WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2024 – 12:02 PM EDT

|		
PDB ID	:	8UZH
Title	:	SUMO fused Trehalose Synthase (TreS) of Mycobacterium tuberculosis
Authors	:	Pathirage, R.; Ronning, D.R.
Deposited on	:	2023-11-15
Resolution	:	2.80 Å(reported)

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 2.80 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	Percentile Ranks	Value
Rfree		0.291
Clashscore		10
Ramachandran outliers		0.1%
Sidechain outliers		5.6%
RSRZ outliers		8.5%

Worse   *Better*

▌Percentile relative to all X-ray structures

▯Percentile relative to X-ray structures of similar resolution
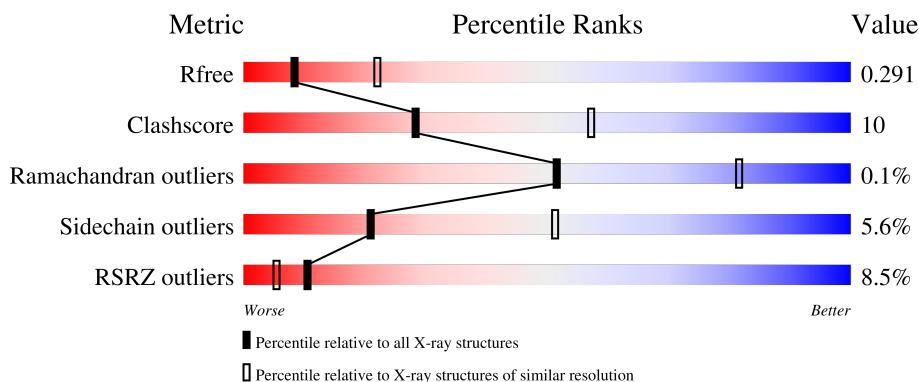
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	695	8% 65% 20% · 13%
1	B	695	7% 67% 21% · 10%
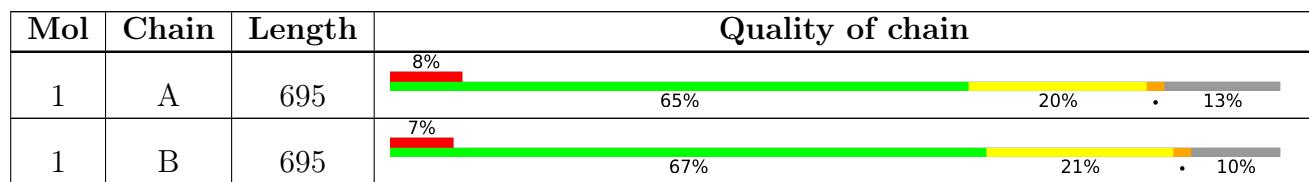
2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 9697 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 SUMO fused Trehalose Synthase (TreS),Trehalose synthase/amylase TreS.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	605	Total 4761	C 3064	N 799	O 881	S 17	0	0	0
1	B	626	Total 4926	C 3170	N 826	O 914	S 16	0	0	0

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q12306
A	2	HIS	-	expression tag	UNP Q12306
A	3	HIS	-	expression tag	UNP Q12306
A	4	HIS	-	expression tag	UNP Q12306
A	5	HIS	-	expression tag	UNP Q12306
A	6	HIS	-	expression tag	UNP Q12306
A	7	HIS	-	expression tag	UNP Q12306
A	8	GLY	-	expression tag	UNP Q12306
A	9	SER	-	expression tag	UNP Q12306
B	1	MET	-	initiating methionine	UNP Q12306
B	2	HIS	-	expression tag	UNP Q12306
B	3	HIS	-	expression tag	UNP Q12306
B	4	HIS	-	expression tag	UNP Q12306
B	5	HIS	-	expression tag	UNP Q12306
B	6	HIS	-	expression tag	UNP Q12306
B	7	HIS	-	expression tag	UNP Q12306
B	8	GLY	-	expression tag	UNP Q12306
B	9	SER	-	expression tag	UNP Q12306

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Ca 2	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total Ca 1 1		0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total O 2 2		0	0
3	B	5	Total O 5 5		0	0

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: SUMO fused Trehalose Synthase (TreS),Trehalose synthase/amylase TreS

