



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 09:37 PM UTC

PDB ID : 3E73 / pdb_00003e73
Title : Crystal Structure of Human LanCL1 complexed with GSH
Authors : Zhang, W.; Zhu, G.; Li, X.; Rao, Z.; Zhang, C.
Deposited on : 2008-08-17
Resolution : 2.80 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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

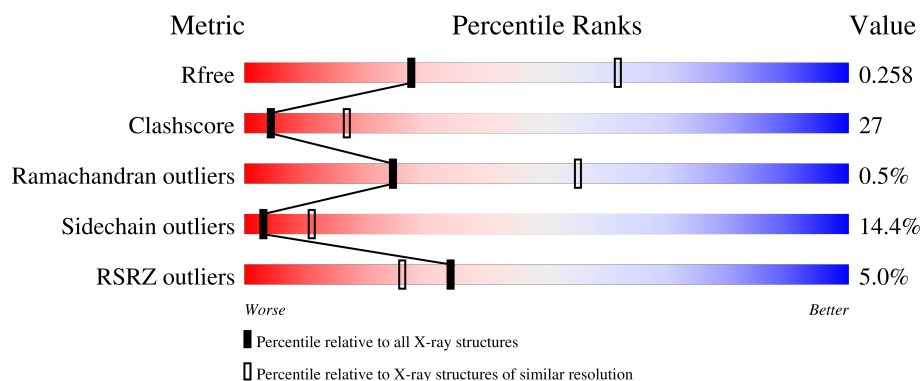
1 Overall quality at a glance

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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (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 $\leq 5\%$. 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	411	6% 56% 33% 9% ..
1	B	411	3% 54% 37% 6% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GSH	A	502	-	-	X	-
3	GSH	B	503	-	X	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6553 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 LanC-like protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	405	Total	C	N	O	S	0	0	0
			3243	2099	539	582	23			
1	B	399	Total	C	N	O	S	0	0	0
			3193	2067	533	571	22			

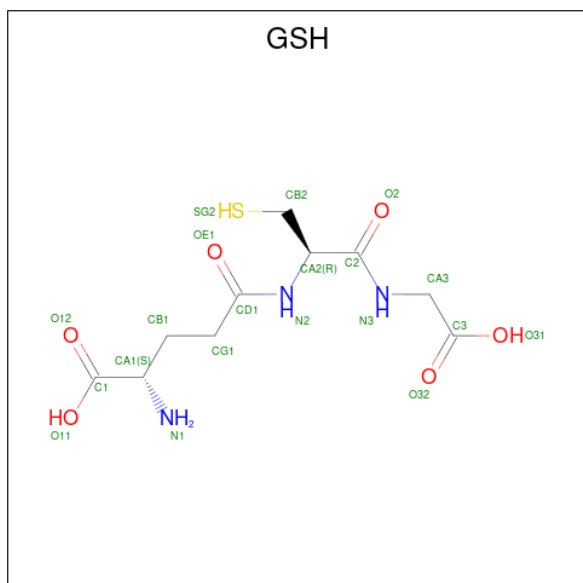
There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-11	HIS	-	expression tag	UNP O43813
A	-10	HIS	-	expression tag	UNP O43813
A	-9	HIS	-	expression tag	UNP O43813
A	-8	HIS	-	expression tag	UNP O43813
A	-7	HIS	-	expression tag	UNP O43813
A	-6	HIS	-	expression tag	UNP O43813
A	-5	SER	-	expression tag	UNP O43813
A	-4	MET	-	expression tag	UNP O43813
A	-3	ASP	-	expression tag	UNP O43813
A	-2	ILE	-	expression tag	UNP O43813
A	-1	GLU	-	expression tag	UNP O43813
A	0	PHE	-	expression tag	UNP O43813
B	-11	HIS	-	expression tag	UNP O43813
B	-10	HIS	-	expression tag	UNP O43813
B	-9	HIS	-	expression tag	UNP O43813
B	-8	HIS	-	expression tag	UNP O43813
B	-7	HIS	-	expression tag	UNP O43813
B	-6	HIS	-	expression tag	UNP O43813
B	-5	SER	-	expression tag	UNP O43813
B	-4	MET	-	expression tag	UNP O43813
B	-3	ASP	-	expression tag	UNP O43813
B	-2	ILE	-	expression tag	UNP O43813
B	-1	GLU	-	expression tag	UNP O43813
B	0	PHE	-	expression tag	UNP O43813

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Zn	0	0
			1	1		
2	B	1	Total	Zn	0	0
			1	1		

- Molecule 3 is GLUTATHIONE (CCD ID: GSH) (formula: C₁₀H₁₇N₃O₆S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	S	0	0
			20	10	3	6	1		
3	B	1	Total	C	N	O	S	0	0
			20	10	3	6	1		

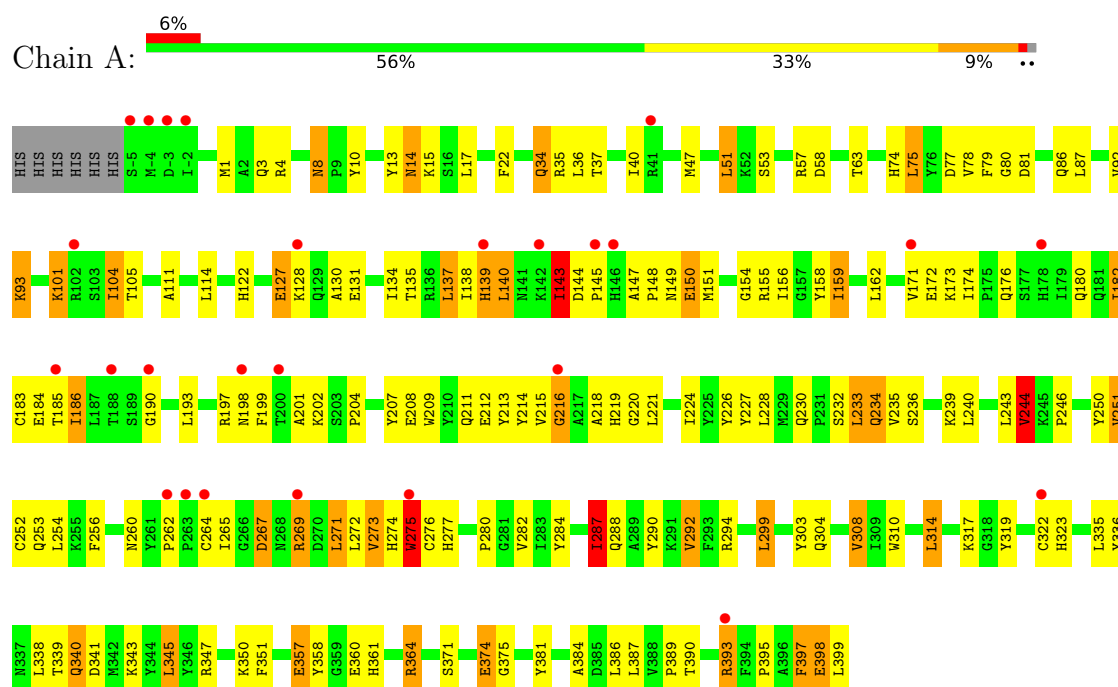
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	35	Total	O	0	0
			35	35		
4	B	40	Total	O	0	0
			40	40		

