



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 16, 2024 – 03:06 AM EDT

PDB ID : 1Y7E  
Title : The Crystal Structure of Aminopeptidase I from *Borrelia burgdorferi* B31  
Authors : Min, T.; Gorman, J.; Shapiro, L.; Burley, S.K.; New York SGX Research Center for Structural Genomics (NYSGXRC)  
Deposited on : 2004-12-08  
Resolution : 3.20 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) : 1.20.1  
EDS : 2.37.1  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

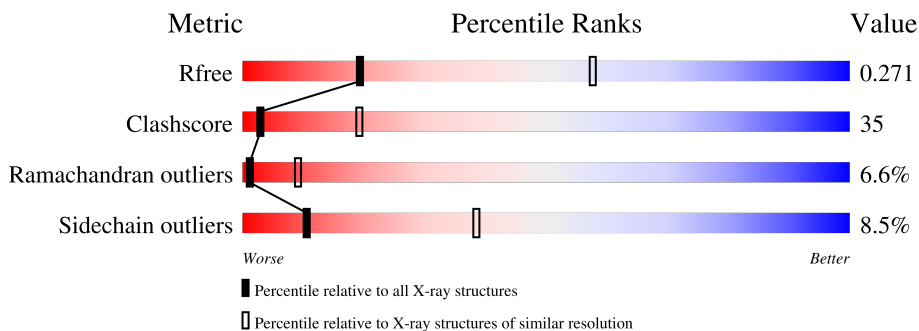
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.20 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))
$R_{free}$	130704	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)

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	458	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 3296 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 Probable M18-family aminopeptidase 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	404	3232	2088	517	616	4	7	0	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	61	MSE	MET	modified residue	UNP Q45055
A	89	MSE	MET	modified residue	UNP Q45055
A	308	MSE	MET	modified residue	UNP Q45055
A	363	MSE	MET	modified residue	UNP Q45055
A	426	MSE	MET	modified residue	UNP Q45055
A	433	MSE	MET	modified residue	UNP Q45055
A	437	MSE	MET	modified residue	UNP Q45055

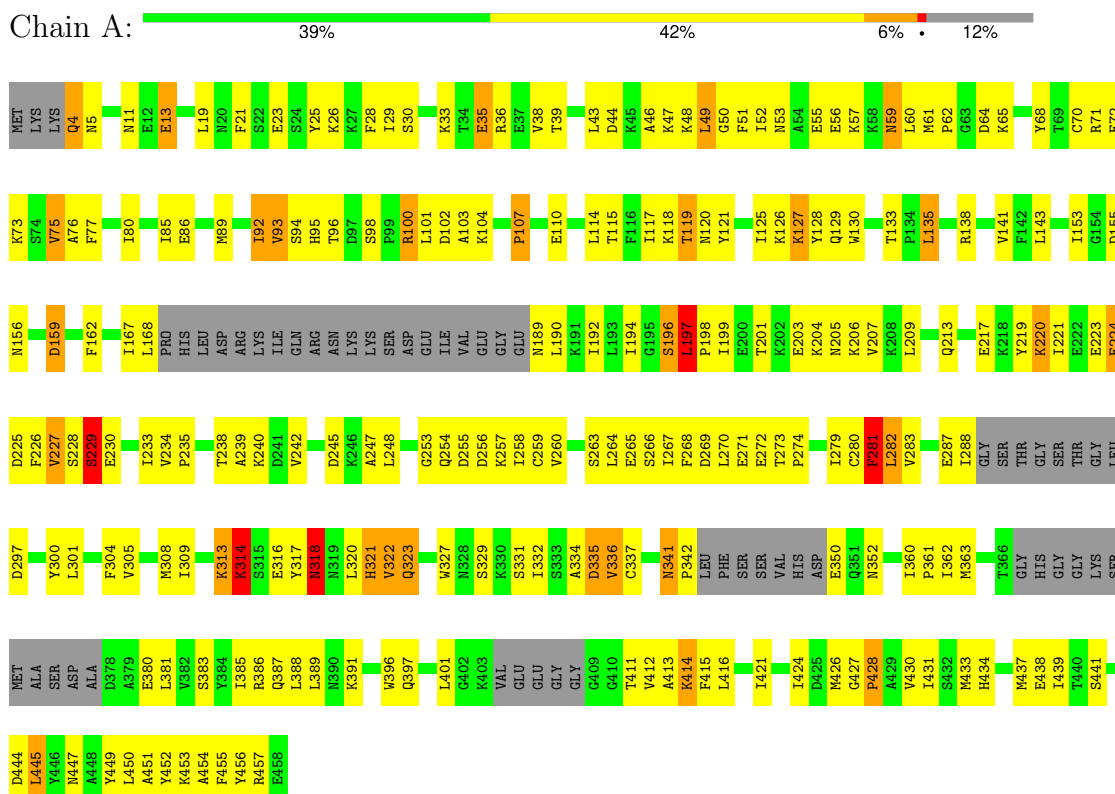
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	64	Total	O	0	0
			64	64		