Chain A:

• Molecule 1: SUMO fused Trehalose Synthase (TreS),Trehalose synthase/amylase TreS

Chain B:

F151 G158 L162 L165 I166 D167 R168 L172 I177 P184 F185 Y186 D187 D196 I197 R198 L204 P205 F213 D218 R222 D230 M233 N234 H235 T236 S237 E238 F243 S246 R247 Y254 G255 D256 Y257 Y258 V259 W260 S261 D262 T263 S264

D276 T277 E278 E279 S280 N281 W282 S283 F284 D285 Q290 F291 Y292 W293 H294 R295 S298 H299 D302 L303 N304 Y305 V310 Q311 M314 I315 L322 I326 D327 R330 L331 D332 A333 V334 P335 R340 E346 E350 V358 R359 K360 V361 V362 D363 D364 R369 V370

L371 L372 N376 Q377 W378 P379 V382 D388 T391 E395 C396 M405 I408 A411 V412 E415 Q426 F439 L440 H443 D444 E445 L446 T447 L448 E449 D466 P467 R468 M469 R476 R477 R478 L479 D484 L497 V505 Y508 E511 I512

D516 W519 L520 V526 P529 M530 Q531 W532 N537 A538 G539 F540 L548 Y549 L550 P551 P552 Y560 Q561 N564 V565 R569 R588 H589 Q598 E599 L600 V611 T621 L628 L637 D638 L639 Y645 L650 P657 Q661 Y664 Y674 W675

L678 T679 T680 HIS GLU VAL GLY ALA PRO PRO THR CYS GLY GLY GLU ARG ARG LEU

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 32 1 2	Depositor
Cell constants a, b, c, α, β, γ	156.88Å 156.88Å 138.44Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	43.69 – 2.80 48.48 – 2.71	Depositor EDS
% Data completeness (in resolution range)	98.0 (43.69-2.80) 89.4 (48.48-2.71)	Depositor EDS
R_{merge}	0.24	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.90 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.248 , 0.290 0.251 , 0.291	Depositor DCC
R_{free} test set	2004 reflections (3.77%)	wwPDB-VP
Wilson B-factor (Å^2)	64.6	Xtriage
Anisotropy	0.525	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 54.9	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.035 for -h,-k,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	9697	wwPDB-VP
Average B, all atoms (Å^2)	87.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.68% 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 ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CA

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	0.26	0/4900	0.50	0/6688
1	B	0.26	0/5070	0.50	2/6919 (0.0%)
All	All	0.26	0/9970	0.50	2/13607 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	89	LEU	CB-CG-CD1	5.32	120.05	111.00
1	B	89	LEU	CB-CG-CD2	-5.19	102.18	111.00

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	4761	0	4394	89	0
1	B	4926	0	4547	97	0
2	A	2	0	0	0	0
2	B	1	0	0	0	0
3	A	2	0	0	0	0
3	B	5	0	0	0	0
All	All	9697	0	8941	182	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 10.

