WORLDWIDE
wwPDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Jun 24, 2024 – 01:39 AM EDT

PDB ID	:	6QDM
Title	:	Molecular features of the UNC-45 chaperone critical for binding and folding muscle myosin
Authors	:	Meinhart, A.; Clausen, T.; Hellerschmied, D.
Deposited on	:	2019-01-02
Resolution	:	3.80 Å(reported)

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

|		
MolProbity	:	4.02b-467
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
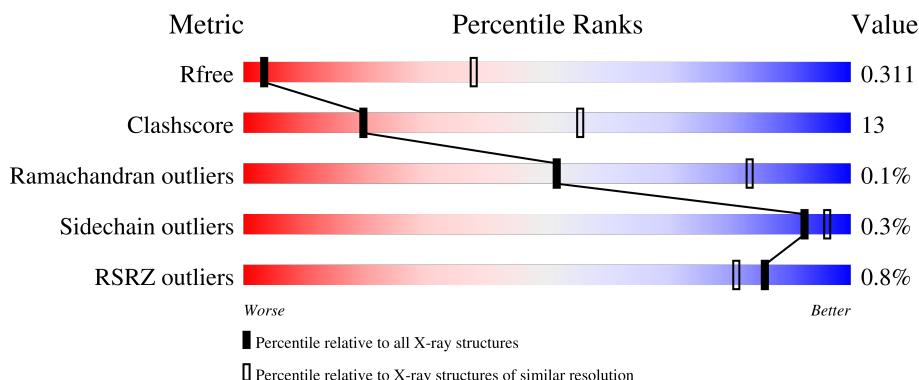
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
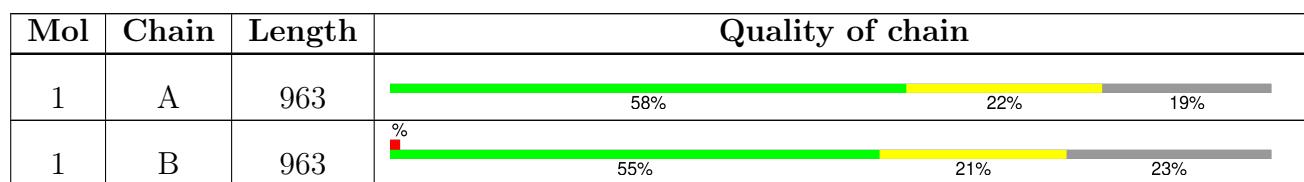
The reported resolution of this entry is 3.80 Å.

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	1212 (4.00-3.60)
Clashscore	141614	1288 (4.00-3.60)
Ramachandran outliers	138981	1243 (4.00-3.60)
Sidechain outliers	138945	1237 (4.00-3.60)
RSRZ outliers	127900	1121 (4.00-3.60)

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	963	58% 22% 19%
1	B	963	55% 21% 23%