### 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. 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: Probable M18-family aminopeptidase 1



## 4 Data and refinement statistics

Property	Value	Source
Space group	F 4 3 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	244.27Å 244.27Å 244.27Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.81 – 3.20 49.86 – 2.70	Depositor EDS
% Data completeness (in resolution range)	95.2 (19.81-3.20) 98.0 (49.86-2.70)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.42 (at 2.69Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.202 , 0.258 0.209 , 0.271	Depositor DCC
$R_{free}$ test set	870 reflections (2.70%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	31.0	Xtrriage
Anisotropy	0.000	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 43.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.88	EDS
Total number of atoms	3296	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	23.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.46% 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	0.39	0/3287	0.71	2/4418 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	227	VAL	N-CA-C	-5.49	96.18	111.00
1	A	321	HIS	N-CA-C	-5.48	96.20	111.00

There are no chirality outliers.

There are no planarity outliers.

### 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	3232	0	3254	225	0
2	A	64	0	0	5	1
All	All	3296	0	3254	225	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 35.

All (225) 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:117:ILE:HG13	1:A:194:ILE:HD11	1.23	1.15
1:A:68:TYR:H	1:A:76:ALA:HB3	1.24	0.98
1:A:336:VAL:HG21	1:A:430:VAL:HG23	1.48	0.94
1:A:259:CYS:HB3	1:A:334:ALA:HB1	1.55	0.88
1:A:350:GLU:HG3	1:A:352:ASN:H	1.39	0.87
1:A:68:TYR:HB2	1:A:76:ALA:HB2	1.57	0.86
1:A:89:MSE:HE2	1:A:279:ILE:HD11	1.62	0.82
1:A:362:ILE:HG23	1:A:424:ILE:HD11	1.64	0.79
1:A:341:ASN:HB3	1:A:342:PRO:C	2.04	0.78
1:A:203:GLU:HG2	1:A:209:LEU:HD11	1.64	0.76
1:A:265:GLU:O	1:A:270:LEU:HD12	1.85	0.76
1:A:118:LYS:O	1:A:119:THR:HB	1.87	0.75
1:A:313:LYS:HB2	1:A:316:GLU:HG3	1.67	0.75
1:A:336:VAL:CG2	1:A:430:VAL:HG23	2.15	0.75
1:A:26:LYS:HA	1:A:29:ILE:HD11	1.69	0.75
1:A:101:LEU:HB2	1:A:233:ILE:HB	1.68	0.74