All (182) 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:91:MET:HE1	1:B:97:ILE:HD11	1.56	0.87
1:B:331:LEU:HD21	1:B:371:LEU:HD12	1.60	0.84
1:B:478:ARG:NH1	1:B:508:TYR:O	2.20	0.75
1:A:600:LEU:HD11	1:A:611:VAL:HG23	1.69	0.75
1:B:439:PHE:HB3	1:B:505:VAL:HB	1.67	0.74
1:A:321:TRP:HB2	1:A:329:PHE:HZ	1.52	0.74
1:A:523:ARG:H	1:A:523:ARG:HD3	1.52	0.74
1:B:440:LEU:HG	1:B:497:LEU:HD13	1.68	0.74
1:A:332:ASP:HB3	1:A:446:LEU:HD21	1.72	0.71
1:B:476:ARG:HD3	1:B:526:VAL:HG11	1.74	0.70
1:B:80:ILE:HD12	1:B:81:GLN:H	1.57	0.70
1:B:405:MET:HA	1:B:408:ILE:HB	1.76	0.68
1:A:447:THR:OG1	1:A:448:LEU:N	2.23	0.67
1:A:561:GLN:OE1	1:A:561:GLN:N	2.24	0.67
1:B:172:LEU:HD22	1:B:177:ILE:HD13	1.78	0.65
1:A:642:TRP:HB3	1:A:645:TYR:HD1	1.62	0.64
1:B:447:THR:O	1:B:449:GLU:N	2.31	0.64
1:B:561:GLN:OE1	1:B:561:GLN:N	2.26	0.63
1:A:148:VAL:HG11	1:A:162:LEU:HD23	1.80	0.61
1:B:233:MET:HG2	1:B:331:LEU:HD12	1.82	0.61
1:A:407:ARG:HG3	1:A:423:ILE:HG13	1.82	0.61
1:B:376:ASN:ND2	1:B:444:ASP:OD2	2.34	0.60
1:A:98:GLU:HG2	1:B:467:PRO:HG3	1.83	0.60
1:B:360:LYS:HG3	1:B:361:VAL:N	2.16	0.60
1:B:532:TRP:HA	1:B:565:VAL:HG12	1.84	0.60
1:B:637:LEU:HB3	1:B:639:LEU:HG	1.84	0.59
1:A:43:ILE:HD11	1:A:63:ARG:HG2	1.85	0.59
1:A:439:PHE:HB3	1:A:505:VAL:HB	1.85	0.58
1:A:640:GLN:OE1	1:A:640:GLN:N	2.32	0.57
1:A:35:LYS:HD2	1:A:96:ILE:HG23	1.87	0.57
1:A:650:LEU:HD23	1:A:675:TRP:HB3	1.86	0.56
1:B:645:TYR:HB3	1:B:678:LEU:HD12	1.87	0.56
1:A:334:VAL:HG23	1:A:335:PRO:HD3	1.86	0.56
1:B:322:LEU:HD22	1:B:369:ARG:HG3	1.88	0.56
1:A:414:ARG:HH22	1:A:462:GLU:HG3	1.71	0.56
1:B:378:TRP:NE1	1:B:426:GLN:OE1	2.38	0.56
1:A:166:ILE:HD12	1:A:166:ILE:H	1.70	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:213:PHE:HZ	1:B:326:ILE:HD12	1.71	0.55
1:B:184:PRO:HD3	1:B:230:ASP:HB2	1.88	0.55
1:B:600:LEU:HD11	1:B:611:VAL:HG23	1.88	0.55
1:A:330:ARG:HD2	1:A:400:PHE:HE2	1.72	0.54
1:A:639:LEU:HB2	1:A:659:ILE:HG21	1.90	0.54
1:A:358:VAL:O	1:A:362:VAL:HG13	2.08	0.54
1:A:478:ARG:HB2	1:A:516:ASP:OD1	2.07	0.54
1:A:143:PHE:HB2	1:A:505:VAL:HG22	1.89	0.53
1:A:177:ILE:O	1:A:587:ARG:NH2	2.41	0.53
1:A:232:VAL:HA	1:A:332:ASP:HB2	1.90	0.53
1:A:511:GLU:HG2	1:A:512:ILE:HG23	1.91	0.53
1:A:138:PHE:HB3	1:A:370:VAL:HG21	1.89	0.53
1:A:380:GLY:HA2	1:A:428:PRO:HG2	1.91	0.53
1:A:321:TRP:HB2	1:A:329:PHE:CZ	2.40	0.52
1:B:661:GLN:H	1:B:661:GLN:CD	2.12	0.52
1:A:316:ASP:OD1	1:A:319:ARG:NH1	2.41	0.52
1:B:196:ASP:HB2	1:B:237:SER:HB2	1.91	0.52
1:A:405:MET:HA	1:A:408:ILE:HB	1.92	0.52
1:B:477:ARG:NH1	1:B:516:ASP:OD1	2.42	0.52
1:B:138:PHE:HB3	1:B:370:VAL:HG21	1.92	0.51
1:B:168:ARG:HD3	1:B:532:TRP:CZ2	2.45	0.51
1:A:331:LEU:HD21	1:A:371:LEU:HD23	1.92	0.51
1:A:321:TRP:HA	1:A:324:LEU:HD12	1.92	0.51