2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 11813 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 UNC-45,UNC-45.
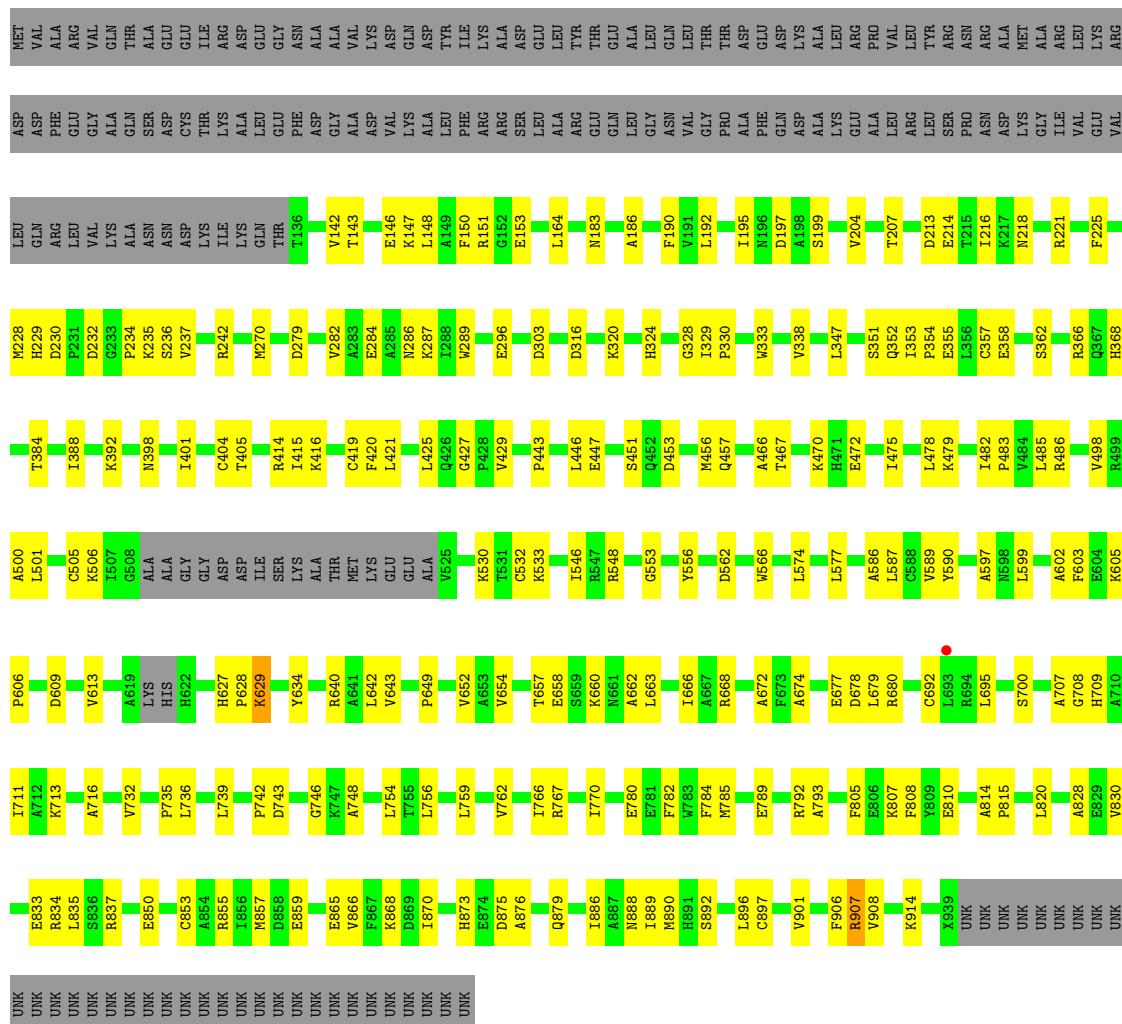
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	776	Total	C	N	O	S	0	0	0
			6035	3830	1028	1134	43			
1	B	739	Total	C	N	O	S	0	0	0
			5778	3670	981	1085	42			
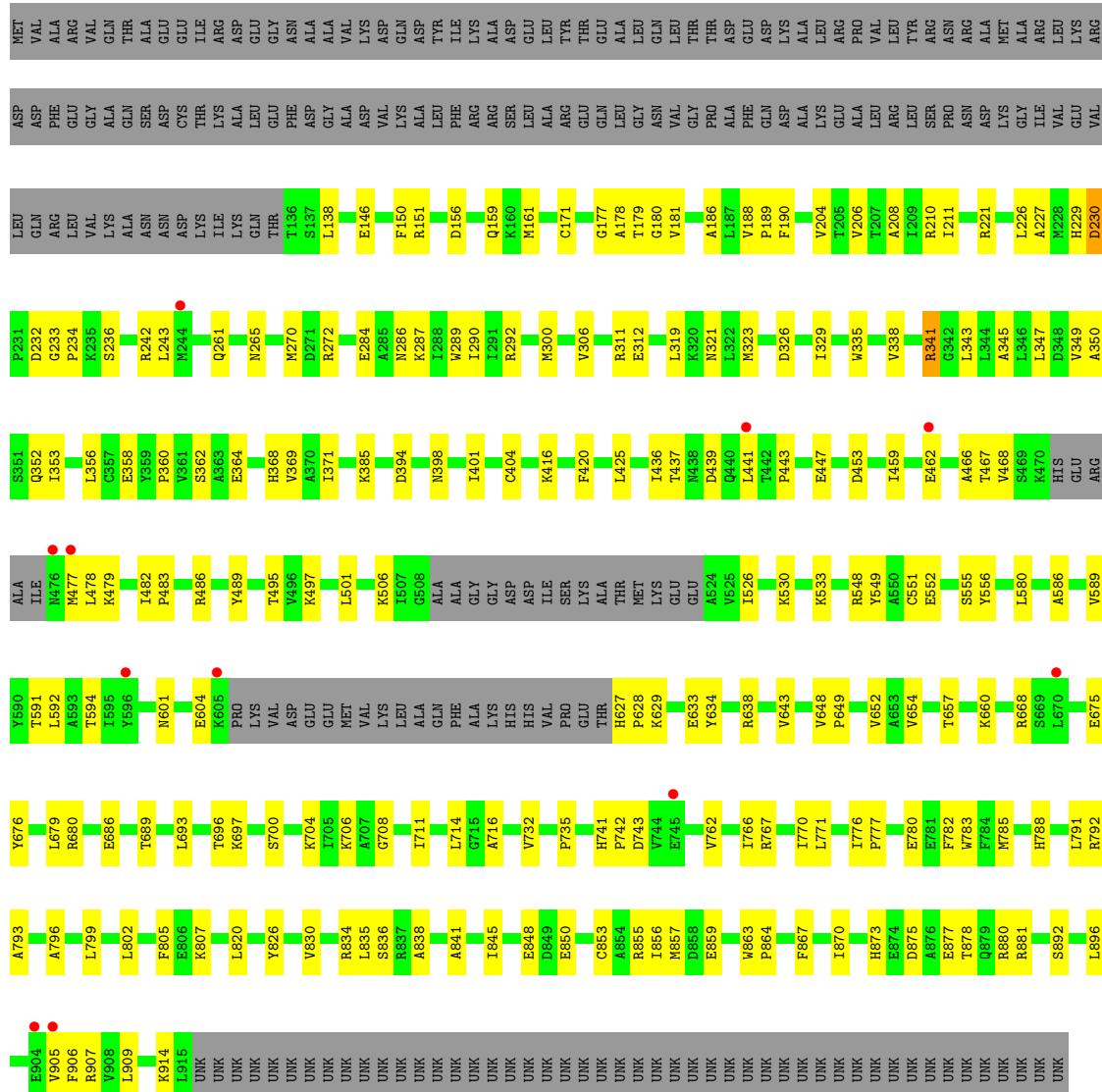
3 Residue-property plots ⓘ

