WORLDWIDE
wwPDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jun 15, 2024 – 05:32 PM EDT

PDB ID : 4R1I
Title : Structure and Function of Neisseria gonorrhoeae MtrF Illuminates a Class of Antimetabolite Efflux Pumps
Authors : Su, C.-C.; Bolla, J.R.; Yu, E.W.
Deposited on : 2014-08-06
Resolution : 3.96 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 : 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)
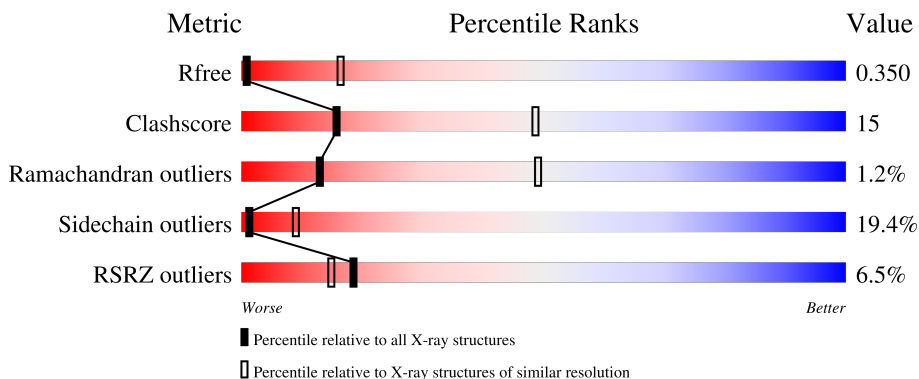Validation Pipeline (wwPDB-VP) : 2.37.1

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 3.96 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	Percentile Ranks	Value
Rfree		0.350
Clashscore		15
Ramachandran outliers		1.2%
Sidechain outliers		19.4%
RSRZ outliers		6.5%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1025 (4.22-3.70)
Clashscore	141614	1085 (4.22-3.70)
Ramachandran outliers	138981	1047 (4.22-3.70)
Sidechain outliers	138945	1039 (4.22-3.70)
RSRZ outliers	127900	1013 (4.28-3.64)

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	522	7% (red bar) / 55% / 36% / 7% / ·
1	B	522	5% (red bar) / 56% / 36% / 5% / ·

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2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 7684 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.
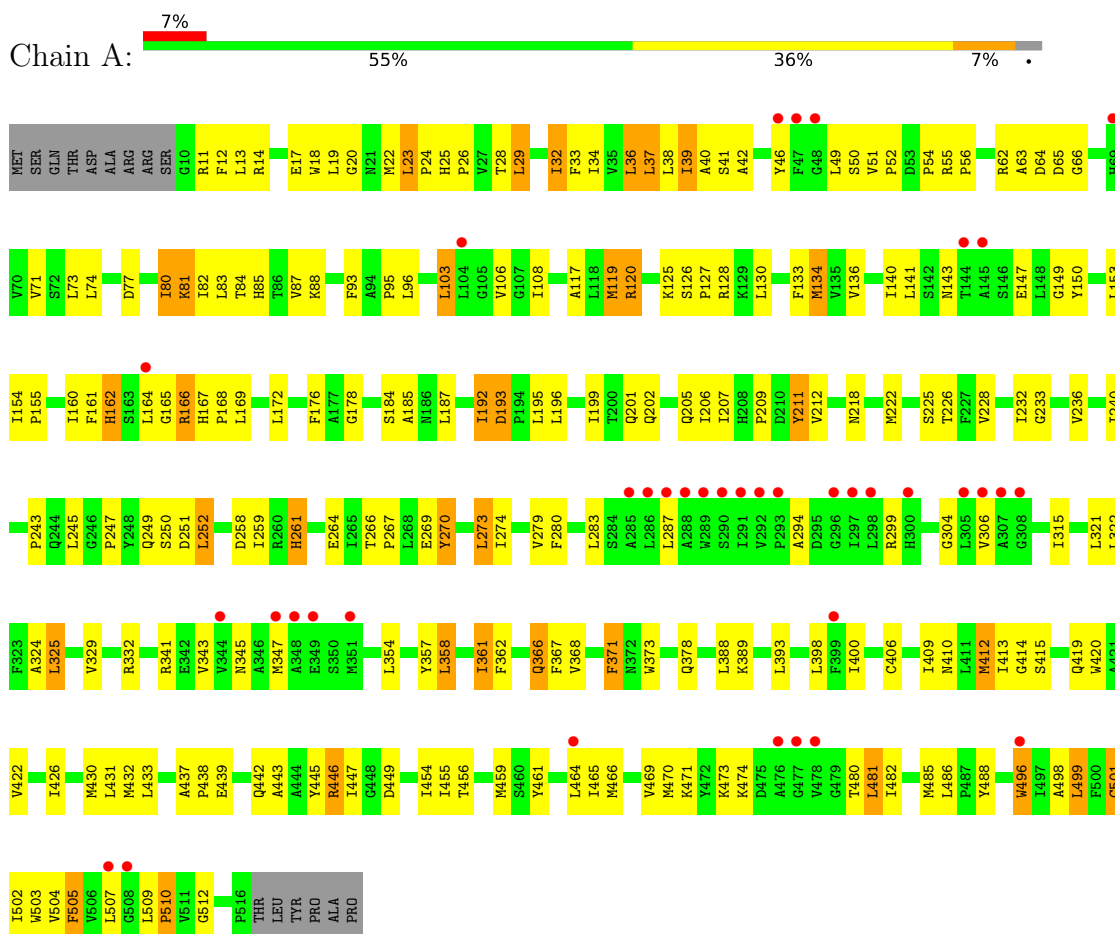
- Molecule 1 is a protein called Aminobenzoyl-glutamate transporter.