1:A:66:LYS:NZ	1:A:156:ALA:O	2.43	0.51
1:B:637:LEU:HD23	1:B:639:LEU:HD11	1.91	0.51
1:B:295:ARG:N	1:B:302:ASP:OD2	2.43	0.51
1:B:388:ASP:HB2	1:B:391:THR:HG23	1.92	0.51
1:A:623:LEU:HB2	1:A:678:LEU:HD21	1.93	0.50
1:B:218:ASP:O	1:B:222:ARG:HG2	2.11	0.50
1:B:661:GLN:N	1:B:661:GLN:OE1	2.43	0.50
1:A:234:ASN:ND2	1:A:302:ASP:OD1	2.44	0.50
1:B:412:VAL:HG12	1:B:628:LEU:HD22	1.92	0.50
1:A:166:ILE:HA	1:A:169:LEU:HD23	1.93	0.50
1:A:312:GLU:HA	1:A:315:ILE:HG12	1.93	0.50
1:B:243:PHE:O	1:B:247:ARG:HG2	2.11	0.50
1:B:246:SER:HG	1:B:260:TRP:HE1	1.60	0.50
1:A:531:GLN:HA	1:A:538:ALA:HB1	1.94	0.49
1:B:589:HIS:NE2	1:B:650:LEU:HD11	2.27	0.49
1:B:476:ARG:HH11	1:B:476:ARG:HG2	1.77	0.49
1:B:37:SER:HB2	1:B:42:GLU:HG2	1.93	0.49
1:B:511:GLU:HG2	1:B:512:ILE:HG23	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:PHE:O	1:A:369:ARG:HG2	2.14	0.48
1:A:621:THR:HG22	1:A:678:LEU:HD23	1.94	0.48
1:A:372:LEU:HG	1:A:398:MET:HB2	1.96	0.48
1:B:162:LEU:H	1:B:162:LEU:HD12	1.79	0.48
1:A:519:TRP:CG	1:B:551:PRO:HD3	2.49	0.47
1:B:411:ALA:O	1:B:415:GLU:N	2.46	0.47
1:B:146:VAL:HG21	1:B:151:PHE:CD1	2.49	0.47
1:B:234:ASN:ND2	1:B:302:ASP:OD1	2.47	0.47
1:A:612:ARG:HB2	1:A:622:VAL:HG22	1.96	0.47
1:A:218:ASP:O	1:A:222:ARG:HG3	2.14	0.47
1:A:555:ASP:OD2	1:A:556:PRO:HD2	2.14	0.47
1:A:170:ASP:HA	1:A:223:ARG:NH1	2.29	0.47
1:A:354:PHE:O	1:A:358:VAL:HG23	2.15	0.47
1:B:477:ARG:HD2	1:B:516:ASP:OD2	2.14	0.47
1:A:678:LEU:H	1:A:678:LEU:HD22	1.80	0.47
1:B:621:THR:HB	1:B:678:LEU:HB2	1.95	0.47
1:B:358:VAL:O	1:B:362:VAL:HG23	2.15	0.47
1:A:520:LEU:HD22	1:A:550:LEU:HD22	1.97	0.46
1:B:469:MET:HE2	1:B:469:MET:HA	1.97	0.46
1:A:206:GLU:N	1:A:206:GLU:OE1	2.48	0.46
1:B:88:ASP:HB2	1:B:89:LEU:HD12	1.98	0.46
1:B:305:TYR:O	1:B:311:GLN:NE2	2.43	0.46
1:B:35:LYS:HD2	1:B:96:ILE:HG12	1.98	0.46
1:B:466:ASP:HB3	1:B:469:MET:HB2	1.96	0.46
1:A:37:SER:HB2	1:A:42:GLU:HG2	1.97	0.46
1:A:359:ARG:NH2	1:A:393:GLY:O	2.49	0.46
1:B:204:LEU:HD12	1:B:205:PRO:HD2	1.97	0.46
1:A:280:SER:OG	1:A:282:TRP:O	2.33	0.46
1:A:384:GLU:H	1:A:384:GLU:CD	2.12	0.46
1:B:236:THR:HG23	1:B:303:LEU:HD21	1.97	0.46
1:B:238:GLU:HG3	1:B:299:HIS:HA	1.98	0.45
1:A:209:THR:OG1	1:A:210:VAL:N	2.49	0.45
1:B:116:VAL:HA	1:B:254:TYR:HE2	1.80	0.45
1:B:657:PRO:O	1:B:664:TYR:OH	2.23	0.45
1:B:278:GLU:OE2	1:B:298:SER:N	2.48	0.45
1:B:334:VAL:HG23	1:B:335:PRO:HD3	1.99	0.45
1:B:340:ARG:NH2	1:B:350:GLU:OE2	2.50	0.45
1:A:63:ARG:O	1:A:63:ARG:NH2	2.50	0.45
1:A:376:ASN:OD1	1:A:451:VAL:HG22	2.16	0.45
1:A:609:ALA:HB2	1:A:625:VAL:HG13	1.98	0.45
1:A:515:GLY:HA3	1:A:558:TYR:HB3	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:146:VAL:HB	1:B:508:TYR:HB3	1.98	0.45