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: UNC-45,UNC-45

Chain A:

• Molecule 1: UNC-45,UNC-45

Chain B:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	157.39Å 97.61Å 148.88Å 90.00° 93.41° 90.00°	Depositor
Resolution (Å)	48.80 – 3.80 48.80 – 3.80	Depositor EDS
% Data completeness (in resolution range)	98.7 (48.80-3.80) 89.0 (48.80-3.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	0.71 (at 3.77Å)	Xtriage
Refinement program	PHENIX (1.13_2998: ???), CNS	Depositor
R, R_{free}	0.280 , 0.310 0.283 , 0.311	Depositor DCC
R_{free} test set	1137 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å^2)	173.5	Xtriage
Anisotropy	0.351	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 159.9	EDS
L-test for twinning[2]	$<|L|> = 0.46, <L^2> = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11813	wwPDB-VP
Average B, all atoms (Å^2)	199.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.97% 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 (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	0.66	0/6058	0.81	0/8178
1	B	0.63	0/5863	0.78	0/7912
All	All	0.64	0/11921	0.79	0/16090

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 (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	6035	0	6128	154	4
1	B	5778	0	5926	152	2
All	All	11813	0	12054	304	4

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 13.

All (304) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:441:LEU:HD23	1:B:477:MET:SD	1.82	1.19
1:A:229:HIS:O	1:A:230:ASP:OD1	1.85	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:551:CYS:SG	1:B:580:LEU:HD22	2.19	0.83
1:B:742:PRO:HG3	1:B:782:PHE:CE2	2.14	0.83
1:A:850:GLU:HG2	1:A:892:SER:HB2	1.61	0.82
1:B:441:LEU:HG	1:B:477:MET:HE1	1.61	0.82
1:B:319:LEU:HD11	1:B:371:ILE:HG22	1.62	0.81
1:B:551:CYS:SG	1:B:580:LEU:CD2	2.69	0.81
1:B:186:ALA:O	1:B:189:PRO:HD2	1.81	0.79
1:B:229:HIS:O	1:B:230:ASP:OD1	2.00	0.79
1:B:229:HIS:O	1:B:230:ASP:CG	2.21	0.79
1:B:732:VAL:O	1:B:735:PRO:HD2	1.84	0.78
1:A:548:ARG:HD3	1:A:587:LEU:HG	1.65	0.77
1:B:441:LEU:CD2	1:B:477:MET:SD	2.70	0.77
1:A:483:PRO:HA	1:A:486:ARG:HD2	1.66	0.76
1:B:156:ASP:HB3	1:B:159:GLN:HG2	1.68	0.75
1:B:150:PHE:CD1	1:B:190:PHE:HB3	2.21	0.75
1:B:441:LEU:HG	1:B:477:MET:CE	2.17	0.75
1:A:674:ALA:O	1:A:680:ARG:NH2	2.20	0.74
1:A:589:VAL:HG22	1:A:654:VAL:HB	1.70	0.74
1:A:732:VAL:O	1:A:735:PRO:HD2	1.88	0.73
1:A:150:PHE:CG	1:A:190:PHE:HB3	2.25	0.71
1:B:530:LYS:NZ	1:B:533:LYS:HD3	2.05	0.71
1:B:467:THR:HB	1:B:478:LEU:HD21	1.72	0.71
1:B:788:HIS:HB2	1:B:834:ARG:HH22	1.53	0.71
1:A:475:ILE:HA	1:A:478:LEU:HB2	1.73	0.70
1:A:907:ARG:HD3	1:A:908:VAL:HG13	1.73	0.70
1:A:229:HIS:O	1:A:230:ASP:CG	2.31	0.69
1:A:146:GLU:OE2	1:A:151:ARG:NH2	2.26	0.69
1:A:602:ALA:HA	1:A:605:LYS:HB2	1.76	0.68
1:A:150:PHE:CD1	1:A:190:PHE:HB3	2.28	0.68
1:A:785:MET:O	1:A:792:ARG:NH2	2.26	0.68
1:B:489:TYR:O	1:B:497:LYS:NZ	2.27	0.67
1:B:857:MET:HG3	1:B:896:LEU:HD22	1.77	0.66