1:A:337:CYS:HB3	1:A:363:MSE:HE3	1.68	0.74
1:A:60:LEU:HD22	1:A:80:ILE:HG12	1.70	0.73
1:A:335:ASP:HB2	2:A:476:HOH:O	1.89	0.73
1:A:259:CYS:CB	1:A:334:ALA:HB1	2.19	0.72
1:A:141:VAL:HG22	1:A:229:SER:HB2	1.71	0.71
1:A:117:ILE:HG13	1:A:194:ILE:CD1	2.13	0.71
1:A:321:HIS:O	1:A:323:GLN:N	2.24	0.71
1:A:247:ALA:HB3	2:A:475:HOH:O	1.90	0.70
1:A:336:VAL:HG21	1:A:430:VAL:CG2	2.22	0.69
1:A:268:PHE:O	1:A:270:LEU:N	2.25	0.69
1:A:363:MSE:HE3	1:A:401:LEU:HD21	1.75	0.68
1:A:341:ASN:HB3	1:A:342:PRO:CA	2.24	0.68
1:A:155:ASP:O	1:A:156:ASN:HB2	1.92	0.68
1:A:48:LYS:C	1:A:50:GLY:H	1.97	0.67
1:A:29:ILE:HD12	1:A:30:SER:N	2.09	0.66
1:A:441:SER:HB3	1:A:444:ASP:OD2	1.95	0.66
1:A:85:ILE:HD11	1:A:89:MSE:HE3	1.78	0.66
1:A:68:TYR:N	1:A:76:ALA:HB3	2.05	0.65
1:A:68:TYR:HB2	1:A:76:ALA:CB	2.25	0.65
1:A:104:LYS:HG2	1:A:120:ASN:HD21	1.61	0.65
1:A:309:ILE:HD13	1:A:322:VAL:HA	1.79	0.65
1:A:36:ARG:HH22	1:A:230:GLU:CD	2.01	0.64
1:A:270:LEU:HD13	1:A:449:TYR:OH	1.96	0.63
1:A:414:LYS:O	1:A:416:LEU:N	2.31	0.62
1:A:336:VAL:HG23	1:A:428:PRO:O	2.00	0.62
1:A:223:GLU:O	1:A:224:GLU:HB3	2.00	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:314:LYS:CD	1:A:314:LYS:H	2.13	0.61
1:A:258:ILE:HG13	1:A:445:LEU:HD23	1.82	0.61
1:A:336:VAL:HG23	1:A:428:PRO:C	2.21	0.61
1:A:336:VAL:HG22	1:A:337:CYS:H	1.65	0.61
1:A:245:ASP:HB3	2:A:517:HOH:O	2.00	0.61
1:A:104:LYS:HG2	1:A:120:ASN:ND2	2.16	0.61
1:A:48:LYS:O	1:A:50:GLY:N	2.34	0.60
1:A:38:VAL:HG21	1:A:257:LYS:HE3	1.83	0.60
1:A:95:HIS:HA	1:A:283:VAL:O	2.01	0.60
1:A:43:LEU:O	1:A:47:LYS:HG2	2.02	0.59
1:A:92:ILE:O	1:A:332:ILE:O	2.21	0.59
1:A:55:GLU:O	1:A:56:GLU:HB2	2.03	0.59
1:A:388:LEU:HD11	1:A:455:PHE:HA	1.84	0.59
1:A:341:ASN:CB	1:A:342:PRO:CA	2.80	0.59
1:A:138:ARG:NH2	1:A:155:ASP:OD2	2.35	0.59
1:A:385:ILE:HD11	1:A:424:ILE:HG21	1.85	0.58
1:A:452:TYR:O	1:A:453:LYS:HB3	2.02	0.58
1:A:29:ILE:HD12	1:A:30:SER:H	1.66	0.58
1:A:94:SER:O	1:A:282:LEU:HA	2.03	0.58
1:A:256:ASP:OD1	1:A:335:ASP:HA	2.03	0.57
1:A:196:SER:O	1:A:197:LEU:HD12	2.05	0.57
1:A:336:VAL:HG22	1:A:337:CYS:N	2.19	0.57
1:A:103:ALA:HA	1:A:119:THR:HA	1.85	0.57
1:A:125:ILE:HG22	1:A:127:LYS:H	1.71	0.56
1:A:192:ILE:HD12	1:A:192:ILE:N	2.21	0.56
1:A:55:GLU:C	1:A:57:LYS:H	2.10	0.55
1:A:68:TYR:HB3	1:A:300:TYR:OH	2.07	0.55