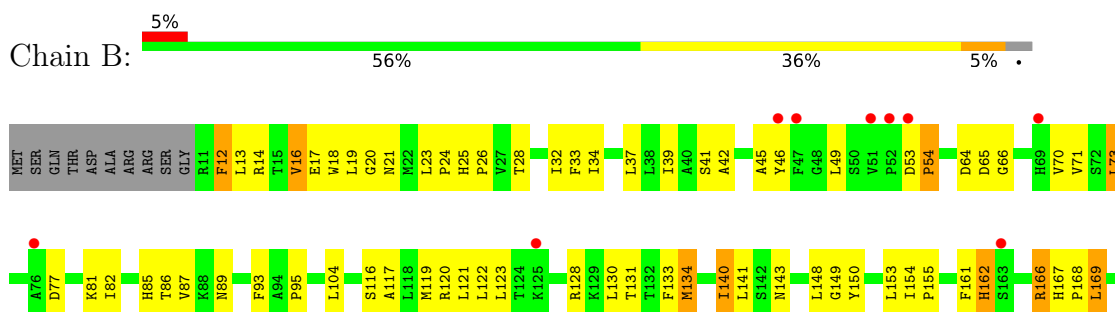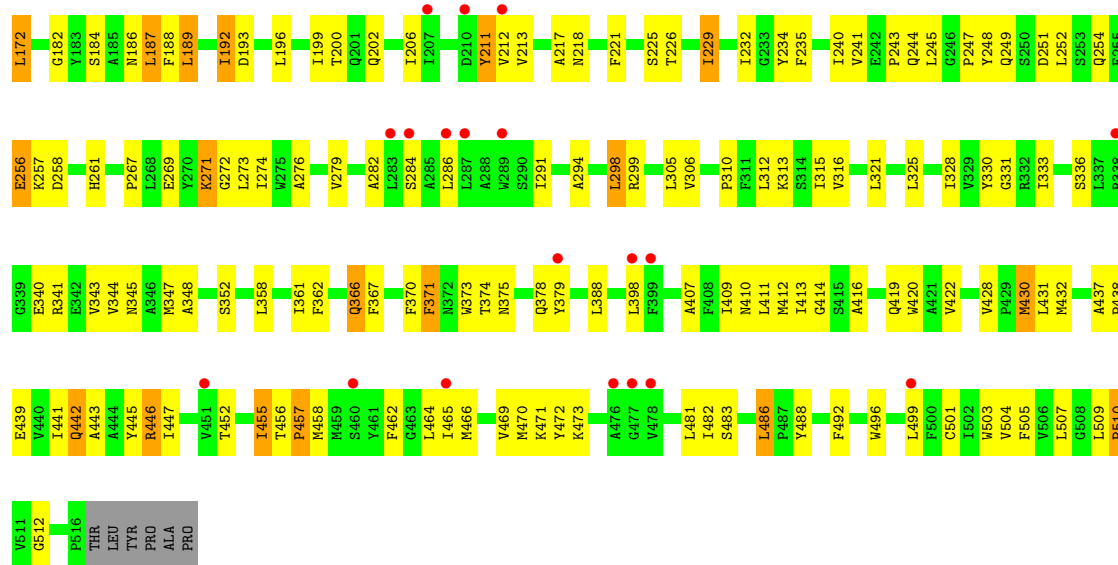| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	507	Total	C	N	O	S	0	0	0
			3846	2566	609	654	17			
1	B	506	Total	C	N	O	S	0	0	0
			3838	2563	605	653	17			

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry 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: Aminobenzoyl-glutamate transporter

Chain A:

• Molecule 1: Aminobenzoyl-glutamate transporter

Chain B:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 65	Depositor
Cell constants a, b, c, α, β, γ	120.77Å 120.77Å 233.90Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	47.74 – 3.96 47.74 – 3.96	Depositor EDS
% Data completeness (in resolution range)	97.4 (47.74-3.96) 97.8 (47.74-3.96)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.82 (at 4.00Å)	Xtriage
Refinement program	PHENIX 1.8.1_1168	Depositor
R, R_{free}	0.311 , 0.338 0.313 , 0.350	Depositor DCC
R_{free} test set	870 reflections (5.29%)	wwPDB-VP
Wilson B-factor (Å^2)	202.7	Xtriage
Anisotropy	0.407	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.23 , 50.2	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.368 for h,-h-k,-l	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	7684	wwPDB-VP
Average B, all atoms (Å^2)	163.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.24% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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	0.27	0/3945	0.49	0/5381
1	B	0.25	0/3938	0.48	0/5374
All	All	0.26	0/7883	0.48	0/10755

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	3846	0	3998	129	0
1	B	3838	0	3990	106	0
All	All	7684	0	7988	231	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 15.

All (231) 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:437:ALA:H	1:A:512:GLY:H	1.22	0.88
1:A:456:THR:HG23	1:A:482:ILE:HD12	1.60	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:393:LEU:HB3	1:A:398:LEU:HB2	1.65	0.79
1:B:131:THR:HA	1:B:134:MET:HB2	1.67	0.76
1:A:184:SER:HB2	1:A:446:ARG:HG2	1.69	0.75
1:B:414:GLY:HA2	1:B:419:GLN:HB2	1.66	0.75
1:B:16:VAL:HG21	1:B:455:ILE:HD11	1.71	0.72
1:B:430:MET:HG2	1:B:431:LEU:HD12	1.70	0.71
1:A:439:GLU:HG3	1:A:510:PRO:HG2	1.73	0.70
1:B:117:ALA:HA	1:B:120:ARG:HB2	1.74	0.69
1:B:410:ASN:HA	1:B:414:GLY:HA3	1.76	0.67
1:B:218:ASN:ND2	1:B:442:GLN:OE1	2.28	0.67
1:B:437:ALA:H	1:B:512:GLY:H	1.43	0.67
1:A:103:LEU:HD13	1:A:354:LEU:HD11	1.77	0.66
1:B:331:GLY:HA2	1:B:336:SER:HB2	1.77	0.66
1:A:36:LEU:O	1:A:40:ALA:N	2.29	0.64
1:B:140:ILE:HG13	1:B:182:GLY:HA3	1.78	0.64
1:B:196:LEU:HD13	1:B:446:ARG:HD2	1.81	0.62
1:A:24:PRO:HA	1:B:341:ARG:HD3	1.82	0.62
1:A:28:THR:O	1:A:32:ILE:HG23	1.98	0.62
1:A:22:MET:HE3	1:A:23:LEU:HG	1.82	0.62
1:A:127:PRO:HD2	1:A:130:LEU:HD12	1.81	0.62
1:A:279:VAL:HG21	1:A:329:VAL:HG21	1.82	0.62
1:A:228:VAL:HG21	1:A:499:LEU:HG	1.82	0.61
1:A:225:SER:OG	1:A:496:TRP:NE1	2.34	0.61
1:A:39:ILE:HA	1:A:42:ALA:HB3	1.83	0.61
1:A:117:ALA:HA	1:A:120:ARG:HB3	1.83	0.60
1:B:89:ASN:HD21	1:B:373:TRP:HH2	1.49	0.60
1:B:341:ARG:O	1:B:345:ASN:ND2	2.30	0.60
1:A:130:LEU:O	1:A:134:MET:N	2.33	0.60
1:A:466:MET:HA	1:A:469:VAL:HG12	1.82	0.59
1:A:93:PHE:CE1	1:A:202:GLN:HG2	2.37	0.59
1:B:184:SER:OG	1:B:446:ARG:O	2.09	0.59
1:B:21:ASN:ND2	1:B:458:MET:SD	2.76	0.59