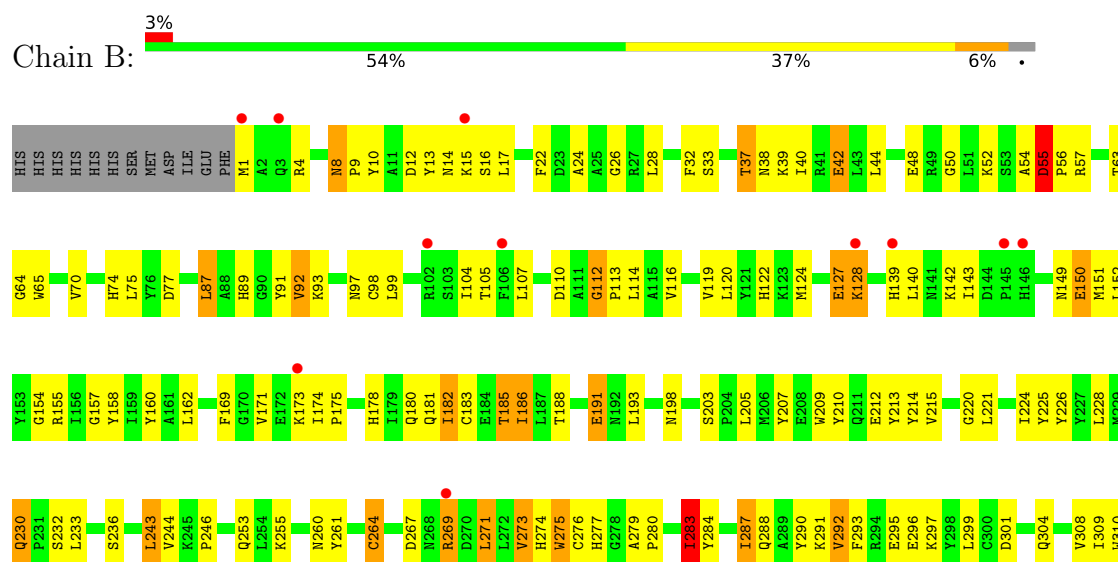
3 Residue-property plots

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: LanC-like protein 1



• Molecule 1: LanC-like protein 1





4 Data and refinement statistics

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, α , β , γ	194.10Å 194.10Å 243.55Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.33 – 2.80 49.33 – 2.80	Depositor EDS
% Data completeness (in resolution range)	88.4 (49.33-2.80) 88.5 (49.33-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	11.34 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.231 , 0.262 0.228 , 0.258	Depositor DCC
R_{free} test set	2374 reflections (4.01%)	wwPDB-VP
Wilson B-factor (Å ²)	81.6	Xtriage
Anisotropy	0.163	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 50.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	6553	wwPDB-VP
Average B, all atoms (Å ²)	89.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.00% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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

5.1 Standard geometry

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

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	0.52	1/3335 (0.0%)	0.94	7/4522 (0.2%)
1	B	0.49	0/3284	0.90	3/4454 (0.1%)
All	All	0.51	1/6619 (0.0%)	0.92	10/8976 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	287	ILE	CA-CB	5.48	1.61	1.54

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	398	GLU	N-CA-C	7.41	119.14	111.14
1	B	55	ASP	CA-C-N	7.25	127.26	119.28
1	B	55	ASP	C-N-CA	7.25	127.26	119.28
1	A	275	TRP	N-CA-C	-6.92	103.79	111.82
1	A	244	VAL	N-CA-C	6.76	116.88	110.53
1	A	374	GLU	N-CA-C	-6.73	105.62	114.31
1	B	283	ILE	CB-CA-C	-5.65	104.51	112.14
1	A	216	GLY	N-CA-C	5.60	121.11	111.98
1	A	139	HIS	N-CA-C	-5.28	107.14	113.21
1	A	143	ILE	N-CA-C	5.23	120.23	109.34

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	3243	0	3169	186	0
1	B	3193	0	3125	149	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	20	0	14	8	0
3	B	20	0	14	15	0
4	A	35	0	0	11	0
4	B	40	0	0	15	0
All	All	6553	0	6322	343	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 27.