1:A:76:ALA:O	1:A:77:PHE:HB2	2.06	0.55
1:A:35:GLU:HG2	1:A:36:ARG:N	2.21	0.55
1:A:228:SER:O	1:A:229:SER:O	2.25	0.55
1:A:73:LYS:O	1:A:96:THR:HG21	2.05	0.55
1:A:431:ILE:HB	1:A:439:ILE:HB	1.87	0.55
1:A:126:LYS:HD2	1:A:128:TYR:CE1	2.42	0.55
1:A:254:GLN:HG3	1:A:438:GLU:HB2	1.88	0.55
1:A:452:TYR:O	1:A:454:ALA:N	2.40	0.55
1:A:313:LYS:HG3	1:A:317:TYR:HA	1.89	0.55
1:A:92:ILE:HG22	1:A:93:VAL:N	2.22	0.54
1:A:92:ILE:HG21	1:A:263:SER:HB2	1.89	0.54
1:A:281:PHE:O	1:A:282:LEU:HB2	2.08	0.54
1:A:317:TYR:CG	1:A:318:ASN:N	2.75	0.54
1:A:70:CYS:O	1:A:71:ARG:HG3	2.07	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:228:SER:OG	1:A:229:SER:N	2.41	0.53
1:A:242:VAL:HB	1:A:248:LEU:HB2	1.90	0.53
1:A:125:ILE:HG22	1:A:127:LYS:N	2.24	0.53
1:A:104:LYS:O	1:A:107:PRO:HD3	2.09	0.53
1:A:223:GLU:O	1:A:224:GLU:CB	2.55	0.53
1:A:337:CYS:HB3	1:A:363:MSE:CE	2.36	0.53
1:A:95:HIS:HE2	1:A:335:ASP:CG	2.12	0.53
1:A:203:GLU:CG	1:A:209:LEU:HD11	2.35	0.53
1:A:362:ILE:CG2	1:A:424:ILE:HD11	2.34	0.53
1:A:25:TYR:O	1:A:29:ILE:HG13	2.08	0.52
1:A:115:THR:HG22	1:A:194:ILE:HB	1.91	0.52
1:A:234:VAL:HG13	1:A:235:PRO:HD2	1.90	0.52
1:A:334:ALA:O	1:A:335:ASP:C	2.46	0.52
1:A:95:HIS:NE2	1:A:335:ASP:OD1	2.38	0.52
1:A:118:LYS:O	1:A:190:LEU:O	2.27	0.52
1:A:320:LEU:C	1:A:321:HIS:O	2.48	0.52
1:A:39:THR:HG23	1:A:75:VAL:HG22	1.92	0.52
1:A:126:LYS:HB3	1:A:129:GLN:HG3	1.91	0.51
1:A:219:TYR:O	1:A:220:LYS:HB2	2.11	0.51
1:A:281:PHE:O	1:A:282:LEU:CB	2.58	0.51
1:A:11:ASN:HD21	1:A:13:GLU:HB3	1.76	0.51
1:A:253:GLY:O	1:A:257:LYS:HB2	2.10	0.51
1:A:48:LYS:C	1:A:50:GLY:N	2.62	0.51
1:A:412:VAL:O	1:A:414:LYS:O	2.29	0.51
1:A:143:LEU:HA	1:A:225:ASP:OD1	2.11	0.50
1:A:49:LEU:O	1:A:65:LYS:HE3	2.12	0.50
1:A:135:LEU:HB2	1:A:162:PHE:O	2.12	0.50
1:A:360:ILE:H	1:A:447:ASN:HD21	1.59	0.49
1:A:21:PHE:CD2	1:A:445:LEU:HD13	2.46	0.49
1:A:26:LYS:O	1:A:29:ILE:HD12	2.12	0.49
1:A:46:ALA:O	1:A:51:PHE:HB2	2.12	0.49
1:A:29:ILE:HD13	1:A:239:ALA:HB2	1.93	0.49
1:A:196:SER:O	1:A:197:LEU:O	2.30	0.49
1:A:314:LYS:H	1:A:314:LYS:HD3	1.78	0.49
1:A:4:GLN:C	1:A:4:GLN:HE21	2.15	0.49
1:A:213:GLN:O	1:A:217:GLU:HG3	2.13	0.49
1:A:62:PRO:HA	1:A:80:ILE:HG22	1.95	0.49
1:A:331:SER:HB3	1:A:421:ILE:HG21	1.94	0.49
1:A:189:ASN:CG	1:A:190:LEU:H	2.15	0.49