1:B:335:PRO:O	1:B:346:GLU:HA	2.17	0.45
1:A:509:GLY:HA2	1:A:514:MET:HE3	1.99	0.44
1:A:272:ILE:HD11	1:A:280:SER:HA	1.99	0.44
1:A:311:GLN:O	1:A:315:ILE:HG23	2.17	0.44
1:B:532:TRP:HE3	1:B:565:VAL:HG11	1.82	0.44
1:A:37:SER:HB3	1:B:467:PRO:HG2	1.99	0.44
1:A:238:GLU:N	1:A:299:HIS:O	2.49	0.44
1:B:281:ASN:HB2	1:B:293:TRP:CZ3	2.53	0.44
1:A:138:PHE:HB2	1:A:398:MET:CE	2.48	0.43
1:A:424:ILE:HG21	1:A:597:PHE:CE2	2.52	0.43
1:A:548:LEU:HD12	1:A:552:PRO:HD3	2.00	0.43
1:B:327:ASP:HA	1:B:369:ARG:HD2	2.00	0.43
1:B:395:GLU:HB3	1:B:396:CYS:H	1.65	0.43
1:A:551:PRO:HG3	1:B:519:TRP:CD1	2.54	0.43
1:B:247:ARG:NH1	1:B:285:ASP:OD1	2.51	0.43
1:B:600:LEU:HD13	1:B:639:LEU:HD21	2.00	0.43
1:B:67:GLU:HB2	1:B:70:SER:HB3	2.00	0.43
1:B:72:ARG:HE	1:B:100:HIS:HB2	1.83	0.43
1:B:340:ARG:NE	1:B:350:GLU:OE1	2.52	0.43
1:B:378:TRP:CD2	1:B:379:PRO:HD2	2.54	0.43
1:A:233:MET:CE	1:A:318:ILE:HD11	2.48	0.43
1:B:531:GLN:HA	1:B:538:ALA:HB1	2.01	0.43
1:B:80:ILE:HD12	1:B:81:GLN:N	2.31	0.42
1:B:377:GLN:HB2	1:B:382:VAL:HG13	2.00	0.42
1:B:565:VAL:O	1:B:569:ARG:HB2	2.19	0.42
1:B:440:LEU:HD13	1:B:479:LEU:HD22	2.01	0.42
1:A:168:ARG:NH1	1:A:168:ARG:HA	2.35	0.42
1:A:293:TRP:O	1:A:302:ASP:N	2.45	0.42
1:B:310:VAL:O	1:B:314:MET:HG2	2.20	0.42
1:B:330:ARG:HA	1:B:372:LEU:HB2	2.02	0.42
1:A:204:LEU:HD12	1:A:205:PRO:HD2	2.02	0.42
1:A:310:VAL:O	1:A:314:MET:HG2	2.20	0.42
1:A:377:GLN:HB2	1:A:382:VAL:HG22	2.01	0.42
1:B:674:TYR:O	1:B:675:TRP:HD1	2.03	0.42
1:A:145:GLU:HA	1:A:181:TRP:O	2.20	0.41
1:B:520:LEU:HD13	1:B:550:LEU:HD22	2.02	0.41
1:A:560:TYR:HA	1:A:563:VAL:O	2.19	0.41
1:A:400:PHE:CD1	1:A:437:GLY:HA3	2.56	0.41
1:A:483:LEU:HD12	1:A:490:ILE:HG12	2.02	0.41
1:B:537:ASN:HA	1:B:552:PRO:HG2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:588:ARG:HE	1:B:588:ARG:HB2	1.55	0.41
1:A:596:ALA:O	1:A:612:ARG:HA	2.21	0.41
1:B:187:ASP:OD1	1:B:198:ARG:NE	2.35	0.41
1:A:512:ILE:O	1:A:568:GLN:NE2	2.53	0.41
1:A:517:VAL:O	1:A:519:TRP:N	2.45	0.41
1:B:315:ILE:HG22	1:B:358:VAL:HG22	2.03	0.41
1:B:332:ASP:OD2	1:B:446:LEU:HD11	2.21	0.41
1:A:58:GLU:O	1:A:62:LYS:HG3	2.20	0.41
1:A:117:VAL:HG23	1:A:254:TYR:CE2	2.56	0.41
1:B:158:GLY:HA2	1:B:548:LEU:HD23	2.02	0.41
1:A:475:ILE:HG22	1:A:477:ARG:HG3	2.03	0.41
1:B:447:THR:O	1:B:447:THR:OG1	2.33	0.41
1:A:142:VAL:HG22	1:A:504:PRO:HG2	2.03	0.40
1:A:466:ASP:HB3	1:A:469:MET:HB2	2.02	0.40
1:B:166:ILE:H	1:B:166:ILE:HD12	1.86	0.40
1:B:529:PRO:HG3	1:B:549:TYR:CE1	2.56	0.40
1:A:331:LEU:HD21	1:A:371:LEU:CD2	2.51	0.40
1:B:331:LEU:HD21	1:B:371:LEU:CD1	2.40	0.40
1:A:204:LEU:HD23	1:A:207:PHE:CE1	2.57	0.40
1:B:148:VAL:HG22	1:B:165:LEU:HD12	2.03	0.40
1:B:259:VAL:HB	1:B:293:TRP:HB3	2.03	0.40
1:B:560:TYR:O	1:B:564:ASN:ND2	2.44	0.40