All (343) 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)
3:B:503:GSH:HA31	3:B:503:GSH:N2	1.56	1.16
3:B:503:GSH:HG12	3:B:503:GSH:CB2	1.68	1.16
3:B:503:GSH:HN2	3:B:503:GSH:CA3	1.61	1.13
1:A:364:ARG:HH22	3:A:502:GSH:C1	1.63	1.08
3:B:503:GSH:HG12	3:B:503:GSH:HB23	1.11	1.07
1:A:183:CYS:HB3	4:A:529:HOH:O	1.59	1.03
1:B:52:LYS:HA	4:B:543:HOH:O	1.61	1.00
1:A:275:TRP:HZ3	1:A:397:PHE:CD2	1.83	0.97
1:B:162:LEU:HD23	1:B:174:ILE:HG21	1.47	0.97
1:A:304:GLN:HG2	4:A:520:HOH:O	1.70	0.92
1:B:236:SER:HA	4:B:526:HOH:O	1.70	0.91
1:A:250:TYR:O	1:A:254:LEU:HD23	1.73	0.89
1:A:335:LEU:O	1:A:339:THR:HG22	1.74	0.87
1:A:256:PHE:HB3	4:A:508:HOH:O	1.76	0.86
1:A:135:THR:O	1:A:139:HIS:HD2	1.59	0.86
1:A:290:TYR:CD1	1:A:299:LEU:HB2	2.11	0.85
1:A:233:LEU:C	1:A:234:GLN:HG2	2.01	0.85
1:B:264:CYS:O	1:B:267:ASP:HB2	1.78	0.84
3:B:503:GSH:HB23	3:B:503:GSH:CG1	2.04	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:220:GLY:O	1:B:224:ILE:HG13	1.78	0.82
1:B:275:TRP:HH2	1:B:397:PHE:CD1	1.96	0.81
1:B:8:ASN:C	1:B:8:ASN:HD22	1.88	0.81
1:B:39:LYS:HE2	1:B:356:LEU:O	1.81	0.81
1:B:178:HIS:HA	4:B:521:HOH:O	1.79	0.80
3:B:503:GSH:HA31	3:B:503:GSH:HN2	0.71	0.80
1:B:366:PRO:HB2	1:B:369:PRO:HA	1.64	0.79
1:A:180:GLN:HA	4:A:529:HOH:O	1.81	0.79
1:A:139:HIS:HB3	4:A:523:HOH:O	1.81	0.78
1:A:251:VAL:O	1:A:254:LEU:HB2	1.84	0.77
1:A:264:CYS:O	1:A:267:ASP:HB2	1.83	0.77
1:A:47:MET:O	1:A:51:LEU:HD22	1.83	0.77
1:A:135:THR:O	1:A:139:HIS:CD2	2.37	0.77
3:B:503:GSH:CB2	3:B:503:GSH:CG1	2.51	0.77
1:A:275:TRP:CD1	1:A:276:CYS:N	2.53	0.77
1:A:14:ASN:ND2	1:A:17:LEU:H	1.84	0.76
1:B:260:ASN:ND2	1:B:279:ALA:H	1.83	0.76
1:B:215:VAL:HG23	1:B:264:CYS:HA	1.68	0.76
1:A:250:TYR:O	1:A:254:LEU:CD2	2.35	0.75
1:A:34:GLN:HA	1:A:34:GLN:HE21	1.52	0.74
1:A:364:ARG:NH2	3:A:502:GSH:C1	2.47	0.74
1:A:233:LEU:C	1:A:234:GLN:CG	2.60	0.74
1:A:398:GLU:O	1:A:399:LEU:HB2	1.86	0.74
1:B:155:ARG:HB3	1:B:182:ILE:HD11	1.68	0.74
1:B:160:TYR:CE1	1:B:396:ALA:HA	2.23	0.74
1:A:1:MET:HE1	1:A:308:VAL:HG13	1.68	0.74
1:A:299:LEU:HD13	1:A:303:TYR:CE1	2.23	0.74
1:A:8:ASN:C	1:A:8:ASN:HD22	1.96	0.73
1:A:275:TRP:CZ3	1:A:397:PHE:CD2	2.72	0.73
1:A:149:ASN:HD21	1:A:155:ARG:HH11	1.34	0.73
1:A:144:ASP:O	1:A:147:ALA:N	2.20	0.72
1:B:38:ASN:HA	4:B:515:HOH:O	1.89	0.72
1:A:299:LEU:CD1	1:A:303:TYR:HE1	2.02	0.72
1:A:215:VAL:HG21	1:A:262:PRO:HG2	1.71	0.71
1:A:288:GLN:O	1:A:292:VAL:HG23	1.89	0.71
1:B:57:ARG:O	1:B:98:CYS:SG	2.48	0.71
1:B:182:ILE:O	1:B:186:ILE:HG22	1.91	0.70
1:A:275:TRP:HZ3	1:A:397:PHE:CE2	2.10	0.70
1:B:260:ASN:HD21	1:B:279:ALA:H	1.38	0.70
1:A:310:TRP:CE3	1:A:347:ARG:HG2	2.26	0.70
1:A:299:LEU:CD1	1:A:303:TYR:CE1	2.77	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:156:ILE:HA	1:A:159:ILE:HG13	1.75	0.67
1:A:149:ASN:ND2	1:A:155:ARG:HH11	1.91	0.67
1:A:220:GLY:O	1:A:224:ILE:HG13	1.93	0.67
1:A:14:ASN:C	1:A:14:ASN:HD22	2.03	0.67
1:B:48:GLU:HG3	4:B:540:HOH:O	1.94	0.67
1:A:317:LYS:HD3	3:A:502:GSH:OE1	1.96	0.66
1:A:251:VAL:HA	1:A:254:LEU:HD23	1.77	0.66
1:A:122:HIS:HD2	1:A:127:GLU:OE1	1.79	0.65
1:A:314:LEU:HB2	4:A:525:HOH:O	1.97	0.65
1:A:235:VAL:HB	1:A:240:LEU:HD13	1.78	0.65
1:B:180:GLN:HA	1:B:183:CYS:HB3	1.77	0.65
1:B:297:LYS:HD3	4:B:529:HOH:O	1.95	0.65
1:A:233:LEU:O	1:A:234:GLN:CG	2.45	0.65
1:B:230:GLN:HG3	4:B:531:HOH:O	1.96	0.65
1:B:291:LYS:HD3	4:B:518:HOH:O	1.95	0.65
1:B:310:TRP:CE3	1:B:347:ARG:HG2	2.32	0.64
1:B:1:MET:HB3	1:B:271:LEU:HA	1.79	0.64
1:A:149:ASN:HD21	1:A:155:ARG:NH1	1.95	0.64
1:A:143:ILE:HG21	4:A:533:HOH:O	1.98	0.64
1:B:213:TYR:O	1:B:264:CYS:HB3	1.98	0.64
1:B:334:THR:HG23	1:B:398:GLU:OE2	1.98	0.63
1:B:275:TRP:CH2	1:B:397:PHE:CG	2.87	0.63
1:A:101:LYS:HD3	1:A:143:ILE:HD11	1.80	0.63
1:A:271:LEU:HD13	1:A:272:LEU:HD23	1.80	0.63
1:A:336:TYR:CD1	1:A:345:LEU:HB2	2.34	0.62
1:A:1:MET:HE3	1:A:273:VAL:HG22	1.81	0.62
1:B:64:GLY:HA2	4:B:544:HOH:O	2.00	0.62
1:A:199:PHE:O	1:A:202:LYS:N	2.32	0.62
1:B:169:PHE:CD1	1:B:173:LYS:HG3	2.35	0.61
1:A:137:LEU:O	1:A:140:LEU:HB2	2.00	0.61
1:A:236:SER:HB2	1:A:239:LYS:HB2	1.82	0.61
1:A:339:THR:HG23	1:A:341:ASP:H	1.65	0.61
1:B:128:LYS:C	1:B:128:LYS:HD3	2.27	0.60
1:B:323:HIS:CE1	3:B:503:GSH:HB23	2.37	0.60
1:A:57:ARG:HE	1:A:57:ARG:HA	1.66	0.60
1:A:37:THR:HA	1:A:40:ILE:HD12	1.82	0.60
1:A:138:ILE:HD11	1:A:174:ILE:HG13	1.83	0.60
1:B:275:TRP:HH2	1:B:397:PHE:CG	2.19	0.60
1:B:275:TRP:CH2	1:B:397:PHE:CD1	2.86	0.60
1:A:233:LEU:O	1:A:234:GLN:HG3	2.01	0.59
1:A:317:LYS:HD3	1:A:323:HIS:CD2	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:275:TRP:CD1	1:A:275:TRP:C	2.78	0.59
1:A:310:TRP:CZ3	1:A:347:ARG:HG2	2.36	0.59
1:B:260:ASN:ND2	1:B:261:TYR:H	2.00	0.59
1:B:275:TRP:HZ3	1:B:397:PHE:CE2	2.20	0.59
1:A:275:TRP:HZ3	1:A:397:PHE:CG	2.20	0.59
1:B:183:CYS:O	1:B:186:ILE:HG23	2.03	0.59
1:A:34:GLN:HA	1:A:34:GLN:NE2	2.16	0.59
1:B:319:TYR:OH	1:B:361:HIS:HD2	1.86	0.59
1:A:14:ASN:HD21	1:A:17:LEU:H	1.47	0.58
1:A:240:LEU:HA	1:A:244:VAL:HG13	1.85	0.58
1:B:276:CYS:O	1:B:277:HIS:CD2	2.56	0.58
1:A:105:THR:C	1:A:111:ALA:HB3	2.27	0.58
1:A:357:GLU:O	1:A:360:GLU:HG3	2.03	0.58