1:A:287:GLU:HB2	1:A:297:ASP:OD2	2.13	0.49
1:A:100:ARG:O	1:A:125:ILE:HD11	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:ASN:CB	1:A:342:PRO:HA	2.43	0.48
1:A:61:MSE:O	1:A:64:ASP:HB2	2.13	0.48
1:A:254:GLN:HB2	1:A:438:GLU:HB2	1.94	0.48
1:A:271:GLU:HB3	1:A:457:ARG:CZ	2.44	0.48
1:A:313:LYS:HE2	1:A:313:LYS:HB3	1.76	0.48
1:A:86:GLU:OE2	1:A:321:HIS:HB3	2.13	0.48
1:A:92:ILE:CG2	1:A:93:VAL:N	2.76	0.48
1:A:44:ASP:O	1:A:48:LYS:HG3	2.14	0.48
1:A:266:SER:CB	1:A:453:LYS:HB2	2.43	0.48
1:A:55:GLU:C	1:A:57:LYS:N	2.66	0.47
1:A:101:LEU:O	1:A:120:ASN:O	2.32	0.47
1:A:198:PRO:HB3	1:A:206:LYS:HB2	1.96	0.47
1:A:361:PRO:HD2	1:A:427:GLY:O	2.14	0.47
1:A:198:PRO:HB3	1:A:206:LYS:CB	2.44	0.47
1:A:288:ILE:HG13	1:A:411:THR:HG21	1.95	0.47
1:A:35:GLU:HA	1:A:96:THR:OG1	2.15	0.47
1:A:309:ILE:HD13	1:A:322:VAL:HG22	1.97	0.47
1:A:314:LYS:CD	1:A:314:LYS:N	2.78	0.47
1:A:51:PHE:CE1	1:A:65:LYS:HD2	2.50	0.47
1:A:424:ILE:CG2	1:A:426:MSE:HE2	2.45	0.47
1:A:226:PHE:C	1:A:227:VAL:O	2.48	0.47
1:A:452:TYR:O	1:A:453:LYS:CB	2.63	0.46
1:A:266:SER:HB2	1:A:453:LYS:HB2	1.97	0.46
1:A:227:VAL:O	1:A:228:SER:C	2.52	0.46
1:A:388:LEU:HD23	1:A:388:LEU:O	2.16	0.46
1:A:168:LEU:C	1:A:168:LEU:HD13	2.36	0.46
1:A:233:ILE:N	1:A:233:ILE:HD12	2.30	0.46
1:A:254:GLN:HB2	1:A:438:GLU:OE1	2.15	0.46
1:A:256:ASP:OD1	1:A:335:ASP:N	2.49	0.46
1:A:57:LYS:NZ	1:A:59:ASN:HB2	2.31	0.46
1:A:224:GLU:C	1:A:226:PHE:N	2.68	0.46
1:A:360:ILE:H	1:A:447:ASN:ND2	2.14	0.46
1:A:26:LYS:C	1:A:28:PHE:N	2.68	0.46
1:A:198:PRO:HG3	1:A:207:VAL:HG22	1.97	0.46
1:A:301:LEU:HA	1:A:304:PHE:CE2	2.51	0.45
1:A:189:ASN:ND2	1:A:190:LEU:H	2.14	0.45
1:A:433:MSE:HE3	1:A:434:HIS:NE2	2.31	0.45
1:A:201:THR:HG21	1:A:209:LEU:HD12	1.98	0.45
1:A:110:GLU:OE1	1:A:205:ASN:HB3	2.17	0.45
1:A:238:THR:HG22	2:A:496:HOH:O	2.16	0.45
1:A:309:ILE:HD13	1:A:322:VAL:CA	2.45	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:362:ILE:CD1	1:A:396:TRP:HB2	2.47	0.44
1:A:254:GLN:N	1:A:438:GLU:OE1	2.50	0.44
1:A:271:GLU:HA	1:A:457:ARG:NH2	2.33	0.44
1:A:85:ILE:HD11	1:A:89:MSE:HG2	1.98	0.44
1:A:227:VAL:HG12	1:A:228:SER:N	2.33	0.44
1:A:413:ALA:C	1:A:414:LYS:O	2.54	0.44
1:A:259:CYS:HB3	1:A:334:ALA:CB	2.36	0.44
1:A:309:ILE:CD1	1:A:322:VAL:HA	2.46	0.44
1:A:256:ASP:OD1	1:A:259:CYS:HB2	2.17	0.44