1:B:272:ARG:NH2	1:B:326:ASP:OD2	2.29	0.66
1:A:501:LEU:HD21	1:A:532:CYS:SG	2.37	0.65
1:B:401:ILE:HA	1:B:404:CYS:SG	2.37	0.64
1:B:799:LEU:HD23	1:B:802:LEU:HD12	1.80	0.63
1:B:586:ALA:HB1	1:B:657:THR:HG23	1.80	0.63
1:A:640:ARG:NH1	1:A:678:ASP:OD2	2.25	0.63
1:B:530:LYS:HZ1	1:B:533:LYS:HD3	1.64	0.63
1:B:742:PRO:HG3	1:B:782:PHE:CZ	2.33	0.62
1:B:877:GLU:OE1	1:B:880:ARG:NH1	2.26	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:680:ARG:HH12	1:B:716:ALA:HB3	1.65	0.62
1:A:602:ALA:HB1	1:A:668:ARG:HB3	1.82	0.61
1:B:788:HIS:HB2	1:B:834:ARG:NH2	2.15	0.61
1:B:319:LEU:HD11	1:B:371:ILE:CG2	2.31	0.61
1:A:483:PRO:O	1:A:486:ARG:HB2	2.01	0.61
1:A:830:VAL:HG21	1:A:873:HIS:NE2	2.16	0.61
1:B:436:ILE:HG23	1:B:477:MET:SD	2.40	0.61
1:B:776:ILE:HB	1:B:777:PRO:HD3	1.83	0.61
1:A:907:ARG:HG2	1:B:495:THR:HG21	1.82	0.60
1:A:183:ASN:HB3	1:A:186:ALA:HB3	1.82	0.60
1:A:230:ASP:HB2	1:A:236:SER:HB2	1.82	0.60
1:B:323:MET:SD	1:B:323:MET:N	2.74	0.60
1:A:805:PHE:HE2	1:A:807:LYS:HB3	1.66	0.60
1:B:762:VAL:HG13	1:B:766:ILE:HG13	1.82	0.60
1:B:589:VAL:HG22	1:B:654:VAL:HB	1.83	0.60
1:A:427:GLY:O	1:A:429:VAL:HG23	2.01	0.60
1:A:876:ALA:HA	1:A:879:GLN:HG2	1.85	0.59
1:A:629:LYS:HA	1:A:634:TYR:HD2	1.68	0.59
1:A:384:THR:O	1:A:388:ILE:HG12	2.02	0.59
1:A:425:LEU:HD13	1:A:466:ALA:O	2.02	0.58
1:B:311:ARG:NH1	1:B:360:PRO:O	2.35	0.58
1:B:468:VAL:HG22	1:B:478:LEU:HD13	1.84	0.58
1:B:649:PRO:HA	1:B:652:VAL:HG22	1.85	0.58
1:A:533:LYS:NZ	1:A:566:TRP:CZ2	2.69	0.58
1:B:425:LEU:HD13	1:B:466:ALA:C	2.23	0.58
1:A:789:GLU:HA	1:A:834:ARG:NH2	2.17	0.57
1:A:533:LYS:HZ2	1:A:566:TRP:HZ2	1.50	0.57
1:A:286:ASN:HB2	1:A:289:TRP:HD1	1.68	0.57
1:B:150:PHE:CE1	1:B:190:PHE:HB3	2.40	0.57
1:A:451:SER:O	1:A:457:GLN:NE2	2.38	0.57
1:B:150:PHE:CG	1:B:190:PHE:HB3	2.39	0.57
1:A:232:ASP:OD2	1:A:234:PRO:HD2	2.05	0.57
1:A:164:LEU:HD11	1:A:204:VAL:HG13	1.85	0.56
1:B:425:LEU:HD13	1:B:467:THR:N	2.20	0.56
1:B:792:ARG:H	1:B:834:ARG:NH1	2.02	0.56
1:A:467:THR:HG22	1:A:478:LEU:HD11	1.87	0.56
1:B:855:ARG:NE	1:B:859:GLU:OE2	2.34	0.56
1:B:741:HIS:HB3	1:B:743:ASP:OD1	2.05	0.56
1:A:287:LYS:HG3	1:A:333:TRP:CH2	2.41	0.56
1:A:242:ARG:NH2	1:A:303:ASP:OD2	2.39	0.56
1:A:498:VAL:HG21	1:A:546:ILE:HG23	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:914:LYS:NZ	1:B:453:ASP:OD2	2.33	0.55
1:A:805:PHE:CE2	1:A:807:LYS:HB3	2.41	0.55
1:A:147:LYS:HE3	1:A:151:ARG:HD2	1.88	0.55
1:A:287:LYS:HG3	1:A:333:TRP:HH2	1.72	0.55
1:B:179:THR:OG1	1:B:221:ARG:NH2	2.40	0.55
1:B:788:HIS:ND1	1:B:791:LEU:HD12	2.22	0.55
1:A:663:LEU:HD23	1:A:666:ILE:HD12	1.87	0.55
1:B:186:ALA:C	1:B:189:PRO:HD2	2.27	0.55
1:A:599:LEU:HD13	1:A:642:LEU:HD11	1.89	0.54
1:A:192:LEU:HD23	1:A:195:ILE:HD12	1.89	0.54
1:A:533:LYS:NZ	1:A:566:TRP:HZ2	2.05	0.54
1:A:562:ASP:OD1	1:A:629:LYS:NZ	2.31	0.54
1:B:441:LEU:CG	1:B:477:MET:CE	2.86	0.54
1:A:602:ALA:O	1:A:668:ARG:HD3	2.07	0.54
1:A:237:VAL:HG12	1:A:296:GLU:HG3	1.89	0.53
1:A:876:ALA:O	1:A:879:GLN:HG2	2.07	0.53
1:A:279:ASP:HB3	1:A:282:VAL:HG22	1.90	0.53