1:A:501:CYS:HA	1:A:504:VAL:HG12	1.85	0.59
1:A:160:ILE:HG23	1:A:164:LEU:HB2	1.85	0.58
1:A:341:ARG:O	1:A:345:ASN:ND2	2.26	0.58
1:A:56:PRO:HB2	1:A:63:ALA:HA	1.84	0.58
1:A:251:ASP:HB3	1:A:252:LEU:HD22	1.86	0.58
1:B:455:ILE:HD12	1:B:482:ILE:HD11	1.86	0.58
1:A:459:MET:HG2	1:A:461:TYR:H	1.69	0.57
1:B:116:SER:HA	1:B:148:LEU:HD11	1.87	0.57
1:A:211:TYR:HE2	1:A:438:PRO:HD2	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:247:PRO:HB2	1:B:252:LEU:HD11	1.87	0.57
1:B:416:ALA:O	1:B:445:TYR:OH	2.22	0.57
1:A:266:THR:OG1	1:A:269:GLU:OE1	2.23	0.56
1:A:410:ASN:OD1	1:A:419:GLN:NE2	2.39	0.56
1:A:410:ASN:HA	1:A:414:GLY:HA3	1.86	0.56
1:A:169:LEU:HD22	1:A:473:LYS:HB2	1.88	0.56
1:A:172:LEU:HD11	1:A:481:LEU:HD11	1.86	0.56
1:A:32:ILE:HG13	1:A:33:PHE:N	2.21	0.55
1:A:249:GLN:O	1:A:251:ASP:N	2.39	0.55
1:A:167:HIS:HB3	1:A:240:ILE:HD11	1.89	0.55
1:A:245:LEU:HB3	1:A:247:PRO:HD2	1.89	0.55
1:A:388:LEU:HD13	1:A:398:LEU:HD11	1.88	0.55
1:A:119:MET:SD	1:A:119:MET:N	2.79	0.55
1:B:169:LEU:HD23	1:B:472:TYR:HB2	1.90	0.54
1:B:291:ILE:HD11	1:B:306:VAL:HG13	1.90	0.54
1:B:186:ASN:ND2	1:B:188:PHE:O	2.41	0.54
1:A:82:ILE:HD13	1:A:373:TRP:HZ2	1.71	0.54
1:A:117:ALA:HA	1:A:120:ARG:HD2	1.89	0.54
1:A:283:LEU:HD11	1:A:325:LEU:HB3	1.89	0.54
1:A:33:PHE:HB3	1:A:367:PHE:CE1	2.43	0.54
1:A:77:ASP:O	1:A:81:LYS:HE3	2.08	0.54
1:B:462:PHE:O	1:B:466:MET:N	2.36	0.54
1:A:36:LEU:HD12	1:A:40:ALA:HB2	1.90	0.54
1:A:33:PHE:HE2	1:A:422:VAL:HG13	1.72	0.53
1:B:19:LEU:HD23	1:B:411:LEU:HB2	1.89	0.53
1:B:367:PHE:O	1:B:371:PHE:HB2	2.08	0.53
1:A:120:ARG:NH2	1:A:269:GLU:OE2	2.42	0.53
1:A:420:TRP:HB2	1:A:445:TYR:CZ	2.43	0.53
1:A:247:PRO:HG3	1:A:473:LYS:HD3	1.90	0.52
1:B:256:GLU:HG3	1:B:471:LYS:HD2	1.89	0.52
1:B:252:LEU:HB3	1:B:472:TYR:HA	1.91	0.52
1:A:93:PHE:HE2	1:A:361:ILE:HG12	1.75	0.52
1:A:393:LEU:HD13	1:A:398:LEU:HD13	1.92	0.52
1:B:200:THR:HG1	1:B:420:TRP:HE1	1.56	0.52
1:A:136:VAL:HG21	1:A:233:GLY:HA3	1.90	0.52
1:A:161:PHE:HA	1:A:165:GLY:HA3	1.91	0.51
1:A:432:MET:HG3	1:A:438:PRO:HD3	1.91	0.51
1:A:26:PRO:HA	1:A:29:LEU:HB2	1.91	0.51
1:A:367:PHE:O	1:A:371:PHE:HB2	2.10	0.51
1:A:93:PHE:CE2	1:A:361:ILE:HG12	2.45	0.51
1:B:388:LEU:HD13	1:B:398:LEU:HD11	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:357:TYR:CZ	1:A:361:ILE:HD12	2.46	0.50
1:A:406:CYS:HA	1:A:409:ILE:HG22	1.93	0.50
1:B:20:GLY:HA2	1:B:412:MET:HA	1.93	0.50
1:B:172:LEU:HD11	1:B:465:ILE:HG23	1.92	0.50
1:A:136:VAL:O	1:A:140:ILE:HG12	2.11	0.50
1:B:45:ALA:HB2	1:B:70:VAL:HG23	1.94	0.50
1:B:33:PHE:HE2	1:B:422:VAL:HG13	1.76	0.50
1:B:184:SER:HB2	1:B:446:ARG:HG2	1.94	0.49
1:B:272:GLY:O	1:B:276:ALA:N	2.45	0.49
1:B:420:TRP:HB2	1:B:445:TYR:CZ	2.47	0.49
1:B:501:CYS:HA	1:B:504:VAL:HG12	1.95	0.49
1:A:267:PRO:HA	1:A:270:TYR:HB2	1.94	0.49
1:B:254:GLN:HA	1:B:257:LYS:HE2	1.94	0.49
1:B:348:ALA:O	1:B:352:SER:OG	2.27	0.49
1:A:95:PRO:HG2	1:A:361:ILE:HD11	1.96	0.48
1:A:283:LEU:HB3	1:A:322:LEU:HD23	1.95	0.48