1:A:297:ASP:N	2:A:461:HOH:O	2.51	0.44
1:A:401:LEU:HD12	1:A:401:LEU:N	2.33	0.44
1:A:52:ILE:HG22	1:A:53:ASN:O	2.18	0.43
1:A:141:VAL:HA	1:A:229:SER:HB2	1.99	0.43
1:A:453:LYS:O	1:A:454:ALA:C	2.56	0.43
1:A:267:ILE:HG23	1:A:268:PHE:N	2.32	0.43
1:A:385:ILE:O	1:A:389:LEU:HG	2.19	0.43
1:A:265:GLU:O	1:A:266:SER:C	2.56	0.43
1:A:272:GLU:O	1:A:273:THR:C	2.57	0.43
1:A:387:GLN:O	1:A:391:LYS:HB2	2.19	0.43
1:A:248:LEU:HD23	1:A:441:SER:HA	2.01	0.43
1:A:227:VAL:HG12	1:A:228:SER:H	1.83	0.43
1:A:341:ASN:HB2	1:A:342:PRO:HA	1.99	0.42
1:A:68:TYR:CD2	1:A:304:PHE:HB2	2.53	0.42
1:A:196:SER:HB2	1:A:197:LEU:H	1.72	0.42
1:A:133:THR:O	1:A:135:LEU:HD13	2.20	0.42
1:A:89:MSE:HE1	1:A:308:MSE:SE	2.69	0.42
1:A:130:TRP:CH2	1:A:235:PRO:HD3	2.55	0.42
1:A:19:LEU:O	1:A:23:GLU:HG2	2.20	0.42
1:A:4:GLN:C	1:A:4:GLN:NE2	2.73	0.42
1:A:33:LYS:HD3	1:A:234:VAL:HG11	2.01	0.42
1:A:360:ILE:N	1:A:447:ASN:ND2	2.68	0.42
1:A:451:ALA:C	1:A:452:TYR:O	2.55	0.42
1:A:110:GLU:HA	1:A:114:LEU:O	2.19	0.42
1:A:199:ILE:HG23	1:A:201:THR:HG22	2.01	0.42
1:A:361:PRO:HB3	1:A:397:GLN:HB2	2.02	0.42
1:A:430:VAL:CG1	1:A:438:GLU:HB3	2.50	0.42
1:A:76:ALA:O	1:A:77:PHE:CB	2.68	0.42
1:A:48:LYS:O	1:A:49:LEU:HB2	2.20	0.41
1:A:155:ASP:O	1:A:159:ASP:CB	2.69	0.41
1:A:221:ILE:HG23	1:A:225:ASP:HB2	2.01	0.41
1:A:85:ILE:CD1	1:A:89:MSE:HG2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:89:MSE:CE	1:A:279:ILE:HD11	2.43	0.41
1:A:264:LEU:HD23	1:A:280:CYS:SG	2.60	0.41
1:A:336:VAL:HG11	1:A:430:VAL:HG21	2.02	0.41
1:A:80:ILE:HD11	1:A:308:MSE:HE3	2.01	0.41
1:A:118:LYS:O	1:A:119:THR:CB	2.58	0.41
1:A:267:ILE:HB	1:A:456:TYR:CE1	2.56	0.41
1:A:305:VAL:O	1:A:309:ILE:HD12	2.20	0.41
1:A:203:GLU:CB	1:A:209:LEU:HD11	2.50	0.41
1:A:75:VAL:O	1:A:281:PHE:O	2.37	0.41
1:A:197:LEU:HA	1:A:198:PRO:HD3	1.73	0.41
1:A:450:LEU:O	1:A:454:ALA:HB2	2.21	0.41
1:A:25:TYR:OH	1:A:254:GLN:OE1	2.21	0.41
1:A:264:LEU:HD21	1:A:282:LEU:HD11	2.03	0.41
1:A:21:PHE:HD2	1:A:445:LEU:HD13	1.86	0.40
1:A:11:ASN:ND2	1:A:13:GLU:HB3	2.35	0.40
1:A:336:VAL:CG2	1:A:428:PRO:O	2.68	0.40
1:A:125:ILE:HG22	1:A:126:LYS:N	2.37	0.40
1:A:383:SER:O	1:A:387:GLN:HG3	2.21	0.40
1:A:260:VAL:O	1:A:264:LEU:HG	2.22	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)
2:A:465:HOH:O	2:A:465:HOH:O[74_555]	1.88	0.32