1:A:338:VAL:O	1:A:392:LYS:NZ	2.42	0.53
1:A:485:LEU:HD21	1:A:500:ALA:O	2.09	0.53
1:A:762:VAL:HG13	1:A:766:ILE:HG13	1.91	0.53
1:B:287:LYS:HA	1:B:290:ILE:HD12	1.91	0.53
1:A:767:ARG:HA	1:A:770:ILE:HD12	1.91	0.53
1:B:341:ARG:H	1:B:341:ARG:HD2	1.74	0.53
1:B:850:GLU:HG3	1:B:892:SER:HB2	1.91	0.52
1:A:876:ALA:C	1:A:879:GLN:HG2	2.30	0.52
1:A:890:MET:HB3	1:A:897:CYS:SG	2.50	0.52
1:A:354:PRO:HG3	1:A:362:SER:HA	1.91	0.52
1:B:776:ILE:O	1:B:780:GLU:HG3	2.10	0.52
1:B:171:CYS:HB2	1:B:178:ALA:HB2	1.92	0.52
1:B:230:ASP:HB2	1:B:236:SER:HB2	1.92	0.52
1:B:311:ARG:HH22	1:B:360:PRO:HD2	1.75	0.52
1:B:350:ALA:HB2	1:B:369:VAL:HG11	1.92	0.51
1:B:482:ILE:HB	1:B:483:PRO:HD3	1.92	0.51
1:A:164:LEU:HB3	1:A:207:THR:HG21	1.92	0.51
1:B:232:ASP:OD2	1:B:234:PRO:HD2	2.10	0.51
1:B:489:TYR:HE1	1:B:501:LEU:HD13	1.75	0.51
1:B:627:HIS:CD2	1:B:629:LYS:H	2.29	0.51
1:B:591:THR:OG1	1:B:592:LEU:N	2.42	0.51
1:A:270:MET:HE1	1:A:328:GLY:HA2	1.93	0.51
1:A:855:ARG:NH2	1:A:859:GLU:OE1	2.44	0.51
1:A:605:LYS:HZ2	1:A:672:ALA:HB2	1.76	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:736:LEU:HD11	1:A:756:LEU:HD21	1.93	0.50
1:B:208:ALA:O	1:B:211:ILE:HB	2.10	0.50
1:B:526:ILE:O	1:B:530:LYS:HG2	2.12	0.50
1:B:627:HIS:CD2	1:B:629:LYS:HB2	2.46	0.50
1:A:876:ALA:HA	1:A:879:GLN:CD	2.31	0.50
1:B:151:ARG:HH21	1:B:190:PHE:HZ	1.60	0.50
1:B:660:LYS:HB3	1:B:700:SER:HB3	1.93	0.50
1:B:826:TYR:HB3	1:B:835:LEU:HD11	1.94	0.50
1:B:138:LEU:HD11	1:B:180:GLY:HA3	1.93	0.50
1:B:633:GLU:OE1	1:B:633:GLU:N	2.42	0.50
1:A:888:ASN:N	1:A:888:ASN:OD1	2.42	0.49
1:B:785:MET:O	1:B:834:ARG:NH2	2.45	0.49
1:B:353:ILE:HG13	1:B:356:LEU:H	1.77	0.49
1:A:316:ASP:OD1	1:A:368:HIS:ND1	2.44	0.49
1:B:338:VAL:HG13	1:B:343:LEU:HD22	1.94	0.49
1:B:437:THR:O	1:B:439:ASP:OD1	2.31	0.49
1:B:793:ALA:N	1:B:834:ARG:HD2	2.28	0.49
1:A:857:MET:HG3	1:A:896:LEU:HD22	1.95	0.48
1:A:873:HIS:ND1	1:A:875:ASP:O	2.36	0.48
1:A:876:ALA:HA	1:A:879:GLN:CG	2.42	0.48
1:A:405:THR:O	1:A:414:ARG:NH1	2.45	0.48
1:A:876:ALA:CA	1:A:879:GLN:HG2	2.43	0.48
1:B:306:VAL:O	1:B:311:ARG:NH2	2.46	0.48
1:B:767:ARG:HA	1:B:770:ILE:HD12	1.96	0.48
1:A:530:LYS:O	1:A:533:LYS:HB3	2.13	0.48
1:A:506:LYS:HA	1:A:556:TYR:HB3	1.95	0.48
1:B:177:GLY:O	1:B:181:VAL:HG23	2.13	0.48
1:A:736:LEU:HA	1:A:739:LEU:HD13	1.95	0.48
1:A:324:HIS:HA	1:A:328:GLY:H	1.79	0.48
1:B:443:PRO:O	1:B:447:GLU:HG3	2.14	0.48
1:A:677:GLU:O	1:A:680:ARG:HG2	2.14	0.47
1:B:206:VAL:HG12	1:B:210:ARG:NH1	2.29	0.47
1:A:629:LYS:HA	1:A:634:TYR:CD2	2.49	0.47
1:B:836:SER:HB2	1:B:878:THR:HG21	1.96	0.47
1:A:482:ILE:HB	1:A:483:PRO:HD3	1.96	0.47
1:B:697:LYS:O	1:B:704:LYS:NZ	2.46	0.47
1:B:551:CYS:SG	1:B:580:LEU:HD21	2.54	0.47
1:A:793:ALA:HB2	1:A:834:ARG:HH11	1.79	0.47
1:B:394:ASP:O	1:B:398:ASN:ND2	2.47	0.47
1:B:530:LYS:HZ2	1:B:533:LYS:HD3	1.77	0.47
1:B:261:GLN:OE1	1:B:321:ASN:ND2	2.38	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:601:ASN:OD1	1:B:638:ARG:NH1	2.47	0.47
1:B:668:ARG:HG2	1:B:706:LYS:HE3	1.96	0.47