1:A:23:LEU:HD13	1:A:413:ILE:HD13	1.94	0.48
1:A:37:LEU:HA	1:A:40:ALA:HB3	1.94	0.48
1:A:108:ILE:HD12	1:A:324:ALA:HB1	1.96	0.48
1:B:140:ILE:HG22	1:B:141:LEU:HD12	1.96	0.48
1:A:167:HIS:CD2	1:A:168:PRO:HD2	2.49	0.48
1:B:240:ILE:HG23	1:B:241:VAL:HG23	1.96	0.48
1:A:455:ILE:HG13	1:A:482:ILE:HD11	1.95	0.48
1:B:331:GLY:O	1:B:336:SER:N	2.47	0.48
1:B:375:ASN:ND2	1:B:378:GLN:OE1	2.47	0.48
1:B:42:ALA:HB2	1:B:73:LEU:HG	1.96	0.48
1:A:162:HIS:CE1	1:A:168:PRO:HG3	2.49	0.48
1:B:85:HIS:O	1:B:89:ASN:ND2	2.47	0.47
1:B:150:TYR:HB3	1:B:464:LEU:HD23	1.96	0.47
1:B:189:LEU:HD22	1:B:189:LEU:H	1.78	0.47
1:B:93:PHE:CE1	1:B:202:GLN:HG2	2.49	0.47
1:B:167:HIS:ND1	1:B:168:PRO:HD2	2.28	0.47
1:B:37:LEU:HD11	1:B:371:PHE:CD1	2.49	0.47
1:B:192:ILE:HD13	1:B:446:ARG:HH22	1.80	0.47
1:B:466:MET:O	1:B:470:MET:HG2	2.14	0.47
1:A:196:LEU:HD13	1:A:446:ARG:HG3	1.97	0.46
1:B:122:LEU:HD12	1:B:123:LEU:N	2.30	0.46
1:A:33:PHE:CE2	1:A:422:VAL:HG13	2.51	0.46
1:A:343:VAL:O	1:A:347:MET:HG3	2.15	0.46
1:B:162:HIS:CE1	1:B:249:GLN:HA	2.51	0.46
1:A:54:PRO:O	1:A:56:PRO:HD3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:343:VAL:O	1:B:347:MET:HG3	2.16	0.46
1:A:185:ALA:HA	1:A:222:MET:HB3	1.97	0.46
1:A:443:ALA:O	1:A:447:ILE:HG12	2.16	0.46
1:B:298:LEU:HD21	1:B:310:PRO:HB2	1.97	0.46
1:A:160:ILE:O	1:A:164:LEU:N	2.44	0.46
1:A:154:ILE:HB	1:A:155:PRO:HD3	1.98	0.46
1:A:258:ASP:O	1:A:261:HIS:ND1	2.42	0.46
1:B:12:PHE:HZ	1:B:486:LEU:HD21	1.81	0.46
1:B:33:PHE:HB3	1:B:367:PHE:CE1	2.51	0.46
1:B:362:PHE:O	1:B:366:GLN:HB2	2.16	0.46
1:A:13:LEU:HD21	1:A:482:ILE:HD13	1.98	0.46
1:A:37:LEU:HA	1:A:37:LEU:HD23	1.72	0.46
1:A:498:ALA:O	1:A:502:ILE:HD12	2.15	0.46
1:B:370:PHE:O	1:B:374:THR:OG1	2.21	0.46
1:A:150:TYR:HE1	1:A:461:TYR:HB3	1.81	0.45
1:A:166:ARG:N	1:A:166:ARG:HD2	2.31	0.45
1:A:358:LEU:O	1:A:362:PHE:N	2.49	0.45
1:B:82:ILE:O	1:B:86:THR:OG1	2.35	0.45
1:B:154:ILE:HB	1:B:155:PRO:HD3	1.98	0.45
1:A:192:ILE:HA	1:A:195:LEU:HB3	1.98	0.45
1:B:54:PRO:HD3	1:B:66:GLY:HA2	1.99	0.45
1:A:140:ILE:HG21	1:A:226:THR:HG23	1.99	0.45
1:B:28:THR:O	1:B:32:ILE:HG23	2.17	0.45
1:B:247:PRO:HG3	1:B:473:LYS:HG2	1.98	0.45
1:B:294:ALA:HA	1:B:299:ARG:NH2	2.31	0.45
1:A:25:HIS:HD2	1:B:344:VAL:HG11	1.83	0.44
1:A:193:ASP:OD1	1:A:446:ARG:NH1	2.48	0.44
1:A:150:TYR:CE1	1:A:461:TYR:HB3	2.53	0.44
1:A:357:TYR:O	1:A:361:ILE:HB	2.17	0.44
1:B:457:PRO:HB2	1:B:458:MET:H	1.46	0.44
1:A:41:SER:HB3	1:A:71:VAL:O	2.18	0.44
1:A:149:GLY:O	1:A:154:ILE:HG12	2.18	0.44
1:B:149:GLY:O	1:B:154:ILE:HG12	2.17	0.44
1:B:221:PHE:CZ	1:B:447:ILE:HD11	2.53	0.44
1:A:77:ASP:OD1	1:A:77:ASP:N	2.51	0.44
1:B:229:ILE:HG23	1:B:492:PHE:CE2	2.53	0.44
1:A:341:ARG:HD3	1:B:24:PRO:HA	1.99	0.44
1:B:509:LEU:HB2	1:B:510:PRO:HD3	2.00	0.44
1:A:206:ILE:HG22	1:A:378:GLN:HG2	2.00	0.44
1:B:211:TYR:HD1	1:B:212:VAL:H	1.66	0.44
1:A:176:PHE:CE1	1:A:465:ILE:HG13	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:33:PHE:O	1:B:37:LEU:HB2	2.18	0.43