1:B:22:PHE:CD2	1:B:26:GLY:HA2	2.37	0.58
1:B:155:ARG:HD3	1:B:182:ILE:HD12	1.86	0.58
1:A:172:GLU:O	1:A:172:GLU:HG2	2.05	0.57
1:A:264:CYS:HB2	1:A:267:ASP:OD1	2.04	0.57
1:A:243:LEU:O	1:A:246:PRO:HD2	2.05	0.57
1:A:155:ARG:HB3	1:A:182:ILE:CD1	2.35	0.57
1:B:139:HIS:HB3	1:B:142:LYS:HE2	1.86	0.57
1:A:275:TRP:CZ3	1:A:397:PHE:CG	2.93	0.57
1:A:299:LEU:O	1:A:303:TYR:HD1	1.86	0.57
1:B:188:THR:HA	1:B:191:GLU:HG3	1.85	0.57
1:B:275:TRP:CZ3	1:B:397:PHE:CD2	2.92	0.57
1:B:323:HIS:NE2	3:B:503:GSH:HG13	2.20	0.57
3:B:503:GSH:SG2	3:B:503:GSH:O2	2.62	0.57
1:B:8:ASN:C	1:B:8:ASN:ND2	2.60	0.56
1:B:122:HIS:HD2	1:B:127:GLU:OE1	1.88	0.56
1:B:310:TRP:CZ3	1:B:347:ARG:HG2	2.40	0.56
1:B:203:SER:OG	1:B:205:LEU:O	2.22	0.56
1:A:1:MET:HE1	1:A:308:VAL:CG1	2.35	0.56
1:B:317:LYS:NZ	3:B:503:GSH:OE1	2.34	0.56
1:A:319:TYR:OH	1:A:361:HIS:CD2	2.59	0.56
1:A:130:ALA:O	1:A:134:ILE:HG12	2.05	0.56
1:B:97:ASN:HB3	4:B:523:HOH:O	2.05	0.56
1:A:138:ILE:C	1:A:140:LEU:H	2.13	0.55
1:A:216:GLY:O	1:A:220:GLY:HA3	2.06	0.55
1:B:275:TRP:HZ3	1:B:397:PHE:CD2	2.24	0.55
1:A:144:ASP:N	1:A:145:PRO:HD3	2.21	0.55
1:B:288:GLN:O	1:B:292:VAL:HG22	2.07	0.55
1:A:180:GLN:O	1:A:184:GLU:HG2	2.05	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:269:ARG:HA	1:A:269:ARG:NE	2.21	0.55
1:B:8:ASN:ND2	1:B:10:TYR:H	2.04	0.55
1:A:8:ASN:ND2	1:A:10:TYR:H	2.04	0.55
1:B:89:HIS:N	1:B:120:LEU:HD11	2.21	0.54
1:B:344:TYR:HE2	1:B:347:ARG:NH1	2.04	0.54
1:A:1:MET:HE3	1:A:260:ASN:ND2	2.23	0.54
1:A:150:GLU:OE1	1:A:154:GLY:N	2.41	0.54
1:A:35:ARG:O	1:A:36:LEU:C	2.50	0.54
1:B:178:HIS:O	1:B:182:ILE:HG22	2.08	0.54
1:A:239:LYS:HG2	1:A:243:LEU:HD12	1.89	0.54
1:B:14:ASN:O	1:B:16:SER:N	2.41	0.54
1:A:227:TYR:O	1:A:233:LEU:HD22	2.07	0.53
1:A:209:TRP:HE3	1:A:214:TYR:CE2	2.25	0.53
1:B:275:TRP:CD1	1:B:322:CYS:HA	2.43	0.53
1:A:3:GLN:NE2	1:B:198:ASN:O	2.40	0.53
1:A:34:GLN:HE21	1:A:34:GLN:CA	2.18	0.53
1:A:148:PRO:HG2	1:A:154:GLY:HA2	1.90	0.53
1:A:190:GLY:HA3	1:A:207:TYR:CZ	2.44	0.53
1:B:301:ASP:O	1:B:304:GLN:HB3	2.09	0.53
1:A:357:GLU:O	1:A:360:GLU:CG	2.56	0.53
1:B:323:HIS:NE2	3:B:503:GSH:HA1	2.24	0.53
1:A:1:MET:CE	1:A:273:VAL:HG22	2.38	0.53
1:A:8:ASN:C	1:A:8:ASN:ND2	2.67	0.53
1:B:269:ARG:HG3	1:B:271:LEU:HD22	1.91	0.53
1:A:357:GLU:O	1:A:358:TYR:C	2.52	0.53
1:A:199:PHE:O	1:A:201:ALA:N	2.42	0.53
1:A:10:TYR:CE1	1:A:350:LYS:O	2.62	0.52
1:B:279:ALA:O	1:B:283:ILE:HG13	2.09	0.52
1:B:213:TYR:O	1:B:264:CYS:CB	2.58	0.52
1:B:319:TYR:OH	1:B:361:HIS:CD2	2.63	0.52
1:B:158:TYR:O	1:B:162:LEU:HD12	2.10	0.52
1:A:183:CYS:HA	1:A:186:ILE:HG23	1.90	0.51
1:A:319:TYR:CE2	1:A:361:HIS:HD2	2.28	0.51
3:B:503:GSH:HG12	3:B:503:GSH:HB22	1.80	0.51
1:B:10:TYR:CE1	1:B:350:LYS:O	2.64	0.51
1:B:42:GLU:HG2	4:B:513:HOH:O	2.10	0.51
1:B:158:TYR:CE1	1:B:162:LEU:HD11	2.45	0.51
1:B:226:TYR:CE2	1:B:284:TYR:HB3	2.45	0.51
1:B:122:HIS:C	1:B:124:MET:H	2.19	0.51
1:A:15:LYS:HA	4:A:524:HOH:O	2.10	0.51
1:B:395:PRO:HA	4:B:547:HOH:O	2.10	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:79:PHE:C	1:A:81:ASP:H	2.20	0.50
1:A:150:GLU:HB2	1:A:219:HIS:HA	1.93	0.50
1:B:37:THR:HA	1:B:40:ILE:HD12	1.92	0.50
1:B:214:TYR:HA	1:B:264:CYS:HB3	1.93	0.50
1:B:14:ASN:O	1:B:17:LEU:N	2.43	0.50
1:B:357:GLU:O	1:B:360:GLU:CG	2.60	0.50
1:A:275:TRP:CZ3	1:A:397:PHE:CE2	2.97	0.50
1:B:14:ASN:O	1:B:15:LYS:C	2.53	0.50
1:B:22:PHE:HD2	1:B:26:GLY:HA2	1.75	0.50
1:B:183:CYS:HA	1:B:186:ILE:HG23	1.93	0.49
1:B:105:THR:HG21	1:B:152:LEU:C	2.37	0.49
1:A:319:TYR:OH	1:A:361:HIS:HD2	1.93	0.49
1:B:344:TYR:HE2	1:B:347:ARG:HH11	1.60	0.49
1:A:57:ARG:HA	1:A:57:ARG:NE	2.26	0.49
1:A:63:THR:HA	1:A:371:SER:HB2	1.94	0.49
1:A:211:GLN:O	1:A:212:GLU:HG2	2.13	0.49
1:B:87:LEU:O	1:B:91:TYR:CD2	2.66	0.49
1:B:280:PRO:O	1:B:283:ILE:HD11	2.13	0.49
1:A:227:TYR:O	1:A:233:LEU:CD2	2.61	0.49
1:A:204:PRO:HG2	1:A:246:PRO:HG2	1.94	0.48
1:A:211:GLN:C	1:A:212:GLU:HG2	2.39	0.48
1:A:101:LYS:HD3	1:A:143:ILE:CD1	2.42	0.48
1:B:50:GLY:HA3	1:B:370:PHE:CZ	2.47	0.48
1:B:158:TYR:CZ	1:B:162:LEU:HD11	2.48	0.48
1:A:339:THR:O	1:A:340:GLN:HB2	2.13	0.48
1:B:293:PHE:O	1:B:295:GLU:HG3	2.13	0.48
1:A:122:HIS:CD2	1:A:127:GLU:OE1	2.65	0.48
1:A:78:VAL:HG11	1:A:384:ALA:HB1	1.95	0.48
1:A:323:HIS:CE1	3:A:502:GSH:HA2	2.49	0.48
1:A:79:PHE:O	1:A:81:ASP:N	2.46	0.47
1:A:138:ILE:C	1:A:140:LEU:N	2.72	0.47
1:A:171:VAL:CG1	1:A:172:GLU:N	2.77	0.47
1:B:209:TRP:CE3	1:B:210:TYR:HB2	2.49	0.47
1:B:89:HIS:CA	1:B:120:LEU:HD11	2.45	0.47
1:A:274:HIS:HB2	1:A:277:HIS:H	1.80	0.47
1:A:364:ARG:NH2	3:A:502:GSH:O11	2.44	0.47
1:B:290:TYR:CD1	1:B:299:LEU:HB2	2.50	0.47
1:A:274:HIS:HB3	1:A:276:CYS:SG	2.55	0.47
1:B:54:ALA:HB3	1:B:65:TRP:CH2	2.50	0.47
1:A:14:ASN:ND2	1:A:14:ASN:C	2.73	0.47
1:A:393:ARG:HG3	1:A:398:GLU:HG2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:44:LEU:HD23	1:B:380:ILE:HD13	1.97	0.47
1:B:87:LEU:O	1:B:91:TYR:HD2	1.96	0.47
1:B:288:GLN:O	1:B:292:VAL:CG2	2.62	0.47
1:B:207:TYR:HA	4:B:537:HOH:O	2.15	0.47
1:A:299:LEU:HD11	1:A:303:TYR:HE1	1.79	0.46
1:A:251:VAL:CA	1:A:254:LEU:HD23	2.45	0.46