1:B:870:ILE:O	1:B:873:HIS:HB2	2.15	0.47
1:A:586:ALA:HB1	1:A:657:THR:HG23	1.97	0.47
1:A:609:ASP:O	1:A:613:VAL:HG23	2.14	0.47
1:B:857:MET:CG	1:B:896:LEU:HD22	2.44	0.47
1:B:634:TYR:O	1:B:638:ARG:HG3	2.15	0.46
1:B:146:GLU:OE2	1:B:151:ARG:NH2	2.48	0.46
1:B:648:VAL:HB	1:B:649:PRO:HD3	1.98	0.46
1:A:901:VAL:HG22	1:A:906:PHE:CE1	2.50	0.46
1:A:677:GLU:HA	1:A:680:ARG:NE	2.30	0.46
1:A:148:LEU:HD12	1:A:153:GLU:OE1	2.16	0.46
1:B:863:TRP:CD2	1:B:864:PRO:HD3	2.50	0.46
1:B:242:ARG:HE	1:B:300:MET:HG2	1.80	0.46
1:A:505:CYS:HB3	1:A:553:GLY:O	2.16	0.45
1:A:805:PHE:HD2	1:A:808:PHE:H	1.62	0.45
1:B:265:ASN:ND2	1:B:270:MET:O	2.45	0.45
1:B:398:ASN:HA	1:B:401:ILE:HG22	1.99	0.45
1:A:833:GLU:O	1:A:837:ARG:HG3	2.17	0.45
1:B:820:LEU:HA	1:B:820:LEU:HD23	1.72	0.45
1:B:227:ALA:HB2	1:B:289:TRP:CH2	2.52	0.45
1:B:161:MET:HE1	1:B:204:VAL:N	2.31	0.45
1:A:401:ILE:HA	1:A:404:CYS:SG	2.56	0.45
1:A:427:GLY:O	1:A:429:VAL:N	2.49	0.45
1:B:483:PRO:O	1:B:486:ARG:HB2	2.17	0.45
1:B:783:TRP:HA	1:B:792:ARG:HG3	1.98	0.45
1:B:792:ARG:HB3	1:B:834:ARG:CZ	2.47	0.45
1:A:746:GLY:C	1:A:748:ALA:H	2.20	0.45
1:B:286:ASN:HB2	1:B:289:TRP:HD1	1.80	0.45
1:A:351:SER:HB2	1:A:416:LYS:HB3	1.99	0.45
1:A:443:PRO:O	1:A:447:GLU:HG3	2.17	0.45
1:B:312:GLU:OE2	1:B:362:SER:OG	2.34	0.45
1:A:603:PHE:HA	1:A:668:ARG:NH1	2.32	0.45
1:A:853:CYS:SG	1:A:889:ILE:HG12	2.57	0.45
1:B:627:HIS:NE2	1:B:629:LYS:HB2	2.32	0.45
1:A:347:LEU:HD22	1:A:420:PHE:HE1	1.82	0.45
1:A:347:LEU:HD22	1:A:420:PHE:CE1	2.52	0.45
1:A:742:PRO:HG3	1:A:782:PHE:CE2	2.52	0.45
1:A:708:GLY:HA2	1:A:711:ILE:HD12	1.98	0.44
1:B:853:CYS:HA	1:B:856:ILE:HD12	1.99	0.44
1:A:709:HIS:NE2	1:A:713:LYS:HE3	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:188:VAL:HG13	1:B:189:PRO:HD3	1.99	0.44
1:B:284:GLU:OE1	1:B:287:LYS:HD2	2.17	0.44
1:B:805:PHE:CE2	1:B:807:LYS:HB3	2.53	0.44
1:A:320:LYS:HD3	1:A:658:GLU:OE2	2.17	0.44
1:A:759:LEU:O	1:A:762:VAL:HG12	2.17	0.44
1:A:789:GLU:HA	1:A:834:ARG:CZ	2.48	0.44
1:A:820:LEU:HA	1:A:820:LEU:HD23	1.68	0.44
1:A:352:GLN:OE1	1:A:357:CYS:HA	2.18	0.44
1:B:873:HIS:HE1	1:B:875:ASP:HB3	1.83	0.44
1:A:743:ASP:OD1	1:A:743:ASP:N	2.50	0.44
1:A:873:HIS:HB3	1:A:879:GLN:OE1	2.18	0.44
1:B:906:PHE:HA	1:B:909:LEU:HD12	1.98	0.44
1:A:197:ASP:OD1	1:A:199:SER:N	2.41	0.43
1:A:828:ALA:HB2	1:A:866:VAL:HG13	1.99	0.43
1:B:489:TYR:CE1	1:B:501:LEU:HD13	2.52	0.43
1:B:321:ASN:O	1:B:329:ILE:HG12	2.17	0.43
1:B:506:LYS:HA	1:B:556:TYR:HB3	2.00	0.43
1:A:876:ALA:HA	1:A:879:GLN:NE2	2.33	0.43
1:A:479:LYS:O	1:A:482:ILE:HD12	2.19	0.43
1:B:358:GLU:N	1:B:358:GLU:OE1	2.51	0.43
1:B:643:VAL:HG21	1:B:679:LEU:HD13	2.01	0.43
1:B:826:TYR:CG	1:B:835:LEU:HD21	2.54	0.43
1:B:552:GLU:HA	1:B:591:THR:HB	2.01	0.43
1:A:213:ASP:OD1	1:A:214:GLU:N	2.52	0.43
1:A:330:PRO:O	1:A:333:TRP:HD1	2.02	0.43
1:B:345:ALA:O	1:B:349:VAL:HG23	2.19	0.43
1:B:347:LEU:HD22	1:B:420:PHE:HE1	1.84	0.43
1:B:229:HIS:HB2	1:B:236:SER:OG	2.19	0.43
1:A:649:PRO:HA	1:A:652:VAL:HG22	2.00	0.43
1:B:867:PHE:HB2	1:B:905:VAL:HG21	2.01	0.43