1:B:34:ILE:HB	1:B:370:PHE:CD2	2.53	0.43
1:B:93:PHE:CD1	1:B:202:GLN:HG2	2.53	0.43
1:A:126:SER:HA	1:A:127:PRO:HD3	1.87	0.43
1:A:358:LEU:HA	1:A:358:LEU:HD12	1.75	0.43
1:B:432:MET:HG2	1:B:438:PRO:HD3	2.00	0.43
1:A:471:LYS:HE3	1:A:471:LYS:HB3	1.81	0.43
1:B:456:THR:HG1	1:B:462:PHE:HZ	1.65	0.43
1:A:49:LEU:HD22	1:A:50:SER:H	1.84	0.43
1:A:362:PHE:O	1:A:366:GLN:HB2	2.18	0.43
1:A:505:PHE:HD1	1:A:505:PHE:HA	1.67	0.43
1:B:361:ILE:HD13	1:B:361:ILE:HA	1.86	0.43
1:A:140:ILE:HD13	1:A:178:GLY:O	2.19	0.43
1:B:26:PRO:HD3	1:B:413:ILE:HD11	2.00	0.43
1:B:93:PHE:CD2	1:B:95:PRO:HD2	2.54	0.43
1:A:207:ILE:HG21	1:A:433:LEU:HD21	2.00	0.43
1:A:415:SER:O	1:A:415:SER:OG	2.36	0.43
1:A:406:CYS:O	1:A:410:ASN:HB2	2.19	0.43
1:B:141:LEU:HD11	1:B:187:LEU:HD13	2.01	0.43
1:A:51:VAL:HA	1:A:52:PRO:HD3	1.73	0.42
1:B:23:LEU:HA	1:B:24:PRO:HD3	1.90	0.42
1:A:81:LYS:O	1:A:85:HIS:HB2	2.19	0.42
1:A:400:ILE:HD11	1:A:501:CYS:SG	2.59	0.42
1:A:287:LEU:HD12	1:A:322:LEU:HD11	2.02	0.42
1:B:130:LEU:HD12	1:B:130:LEU:HA	1.87	0.42
1:B:25:HIS:CG	1:B:26:PRO:HD2	2.54	0.42
1:B:187:LEU:HD12	1:B:226:THR:HG21	2.01	0.42
1:B:407:ALA:O	1:B:452:THR:HG21	2.20	0.42
1:A:201:GLN:O	1:A:205:GLN:HG2	2.20	0.42
1:A:269:GLU:O	1:A:273:LEU:HB2	2.20	0.42
1:A:413:ILE:HD12	1:A:413:ILE:HA	1.93	0.42
1:A:34:ILE:O	1:A:38:LEU:HG	2.19	0.42
1:B:166:ARG:HE	1:B:166:ARG:N	2.18	0.42
1:B:282:ALA:O	1:B:286:LEU:HG	2.19	0.42
1:B:41:SER:HB3	1:B:71:VAL:O	2.20	0.41
1:B:267:PRO:O	1:B:271:LYS:HB2	2.20	0.41
1:A:25:HIS:HB2	1:B:341:ARG:HG2	2.01	0.41
1:A:393:LEU:HD22	1:A:398:LEU:HA	2.03	0.41
1:B:276:ALA:HB2	1:B:330:TYR:HB2	2.02	0.41
1:A:202:GLN:O	1:A:368:VAL:HG21	2.20	0.41
1:A:228:VAL:O	1:A:232:ILE:HG13	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:454:ILE:HG22	1:A:485:MET:HB3	2.02	0.41
1:B:49:LEU:HD11	1:B:379:TYR:CE1	2.55	0.41
1:B:206:ILE:HG22	1:B:378:GLN:HG2	2.00	0.41
1:A:430:MET:HG3	1:A:431:LEU:HD12	2.02	0.41
1:A:20:GLY:HA2	1:A:412:MET:HA	2.02	0.41
1:A:141:LEU:HD21	1:A:187:LEU:HD12	2.01	0.41
1:A:166:ARG:HD2	1:A:166:ARG:H	1.86	0.41
1:B:221:PHE:HD2	1:B:443:ALA:HB1	1.85	0.41
1:A:420:TRP:HB2	1:A:445:TYR:OH	2.21	0.41
1:B:225:SER:OG	1:B:496:TRP:NE1	2.54	0.41
1:B:232:ILE:HB	1:B:492:PHE:CE2	2.56	0.41
1:A:80:ILE:O	1:A:84:THR:HG23	2.21	0.41
1:B:269:GLU:OE2	1:B:330:TYR:OH	2.37	0.41
1:B:413:ILE:HD12	1:B:413:ILE:HA	1.88	0.41
1:A:245:LEU:HD12	1:A:245:LEU:HA	1.89	0.40
1:A:169:LEU:HD12	1:A:169:LEU:HA	1.85	0.40
1:B:93:PHE:HD2	1:B:361:ILE:HG23	1.87	0.40
1:B:420:TRP:HA	1:B:420:TRP:CE3	2.56	0.40
1:A:55:ARG:HH11	1:A:389:LYS:NZ	2.19	0.40
1:A:64:ASP:C	1:A:66:GLY:H	2.25	0.40
1:B:200:THR:HG22	1:B:213:VAL:HG21	2.03	0.40
1:A:64:ASP:HB3	1:A:65:ASP:H	1.56	0.40
1:A:294:ALA:HA	1:A:299:ARG:CZ	2.52	0.40
1:B:143:ASN:OD1	1:B:186:ASN:HB3	2.22	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	505/522 (97%)	453 (90%)	46 (9%)	6 (1%)	13	49