There are no symmetry-related clashes.

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	593/695 (85%)	562 (95%)	31 (5%)	0	100	100
1	B	612/695 (88%)	585 (96%)	26 (4%)	1 (0%)	47	78
All	All	1205/1390 (87%)	1147 (95%)	57 (5%)	1 (0%)	51	81

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	448	LEU

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	479/599 (80%)	452 (94%)	27 (6%)	21	51
1	B	497/599 (83%)	469 (94%)	28 (6%)	21	51
All	All	976/1198 (82%)	921 (94%)	55 (6%)	21	51

All (55) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	63	ARG
1	A	111	HIS
1	A	151	PHE
1	A	168	ARG
1	A	223	ARG
1	A	233	MET
1	A	246	SER
1	A	266	ARG
1	A	280	SER
1	A	341	GLU
1	A	369	ARG
1	A	405	MET
1	A	421	SER
1	A	439	PHE
1	A	447	THR
1	A	451	VAL
1	A	477	ARG
1	A	484	ASP
1	A	520	LEU
1	A	523	ARG
1	A	540	PHE
1	A	548	LEU

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Mol	Chain	Res	Type
1	A	571	THR
1	A	573	THR
1	A	636	GLU
1	A	638	ASP
1	A	640	GLN
1	B	41	SER
1	B	44	PHE
1	B	72	ARG
1	B	85	THR
1	B	101	ARG
1	B	112	VAL
1	B	151	PHE
1	B	186	TYR
1	B	247	ARG
1	B	276	ASP
1	B	280	SER
1	B	295	ARG
1	B	330	ARG
1	B	334	VAL
1	B	340	ARG
1	B	360	LYS
1	B	364	ASP
1	B	382	VAL
1	B	405	MET
1	B	439	PHE
1	B	443	HIS
1	B	444	ASP
1	B	446	LEU
1	B	484	ASP
1	B	530	MET
1	B	540	PHE
1	B	569	ARG
1	B	598	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	401	HIS
1	B	554	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 ⓘ

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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(Å^2)	Q<0.9
1	A	605/695 (87%)	0.49	56 (9%)	8	4	54, 86, 120, 164	15 (2%)
1	B	626/695 (90%)	0.36	49 (7%)	13	7	54, 84, 121, 159	26 (4%)
All	All	1231/1390 (88%)	0.42	105 (8%)	10	5	54, 85, 121, 164	41 (3%)