1:A:870:ILE:HD11	1:A:886:ILE:HD11	2.01	0.42
1:B:364:GLU:HG2	1:B:368:HIS:CD2	2.54	0.42
1:A:467:THR:CG2	1:A:478:LEU:HD11	2.49	0.42
1:A:643:VAL:HG11	1:A:679:LEU:HB3	2.01	0.42
1:A:780:GLU:HB3	1:A:784:PHE:CZ	2.54	0.42
1:B:233:GLY:HA3	1:B:292:ARG:NH1	2.35	0.42
1:B:792:ARG:HD2	1:B:835:LEU:HD22	2.01	0.42
1:B:845:ILE:O	1:B:848:GLU:HG2	2.19	0.42
1:A:286:ASN:HB2	1:A:289:TRP:CD1	2.52	0.42
1:A:716:ALA:O	1:A:754:LEU:HG	2.19	0.42
1:B:226:LEU:O	1:B:236:SER:OG	2.27	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:213:ASP:HA	1:A:216:ILE:HG12	2.00	0.42
1:A:590:TYR:HA	1:A:662:ALA:HB2	2.01	0.42
1:A:762:VAL:CG1	1:A:766:ILE:HG13	2.48	0.42
1:A:574:LEU:HD21	1:A:642:LEU:HD23	2.01	0.42
1:B:604:GLU:OE1	1:B:604:GLU:N	2.42	0.42
1:A:218:ASN:ND2	1:A:221:ARG:HG3	2.34	0.42
1:A:366:ARG:NH1	1:A:419:CYS:HB3	2.35	0.42
1:B:708:GLY:HA2	1:B:711:ILE:HD12	2.01	0.42
1:A:142:VAL:O	1:A:146:GLU:HB2	2.20	0.42
1:A:358:GLU:OE2	1:A:416:LYS:NZ	2.30	0.42
1:A:446:LEU:HD23	1:A:446:LEU:HA	1.81	0.42
1:A:834:ARG:HG3	1:A:835:LEU:N	2.35	0.42
1:B:693:LEU:O	1:B:696:THR:HG22	2.20	0.42
1:B:796:ALA:HB1	1:B:838:ALA:HB2	2.01	0.42
1:A:284:GLU:OE1	1:A:287:LYS:HD2	2.19	0.41
1:A:353:ILE:HG23	1:A:419:CYS:SG	2.60	0.41
1:A:398:ASN:HA	1:A:401:ILE:HG22	2.01	0.41
1:A:814:ALA:HA	1:A:815:PRO:HD3	1.88	0.41
1:A:873:HIS:HE1	1:A:875:ASP:HB3	1.84	0.41
1:B:841:ALA:CB	1:B:881:ARG:HH11	2.32	0.41
1:A:865:GLU:O	1:A:868:LYS:HG2	2.21	0.41
1:B:555:SER:HB2	1:B:594:THR:HB	2.01	0.41
1:B:689:THR:HG22	1:B:714:LEU:HD13	2.02	0.41
1:B:771:LEU:HD13	1:B:805:PHE:HE2	1.84	0.41
1:B:648:VAL:HB	1:B:686:GLU:OE1	2.21	0.41
1:A:577:LEU:HD23	1:A:577:LEU:HA	1.91	0.41
1:A:660:LYS:HB3	1:A:700:SER:HB3	2.02	0.41
1:A:627:HIS:CG	1:A:628:PRO:HD2	2.55	0.41
1:A:792:ARG:NE	1:A:835:LEU:HD22	2.36	0.41
1:A:143:THR:HG23	1:A:147:LYS:HZ3	1.85	0.41
1:B:441:LEU:CD2	1:B:477:MET:CE	2.98	0.41
1:B:592:LEU:HA	1:B:592:LEU:HD12	1.88	0.41
1:B:762:VAL:CG1	1:B:766:ILE:HG13	2.50	0.41
1:B:830:VAL:HG21	1:B:873:HIS:CE1	2.55	0.41
1:A:230:ASP:OD2	1:A:235:LYS:C	2.59	0.41
1:A:853:CYS:SG	1:A:889:ILE:HA	2.61	0.41
1:B:352:GLN:HE22	1:B:416:LYS:HE2	1.86	0.41
1:A:470:LYS:O	1:A:470:LYS:HG2	2.20	0.41
1:A:692:CYS:HA	1:A:695:LEU:HD12	2.02	0.41
1:B:459:ILE:HA	1:B:462:GLU:HG2	2.01	0.41
1:B:548:ARG:NH2	1:B:549:TYR:OH	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:234:PRO:HG3	1:B:292:ARG:NE	2.36	0.41
1:B:242:ARG:HE	1:B:300:MET:CG	2.34	0.41
1:B:439:ASP:OD1	1:B:439:ASP:N	2.54	0.41
1:B:627:HIS:ND1	1:B:628:PRO:HD2	2.35	0.41
1:A:366:ARG:HH11	1:A:419:CYS:HB3	1.86	0.40
1:A:707:ALA:O	1:A:711:ILE:HG13	2.21	0.40
1:A:225:PHE:O	1:A:228:MET:HG2	2.22	0.40
1:A:415:ILE:HD11	1:A:456:MET:HG2	2.03	0.40
1:A:421:LEU:HD23	1:A:421:LEU:HA	1.86	0.40
1:A:483:PRO:HA	1:A:486:ARG:HB2	2.02	0.40
1:A:329:ILE:HG22	1:A:333:TRP:CG	2.56	0.40
1:A:597:ALA:O	1:A:602:ALA:N	2.48	0.40
1:B:243:LEU:HA	1:B:243:LEU:HD23	1.86	0.40
1:B:335:TRP:CD2	1:B:385:LYS:HE2	2.57	0.40
1:B:675:GLU:HB3	1:B:676:TYR:CE2	2.57	0.40