1:B:334:THR:CG2	1:B:398:GLU:OE2	2.64	0.46
1:B:8:ASN:HD22	1:B:10:TYR:H	1.62	0.46
1:B:107:LEU:HD21	1:B:373:PHE:CE2	2.50	0.46
1:A:317:LYS:HG2	1:A:323:HIS:O	2.15	0.46
1:B:89:HIS:CD2	1:B:124:MET:HE1	2.50	0.46
1:A:13:TYR:HB3	1:A:343:LYS:HG3	1.98	0.46
1:A:143:ILE:CG2	4:A:533:HOH:O	2.60	0.46
1:A:381:TYR:CZ	1:A:395:PRO:HB3	2.51	0.46
1:B:1:MET:HE3	1:B:273:VAL:HG22	1.98	0.46
1:B:212:GLU:OE1	1:B:212:GLU:HA	2.16	0.46
1:B:336:TYR:CD1	1:B:345:LEU:HB2	2.51	0.46
1:B:97:ASN:CB	4:B:523:HOH:O	2.62	0.45
1:B:150:GLU:OE1	1:B:154:GLY:N	2.49	0.45
1:A:226:TYR:OH	1:A:398:GLU:O	2.28	0.45
1:B:155:ARG:HD3	1:B:182:ILE:CD1	2.46	0.45
1:A:74:HIS:O	1:A:78:VAL:HG12	2.16	0.45
1:A:398:GLU:O	1:A:399:LEU:CB	2.60	0.45
1:B:24:ALA:HA	4:B:532:HOH:O	2.16	0.45
1:A:375:GLY:C	4:A:532:HOH:O	2.60	0.45
1:B:243:LEU:O	1:B:246:PRO:HD2	2.17	0.45
1:A:214:TYR:CE1	1:A:264:CYS:SG	3.10	0.45
1:B:279:ALA:HB3	1:B:280:PRO:HD3	1.98	0.45
1:A:230:GLN:HG2	1:A:399:LEU:HD13	1.99	0.44
1:B:341:ASP:C	1:B:341:ASP:OD2	2.60	0.44
1:A:213:TYR:HB2	1:A:265:ILE:HG13	1.99	0.44
1:A:75:LEU:HD12	1:A:75:LEU:HA	1.69	0.44
1:A:280:PRO:O	1:A:284:TYR:HE1	2.00	0.44
1:B:105:THR:HG21	1:B:152:LEU:O	2.18	0.44
1:A:104:ILE:O	1:A:111:ALA:HB2	2.17	0.44
1:A:101:LYS:CD	1:A:143:ILE:HD11	2.45	0.44
1:B:275:TRP:CD1	1:B:276:CYS:N	2.85	0.44
1:B:314:LEU:HD13	1:B:351:PHE:CZ	2.52	0.44
1:B:112:GLY:O	1:B:113:PRO:C	2.61	0.44
1:A:275:TRP:HD1	1:A:322:CYS:O	2.00	0.44
1:A:287:ILE:C	1:A:287:ILE:HD12	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:357:GLU:O	1:B:360:GLU:HG2	2.17	0.44
1:A:34:GLN:O	1:A:37:THR:HG22	2.18	0.43
1:A:149:ASN:HA	1:A:155:ARG:H	1.83	0.43
1:A:14:ASN:HD21	1:A:17:LEU:HG	1.82	0.43
1:A:374:GLU:OE2	3:A:502:GSH:N1	2.51	0.43
1:B:92:VAL:HG12	1:B:93:LYS:N	2.31	0.43
1:A:143:ILE:C	1:A:145:PRO:HD3	2.43	0.43
1:A:197:ARG:O	1:A:198:ASN:HB2	2.18	0.43
1:A:276:CYS:O	1:A:277:HIS:CD2	2.71	0.43
1:B:89:HIS:HA	1:B:120:LEU:HD11	2.00	0.43
1:A:75:LEU:HA	1:A:78:VAL:HG12	2.00	0.43
1:A:299:LEU:HD11	1:A:303:TYR:CE1	2.51	0.43
1:B:8:ASN:HD22	1:B:9:PRO:N	2.13	0.43
1:A:176:GLN:NE2	1:A:234:GLN:NE2	2.66	0.43
1:A:209:TRP:CE3	1:A:214:TYR:CE2	3.06	0.43
1:B:12:ASP:O	1:B:13:TYR:C	2.61	0.43
1:B:181:GLN:O	1:B:185:THR:HG23	2.19	0.43
1:A:4:ARG:HH21	3:A:502:GSH:C3	2.31	0.43
1:A:8:ASN:HD22	1:A:10:TYR:H	1.66	0.43
1:B:280:PRO:HG3	1:B:309:ILE:HG12	2.01	0.43
1:A:319:TYR:CZ	1:A:361:HIS:HD2	2.37	0.43
1:A:386:LEU:O	1:A:389:PRO:HD3	2.19	0.43
1:B:182:ILE:O	1:B:182:ILE:HG13	2.17	0.43
1:A:336:TYR:CE1	1:A:345:LEU:HB2	2.54	0.43
1:B:99:LEU:HD22	1:B:110:ASP:HB3	2.01	0.43
1:B:275:TRP:CZ3	1:B:397:PHE:CE2	3.04	0.42
1:B:364:ARG:NH2	3:B:503:GSH:O12	2.52	0.42
1:A:182:ILE:HG13	1:A:183:CYS:N	2.33	0.42
1:B:4:ARG:HD2	1:B:4:ARG:HA	1.90	0.42
1:A:144:ASP:N	1:A:145:PRO:CD	2.82	0.42
1:B:274:HIS:HE1	3:B:503:GSH:O32	2.02	0.42
1:B:381:TYR:CZ	1:B:395:PRO:HB3	2.54	0.42
1:A:314:LEU:HD13	1:A:351:PHE:CE1	2.55	0.42
1:B:10:TYR:CD1	1:B:350:LYS:HB3	2.54	0.42
1:A:256:PHE:CE1	1:A:262:PRO:HA	2.54	0.42
1:B:50:GLY:HA3	1:B:370:PHE:CE1	2.54	0.42
1:A:151:MET:HB2	1:A:218:ALA:O	2.20	0.42
1:B:225:TYR:O	1:B:228:LEU:N	2.51	0.42
1:B:230:GLN:HG2	1:B:399:LEU:HD13	2.01	0.42
1:B:28:LEU:HD22	1:B:32:PHE:CD2	2.55	0.42
1:B:151:MET:O	1:B:157:GLY:HA3	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:158:TYR:CE1	1:A:162:LEU:HD11	2.55	0.41
1:B:394:PHE:C	1:B:394:PHE:CD2	2.98	0.41
1:A:233:LEU:HD12	1:A:233:LEU:HA	1.84	0.41
1:A:345:LEU:HD21	1:A:389:PRO:CG	2.50	0.41
1:B:309:ILE:O	1:B:313:GLY:N	2.52	0.41
1:B:74:HIS:HE1	1:B:381:TYR:O	2.03	0.41
1:A:127:GLU:HA	1:A:130:ALA:HB3	2.02	0.41
1:A:171:VAL:HG12	1:A:172:GLU:N	2.35	0.41
1:A:271:LEU:HD13	1:A:272:LEU:CD2	2.48	0.41
1:A:357:GLU:HB3	1:A:360:GLU:HG3	2.02	0.41
1:B:175:PRO:HG2	1:B:178:HIS:HB2	2.02	0.41
1:A:250:TYR:CE2	1:A:253:GLN:OE1	2.74	0.41
1:B:350:LYS:HA	1:B:350:LYS:HD3	1.87	0.41
1:A:182:ILE:O	1:A:186:ILE:CG2	2.69	0.41
1:A:335:LEU:C	1:A:339:THR:HG22	2.43	0.41
1:B:32:PHE:O	1:B:33:SER:C	2.63	0.41
1:B:55:ASP:HA	1:B:56:PRO:HD3	1.68	0.41
1:B:287:ILE:C	1:B:287:ILE:HD12	2.46	0.41
1:A:149:ASN:O	1:A:156:ILE:HG12	2.21	0.41
1:A:239:LYS:O	1:A:243:LEU:HB2	2.20	0.41
1:A:294:ARG:HA	1:A:294:ARG:HD3	1.83	0.41
1:A:323:HIS:CD2	3:A:502:GSH:OE1	2.74	0.41
1:B:14:ASN:C	1:B:16:SER:N	2.79	0.41
1:B:116:VAL:O	1:B:119:VAL:HG22	2.21	0.41
1:B:149:ASN:HA	1:B:155:ARG:H	1.86	0.41
1:A:22:PHE:O	4:A:518:HOH:O	2.22	0.40
1:A:149:ASN:ND2	1:A:155:ARG:NH1	2.60	0.40
1:B:225:TYR:O	1:B:226:TYR:C	2.64	0.40
1:A:228:LEU:C	1:A:230:GLN:H	2.29	0.40
1:A:251:VAL:O	1:A:252:CYS:C	2.63	0.40
1:A:93:LYS:HA	1:A:93:LYS:HD2	1.55	0.40
1:B:10:TYR:CG	1:B:350:LYS:HD2	2.56	0.40
1:B:63:THR:HA	1:B:371:SER:HB2	2.04	0.40
1:B:232:SER:HB2	1:B:233:LEU:HD12	2.02	0.40
1:A:58:ASP:OD2	1:A:58:ASP:C	2.65	0.40
1:A:131:GLU:OE1	1:A:173:LYS:NZ	2.54	0.40
1:B:260:ASN:ND2	1:B:279:ALA:N	2.59	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	403/411 (98%)	364 (90%)	37 (9%)	2 (0%)	24	55
1	B	397/411 (97%)	346 (87%)	49 (12%)	2 (0%)	24	55
All	All	800/822 (97%)	710 (89%)	86 (11%)	4 (0%)	24	55