All (105) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	57	MET	6.3
1	B	75	TYR	6.2
1	B	77	GLY	5.9
1	A	63	ARG	5.7
1	A	292	TYR	5.6
1	A	58	GLU	5.5
1	B	100	HIS	5.4
1	B	284	PHE	5.1
1	A	61	ALA	5.0
1	A	259	VAL	4.9
1	A	95	ASP	4.8
1	A	66	LYS	4.8
1	B	70	SER	4.7
1	A	60	PHE	4.7
1	A	56	LEU	4.7
1	A	68	MET	4.5
1	B	258	TYR	4.4
1	A	69	ASP	4.4
1	A	98	GLU	4.4
1	A	62	LYS	4.3
1	A	305	TYR	4.3
1	A	282	TRP	4.1
1	A	37	SER	4.1
1	B	110	SER	4.1

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Mol	Chain	Res	Type	RSRZ
1	B	290	GLN	4.1
1	B	282	TRP	4.0
1	A	293	TRP	4.0
1	B	102	GLU	3.9
1	A	116	VAL	3.9
1	A	256	ASP	3.9
1	B	51	THR	3.9
1	A	59	ALA	3.8
1	A	36	VAL	3.8
1	B	76	ASP	3.7
1	A	257	TYR	3.6
1	A	32	ILE	3.6
1	A	290	GLN	3.6
1	B	73	PHE	3.5
1	A	55	ARG	3.5
1	B	283	SER	3.4
1	B	78	ILE	3.4
1	A	112	VAL	3.3
1	B	92	GLU	3.3
1	B	74	LEU	3.3
1	A	115	GLY	3.2
1	A	258	TYR	3.2
1	A	304	ASN	3.2
1	A	96	ILE	3.2
1	B	72	ARG	3.1
1	B	262	ASP	3.1
1	B	71	LEU	3.1
1	A	253	PRO	3.1
1	B	93	ASP	3.1
1	A	309	ALA	3.1
1	A	291	PHE	3.1
1	A	303	LEU	3.1
1	B	116	VAL	3.0
1	B	90	ASP	3.0
1	B	304	ASN	3.0
1	A	97	ILE	3.0
1	A	285	ASP	3.0
1	B	61	ALA	3.0
1	A	114	GLY	3.0
1	A	64	GLN	3.0
1	A	129	ALA	2.9
1	B	303	LEU	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	99	ALA	2.9
1	A	254	TYR	2.9
1	B	256	ASP	2.8
1	B	264	SER	2.7
1	A	270	ALA	2.7
1	A	245	GLU	2.7
1	B	66	LYS	2.7
1	A	264	SER	2.7
1	B	291	PHE	2.7
1	B	111	HIS	2.7
1	A	284	PHE	2.7
1	B	96	ILE	2.6
1	A	246	SER	2.6
1	A	111	HIS	2.6
1	A	117	VAL	2.5
1	A	248	ARG	2.5
1	B	285	ASP	2.5
1	B	130	ALA	2.5
1	A	260	TRP	2.4
1	B	97	ILE	2.4
1	A	325	GLY	2.4
1	B	101	ARG	2.4
1	B	67	GLU	2.4
1	B	114	GLY	2.4
1	B	117	VAL	2.3
1	B	260	TRP	2.3
1	B	81	GLN	2.2
1	A	124	ASP	2.2
1	B	113	GLU	2.1
1	A	38	ASP	2.1
1	A	151	PHE	2.1
1	B	91	MET	2.1
1	A	130	ALA	2.1
1	A	34	LEU	2.1
1	B	292	TYR	2.0
1	B	79	ARG	2.0
1	B	80	ILE	2.0
1	B	89	LEU	2.0
1	B	168	ARG	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\mathring{A}^2$)	Q<0.9
2	CA	A	701	1/1	0.81	0.13	195,195,195,195	0
2	CA	B	701	1/1	0.89	0.17	155,155,155,155	0
2	CA	A	702	1/1	0.92	0.12	105,105,105,105	0

6.5 Other polymers (i)

There are no such residues in this entry.