All (4) 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:A:472:GLU:CG	1:A:472:GLU:CG[2_656]	1.82	0.38
1:A:355:GLU:CG	1:B:907:ARG:NH1[1_556]	1.86	0.34
1:A:453:ASP:OD2	1:B:914:LYS:NZ[1_556]	2.11	0.09
1:A:533:LYS:CE	1:A:810:GLU:OE1[4_546]	2.15	0.05

5.3   Torsion angles ⓘ

5.3.1   Protein backbone ⓘ

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	756/963 (78%)	726 (96%)	29 (4%)	1 (0%)	51	83
1	B	731/963 (76%)	710 (97%)	20 (3%)	1 (0%)	51	83

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1487/1926 (77%)	1436 (97%)	49 (3%)	2 (0%)	51 83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	230	ASP
1	A	606	PRO

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	652/775 (84%)	650 (100%)	2 (0%)	92 96
1	B	631/775 (81%)	629 (100%)	2 (0%)	92 96
All	All	1283/1550 (83%)	1279 (100%)	4 (0%)	92 96

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	629	LYS
1	A	907	ARG
1	B	341	ARG
1	B	479	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	229	HIS
1	A	324	HIS
1	B	367	GLN
1	B	398	ASN
1	B	598	ASN

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 ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	915:LEU	C	926:UNK	N	7.00

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2		OWAB(Å^2)	Q<0.9
1	A	762/963 (79%)	-0.35	1 (0%)	95　95	133, 190, 238, 297	0
1	B	739/963 (76%)	-0.35	11 (1%)	73　66	142, 205, 248, 336	0
All	All	1501/1926 (77%)	-0.35	12 (0%)	86　81	133, 197, 246, 336	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	462	GLU	4.3
1	B	904	GLU	4.2
1	B	745	GLU	3.9
1	B	477	MET	2.8
1	B	244	MET	2.7
1	B	476	ASN	2.6
1	B	441	LEU	2.5
1	B	905	VAL	2.3
1	B	605	LYS	2.2
1	B	596	TYR	2.2
1	B	670	LEU	2.1
1	A	693	LEU	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.