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	504/522 (97%)	447 (89%)	51 (10%)	6 (1%)	13	49
All	All	1009/1044 (97%)	900 (89%)	97 (10%)	12 (1%)	13	49

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	209	PRO
1	A	243	PRO
1	B	217	ALA
1	A	250	SER
1	A	510	PRO
1	B	187	LEU
1	B	457	PRO
1	B	510	PRO
1	A	264	GLU
1	B	54	PRO
1	B	243	PRO
1	A	304	GLY

5.3.2　Protein sidechains ⓘ

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	403/418 (96%)	326 (81%)	77 (19%)	1	9
1	B	403/418 (96%)	324 (80%)	79 (20%)	1	9
All	All	806/836 (96%)	650 (81%)	156 (19%)	1	9

All (156) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	ARG
1	A	12	PHE
1	A	14	ARG
1	A	17	GLU

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Mol	Chain	Res	Type
1	A	18	TRP
1	A	19	LEU
1	A	23	LEU
1	A	29	LEU
1	A	32	ILE
1	A	36	LEU
1	A	37	LEU
1	A	39	ILE
1	A	46	TYR
1	A	62	ARG
1	A	73	LEU
1	A	74	LEU
1	A	80	ILE
1	A	81	LYS
1	A	83	LEU
1	A	87	VAL
1	A	88	LYS
1	A	96	LEU
1	A	103	LEU
1	A	106	VAL
1	A	119	MET
1	A	120	ARG
1	A	125	LYS
1	A	128	ARG
1	A	133	PHE
1	A	134	MET
1	A	143	ASN
1	A	147	GLU
1	A	153	LEU
1	A	162	HIS
1	A	166	ARG
1	A	192	ILE
1	A	193	ASP
1	A	199	ILE
1	A	211	TYR
1	A	212	VAL
1	A	218	ASN
1	A	236	VAL
1	A	252	LEU
1	A	259	ILE
1	A	261	HIS
1	A	270	TYR

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Mol	Chain	Res	Type
1	A	273	LEU
1	A	274	ILE
1	A	280	PHE
1	A	306	VAL
1	A	315	ILE
1	A	321	LEU
1	A	325	LEU
1	A	332	ARG
1	A	358	LEU
1	A	361	ILE
1	A	366	GLN
1	A	371	PHE
1	A	412	MET
1	A	426	ILE
1	A	442	GLN
1	A	446	ARG
1	A	449	ASP
1	A	464	LEU
1	A	470	MET
1	A	474	LYS
1	A	480	THR
1	A	481	LEU
1	A	486	LEU
1	A	488	TYR
1	A	496	TRP
1	A	499	LEU
1	A	501	CYS
1	A	503	TRP
1	A	505	PHE
1	A	507	LEU
1	A	509	LEU
1	B	12	PHE
1	B	13	LEU
1	B	14	ARG
1	B	16	VAL
1	B	17	GLU
1	B	18	TRP
1	B	39	ILE
1	B	46	TYR
1	B	53	ASP
1	B	64	ASP
1	B	65	ASP