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	80	GLY
1	A	397	PHE
1	B	112	GLY
1	B	397	PHE

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	337/343 (98%)	286 (85%)	51 (15%)	3	10
1	B	331/343 (96%)	286 (86%)	45 (14%)	3	13
All	All	668/686 (97%)	572 (86%)	96 (14%)	3	11

All (96) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	ASN
1	A	14	ASN

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Mol	Chain	Res	Type
1	A	34	GLN
1	A	51	LEU
1	A	53	SER
1	A	75	LEU
1	A	77	ASP
1	A	86	GLN
1	A	87	LEU
1	A	92	VAL
1	A	93	LYS
1	A	101	LYS
1	A	104	ILE
1	A	114	LEU
1	A	127	GLU
1	A	128	LYS
1	A	137	LEU
1	A	140	LEU
1	A	143	ILE
1	A	150	GLU
1	A	159	ILE
1	A	182	ILE
1	A	185	THR
1	A	186	ILE
1	A	193	LEU
1	A	208	GLU
1	A	221	LEU
1	A	232	SER
1	A	233	LEU
1	A	234	GLN
1	A	244	VAL
1	A	251	VAL
1	A	267	ASP
1	A	269	ARG
1	A	271	LEU
1	A	273	VAL
1	A	275	TRP
1	A	282	VAL
1	A	287	ILE
1	A	292	VAL
1	A	299	LEU
1	A	308	VAL
1	A	314	LEU
1	A	338	LEU

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Mol	Chain	Res	Type
1	A	340	GLN
1	A	345	LEU
1	A	357	GLU
1	A	364	ARG
1	A	387	LEU
1	A	390	THR
1	A	393	ARG
1	B	8	ASN
1	B	37	THR
1	B	42	GLU
1	B	55	ASP
1	B	70	VAL
1	B	75	LEU
1	B	77	ASP
1	B	87	LEU
1	B	92	VAL
1	B	104	ILE
1	B	114	LEU
1	B	127	GLU
1	B	128	LYS
1	B	140	LEU
1	B	143	ILE
1	B	150	GLU
1	B	171	VAL
1	B	182	ILE
1	B	185	THR
1	B	186	ILE
1	B	191	GLU
1	B	193	LEU
1	B	221	LEU
1	B	230	GLN
1	B	243	LEU
1	B	244	VAL
1	B	253	GLN
1	B	255	LYS
1	B	264	CYS
1	B	269	ARG
1	B	271	LEU
1	B	273	VAL
1	B	275	TRP
1	B	283	ILE
1	B	287	ILE

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Mol	Chain	Res	Type
1	B	292	VAL
1	B	296	GLU
1	B	308	VAL
1	B	314	LEU
1	B	334	THR
1	B	337	ASN
1	B	345	LEU
1	B	365	THR
1	B	387	LEU
1	B	393	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	8	ASN
1	A	14	ASN
1	A	34	GLN
1	A	89	HIS
1	A	122	HIS
1	A	139	HIS
1	A	149	ASN
1	A	168	ASN
1	A	176	GLN
1	A	178	HIS
1	A	181	GLN
1	A	192	ASN
1	A	234	GLN
1	A	237	GLN
1	A	241	HIS
1	A	274	HIS
1	A	277	HIS
1	A	361	HIS
1	B	8	ASN
1	B	34	GLN
1	B	38	ASN
1	B	74	HIS
1	B	89	HIS
1	B	97	ASN
1	B	122	HIS
1	B	192	ASN
1	B	234	GLN
1	B	253	GLN

