1	H	263	GLY	4.5
1	B	262	SER	4.5
1	G	259	GLY	4.5
1	E	264	VAL	4.5
1	E	53	TRP	4.4
1	E	263	GLY	4.2
1	F	259	GLY	4.2
1	E	259	GLY	4.2
1	A	261	LEU	4.2
1	F	53	TRP	3.9
1	A	263	GLY	3.8
1	A	260	ILE	3.7
1	D	309	ARG	3.7
1	H	259	GLY	3.5
1	C	239	PRO	3.5
1	C	100	VAL	3.5
1	F	54	ALA	3.3
1	C	261	LEU	3.3
1	F	264	VAL	3.3
1	E	238	GLY	3.2
1	A	239	PRO	3.2
1	C	260	ILE	3.2
1	C	262	SER	3.2
1	E	270	PHE	3.2
1	G	270	PHE	3.1
1	D	322	TYR	3.1
1	B	2	SER	3.1
1	B	265	ALA	2.9
1	H	2	SER	2.8
1	H	270	PHE	2.8
1	A	100	VAL	2.8

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Mol	Chain	Res	Type	RSRZ
1	D	327	GLN	2.8
1	D	2	SER	2.7
1	D	260	ILE	2.7
1	B	268	LEU	2.6
1	H	268	LEU	2.5
1	H	53	TRP	2.4
1	C	53	TRP	2.4
1	C	195	GLU	2.4
1	F	240	SER	2.4
1	C	240	SER	2.3
1	D	264	VAL	2.3
1	A	211	TYR	2.2
1	H	239	PRO	2.2
1	E	54	ALA	2.2
1	E	265	ALA	2.2
1	E	239	PRO	2.1
1	D	195	GLU	2.1
1	H	54	ALA	2.1
1	A	238	GLY	2.1
1	A	192	SER	2.0
1	C	211	TYR	2.0
1	B	259	GLY	2.0
1	C	238	GLY	2.0
1	A	2	SER	2.0
1	H	240	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 oligosaccharides 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.