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Mol	Chain	Res	Type
1	B	73	LEU
1	B	77	ASP
1	B	81	LYS
1	B	87	VAL
1	B	104	LEU
1	B	119	MET
1	B	121	LEU
1	B	128	ARG
1	B	133	PHE
1	B	134	MET
1	B	140	ILE
1	B	153	LEU
1	B	161	PHE
1	B	162	HIS
1	B	166	ARG
1	B	169	LEU
1	B	172	LEU
1	B	189	LEU
1	B	192	ILE
1	B	193	ASP
1	B	199	ILE
1	B	211	TYR
1	B	229	ILE
1	B	234	TYR
1	B	235	PHE
1	B	244	GLN
1	B	245	LEU
1	B	248	TYR
1	B	251	ASP
1	B	256	GLU
1	B	258	ASP
1	B	261	HIS
1	B	271	LYS
1	B	273	LEU
1	B	274	ILE
1	B	279	VAL
1	B	284	SER
1	B	298	LEU
1	B	305	LEU
1	B	312	LEU
1	B	313	LYS
1	B	315	ILE

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Mol	Chain	Res	Type
1	B	316	VAL
1	B	321	LEU
1	B	325	LEU
1	B	328	ILE
1	B	333	ILE
1	B	340	GLU
1	B	358	LEU
1	B	366	GLN
1	B	371	PHE
1	B	409	ILE
1	B	428	VAL
1	B	430	MET
1	B	439	GLU
1	B	441	ILE
1	B	442	GLN
1	B	446	ARG
1	B	455	ILE
1	B	469	VAL
1	B	481	LEU
1	B	483	SER
1	B	486	LEU
1	B	488	TYR
1	B	499	LEU
1	B	503	TRP
1	B	505	PHE
1	B	507	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	25	HIS
1	A	167	HIS
1	A	410	ASN
1	A	419	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 monosaccharides 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, 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(Å²)	Q<0.9
1	A	507/522 (97%)	-0.20	38 (7%)	14	12	54, 157, 245, 345	0
1	B	506/522 (96%)	-0.25	28 (5%)	25	22	44, 153, 257, 321	0
All	All	1013/1044 (97%)	-0.22	66 (6%)	18	15	44, 155, 254, 345	0

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	478	VAL	8.0
1	A	297	ILE	7.3
1	B	399	PHE	7.3
1	B	477	GLY	7.2
1	B	478	VAL	6.3
1	A	287	LEU	6.0
1	A	47	PHE	6.0
1	B	52	PRO	5.9
1	B	460	SER	5.8
1	A	477	GLY	5.5
1	B	287	LEU	5.5
1	A	289	TRP	5.4
1	A	145	ALA	5.2
1	A	48	GLY	5.2
1	B	283	LEU	5.0
1	A	307	ALA	5.0
1	B	210	ASP	4.9
1	A	288	ALA	4.4
1	A	308	GLY	4.3
1	A	507	LEU	4.3
1	B	379	TYR	4.2
1	A	508	GLY	4.1
1	A	291	ILE	4.1
1	A	347	MET	4.1

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Mol	Chain	Res	Type	RSRZ
1	A	286	LEU	4.0
1	A	344	VAL	4.0
1	A	351	MET	3.9
1	A	296	GLY	3.7
1	B	499	LEU	3.6
1	B	212	VAL	3.6
1	B	338	ARG	3.5
1	A	46	TYR	3.5
1	B	163	SER	3.4
1	B	289	TRP	3.4
1	A	348	ALA	3.2
1	B	76	ALA	3.2
1	A	306	VAL	3.1
1	A	144	THR	3.1
1	B	286	LEU	3.1
1	A	476	ALA	3.1
1	B	476	ALA	3.0
1	B	207	ILE	2.9
1	B	51	VAL	2.9
1	B	465	ILE	2.8
1	B	398	LEU	2.8
1	A	298	LEU	2.8
1	A	285	ALA	2.8
1	A	399	PHE	2.8
1	B	46	TYR	2.7
1	B	53	ASP	2.7
1	A	104	LEU	2.6
1	B	69	HIS	2.5
1	A	290	SER	2.3
1	A	164	LEU	2.3
1	A	300	HIS	2.3
1	A	292	VAL	2.2
1	A	305	LEU	2.2
1	B	47	PHE	2.2
1	A	293	PRO	2.2
1	A	349	GLU	2.2
1	A	496	TRP	2.1
1	A	464	LEU	2.1
1	B	284	SER	2.1
1	B	125	LYS	2.1
1	A	69	HIS	2.1
1	B	451	VAL	2.0

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

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

6.3   Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4   Ligands ⓘ

There are no ligands in this entry.

6.5   Other polymers ⓘ

There are no such residues in this entry.