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Mol	Chain	Res	Type
1	B	260	ASN
1	B	274	HIS
1	B	277	HIS
1	B	311	GLN
1	B	361	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	GSH	B	503	2	18,19,19	3.94	4 (22%)	21,24,24	3.17	6 (28%)
3	GSH	A	502	2	18,19,19	3.95	4 (22%)	21,24,24	3.17	6 (28%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GSH	B	503	2	-	17/24/24/24	-
3	GSH	A	502	2	-	9/24/24/24	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	502	GSH	O2-C2	10.58	1.43	1.23
3	B	503	GSH	O2-C2	10.52	1.43	1.23
3	A	502	GSH	OE1-CD1	10.26	1.43	1.23
3	B	503	GSH	OE1-CD1	10.26	1.43	1.23
3	A	502	GSH	CD1-N2	5.40	1.45	1.34
3	B	503	GSH	CD1-N2	5.39	1.45	1.34
3	B	503	GSH	C2-N3	5.04	1.45	1.33
3	A	502	GSH	C2-N3	5.01	1.45	1.33

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	502	GSH	OE1-CD1-N2	-7.96	109.48	122.95
3	B	503	GSH	OE1-CD1-N2	-7.95	109.49	122.95
3	A	502	GSH	OE1-CD1-CG1	-6.93	109.46	122.02
3	B	503	GSH	OE1-CD1-CG1	-6.91	109.50	122.02
3	B	503	GSH	O2-C2-N3	-6.39	109.47	122.98
3	A	502	GSH	O2-C2-N3	-6.38	109.48	122.98
3	A	502	GSH	O2-C2-CA2	-5.27	109.45	120.48
3	B	503	GSH	O2-C2-CA2	-5.26	109.46	120.48
3	B	503	GSH	CG1-CD1-N2	-3.35	109.96	115.86
3	A	502	GSH	CG1-CD1-N2	-3.33	109.99	115.86
3	B	503	GSH	CA2-C2-N3	-3.06	109.98	116.54
3	A	502	GSH	CA2-C2-N3	-3.04	110.02	116.54

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	502	GSH	CG1-CD1-N2-CA2
3	A	502	GSH	OE1-CD1-N2-CA2
3	A	502	GSH	CA2-C2-N3-CA3
3	B	503	GSH	O12-C1-CA1-N1
3	B	503	GSH	N1-CA1-CB1-CG1
3	B	503	GSH	C1-CA1-CB1-CG1
3	B	503	GSH	OE1-CD1-N2-CA2

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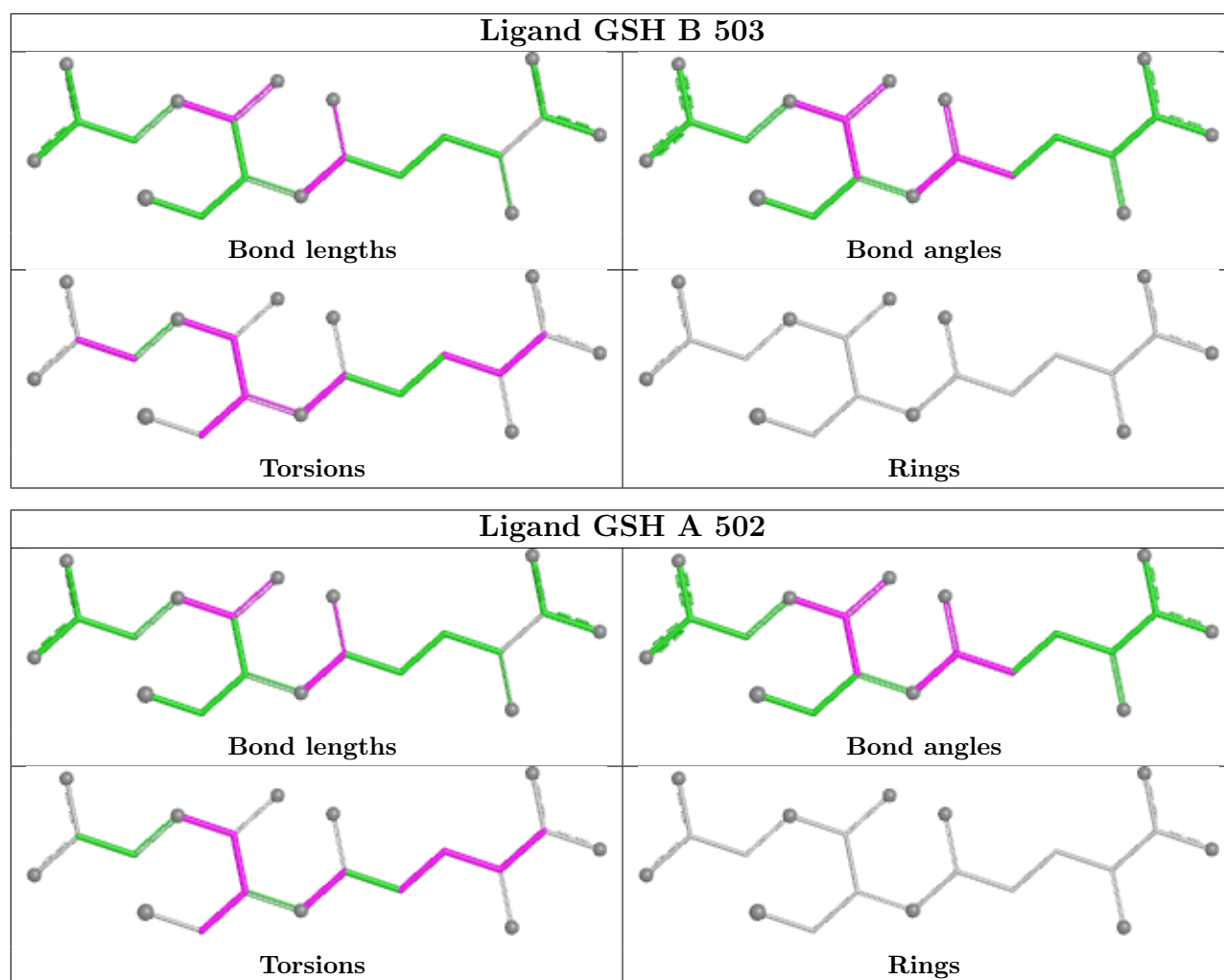
Mol	Chain	Res	Type	Atoms
3	B	503	GSH	N2-CA2-CB2-SG2
3	B	503	GSH	C2-CA2-CB2-SG2
3	B	503	GSH	CA2-C2-N3-CA3
3	B	503	GSH	O2-C2-N3-CA3
3	B	503	GSH	CG1-CD1-N2-CA2
3	B	503	GSH	O11-C1-CA1-N1
3	B	503	GSH	CB2-CA2-N2-CD1
3	A	502	GSH	O11-C1-CA1-N1
3	A	502	GSH	CA1-CB1-CG1-CD1
3	B	503	GSH	O31-C3-CA3-N3
3	A	502	GSH	O2-C2-CA2-N2
3	B	503	GSH	O32-C3-CA3-N3
3	A	502	GSH	N2-CA2-CB2-SG2
3	B	503	GSH	O2-C2-CA2-N2
3	B	503	GSH	C2-CA2-N2-CD1
3	A	502	GSH	C1-CA1-CB1-CG1
3	B	503	GSH	O12-C1-CA1-CB1
3	B	503	GSH	O11-C1-CA1-CB1
3	A	502	GSH	O12-C1-CA1-N1

There are no ring outliers.