## 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	392/458 (86%)	319 (81%)	47 (12%)	26 (7%)	<b>1</b> <b>9</b>

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	127	LYS
1	A	197	LEU
1	A	204	LYS
1	A	229	SER
1	A	269	ASP
1	A	281	PHE
1	A	314	LYS
1	A	329	SER
1	A	341	ASN
1	A	93	VAL
1	A	102	ASP
1	A	224	GLU
1	A	335	ASP
1	A	13	GLU
1	A	72	GLU
1	A	167	ILE
1	A	282	LEU
1	A	318	ASN
1	A	5	ASN
1	A	49	LEU
1	A	255	ASP
1	A	428	PRO
1	A	414	LYS
1	A	322	VAL
1	A	336	VAL
1	A	107	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	355/391 (91%)	325 (92%)	30 (8%)	<b>10</b>   38

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	GLN
1	A	35	GLU
1	A	59	ASN
1	A	75	VAL
1	A	92	ILE
1	A	98	SER
1	A	100	ARG
1	A	119	THR
1	A	121	TYR
1	A	135	LEU
1	A	153	ILE
1	A	159	ASP
1	A	196	SER
1	A	197	LEU
1	A	220	LYS
1	A	229	SER
1	A	240	LYS
1	A	274	PRO
1	A	281	PHE
1	A	313	LYS
1	A	314	LYS
1	A	318	ASN
1	A	323	GLN
1	A	327	TRP
1	A	380	GLU
1	A	381	LEU
1	A	386	ARG
1	A	415	PHE
1	A	437	MSE
1	A	445	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	4	GLN
1	A	11	ASN
1	A	16	ASN
1	A	17	GLN
1	A	120	ASN
1	A	156	ASN
1	A	189	ASN
1	A	341	ASN
1	A	447	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 monosaccharides 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

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.