2 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	503	GSH	15	0
3	A	502	GSH	8	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	405/411 (98%)	0.44	26 (6%) 25 18	57, 84, 112, 125	0
1	B	399/411 (97%)	0.37	14 (3%) 47 38	60, 88, 130, 170	0
All	All	804/822 (97%)	0.41	40 (4%) 34 26	57, 86, 121, 170	0

All (40) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	128	LYS	4.5
1	A	171	VAL	4.3
1	A	269	ARG	3.6
1	A	-2	ILE	3.4
1	A	322	CYS	3.3
1	B	146	HIS	3.3
1	A	146	HIS	3.2
1	A	200	THR	3.2
1	A	-5	SER	3.2
1	B	102	ARG	3.1
1	A	198	ASN	3.1
1	A	275	TRP	3.0
1	B	322	CYS	2.9
1	B	145	PRO	2.8
1	A	142	LYS	2.8
1	A	263	PRO	2.7
1	B	1	MET	2.7
1	A	139	HIS	2.6
1	A	216	GLY	2.5
1	A	185	THR	2.5
1	B	269	ARG	2.5
1	B	139	HIS	2.5
1	B	173	LYS	2.4
1	B	106	PHE	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	128	LYS	2.4
1	A	262	PRO	2.4
1	A	-4	MET	2.3
1	A	41	ARG	2.3
1	B	3	GLN	2.3
1	A	145	PRO	2.3
1	A	102	ARG	2.2
1	A	264	CYS	2.2
1	A	393	ARG	2.2
1	B	397	PHE	2.2
1	A	178	HIS	2.1
1	B	365	THR	2.1
1	B	15	LYS	2.0
1	A	190	GLY	2.0
1	A	188	THR	2.0
1	A	-3	ASP	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

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.

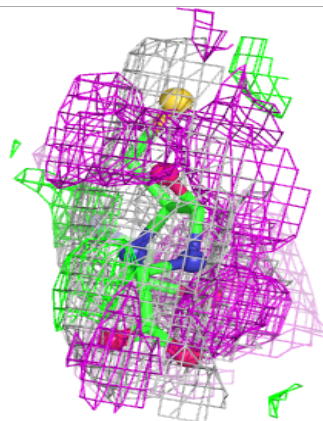
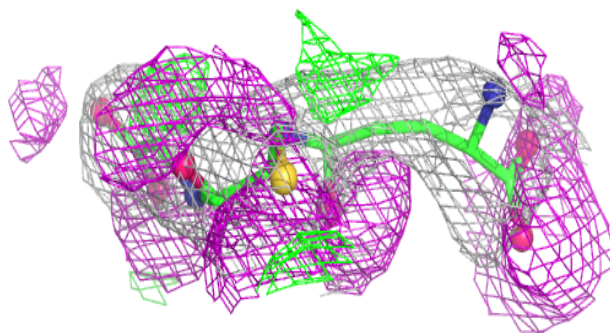
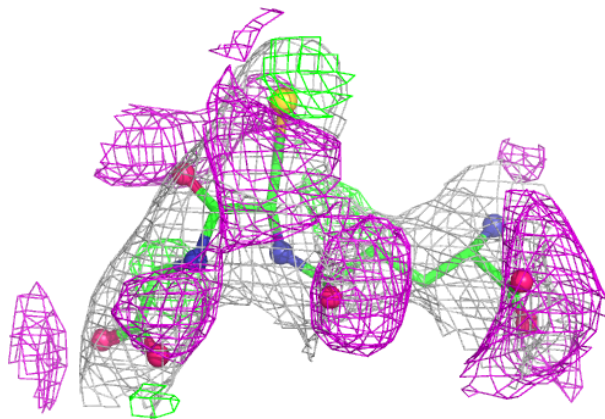
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	GSH	A	502	20/20	0.83	0.19	68,78,83,84	0
3	GSH	B	503	20/20	0.83	0.15	62,80,90,90	0
2	ZN	A	501	1/1	0.86	0.12	88,88,88,88	0
2	ZN	B	502	1/1	0.88	0.11	98,98,98,98	0

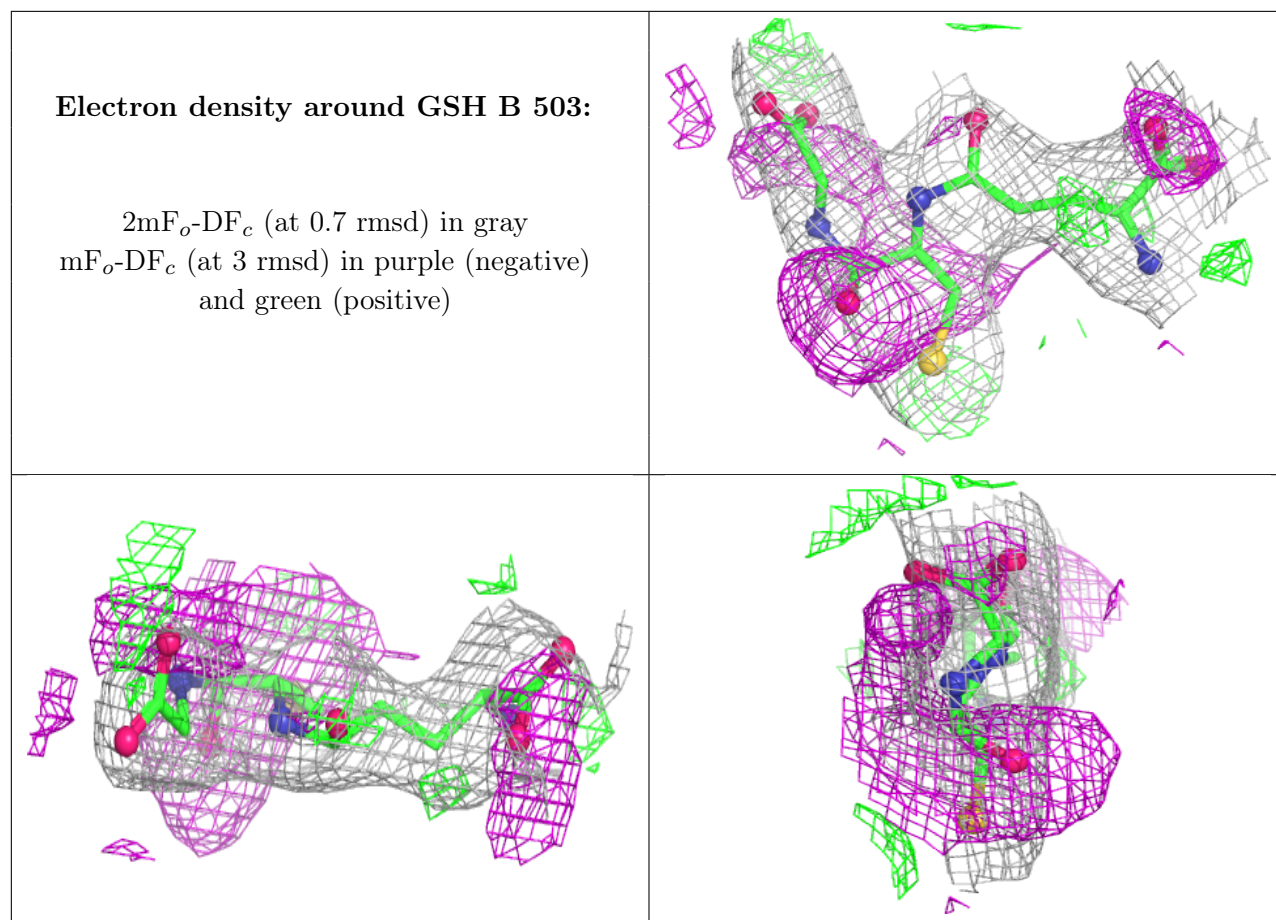
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers

as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around GSH A 502:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers ⓘ

There are no such residues in this entry.