



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2026 – 05:08 AM UTC

PDB ID : 7E2O / pdb_00007e2o
Title : X-ray Crystal structure of PPARgamma R288H mutant.
Authors : Egawa, D.; Itoh, T.
Deposited on : 2021-02-06
Resolution : 3.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

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
Xtriage (Phenix)	:	2.0
EDS	:	3.0
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

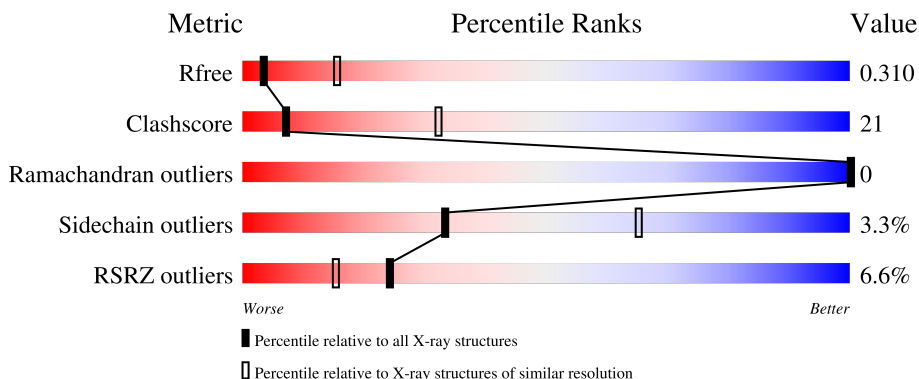
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1466 (3.20-3.20)
Clashscore	190562	1573 (3.20-3.20)
Ramachandran outliers	187476	1548 (3.20-3.20)
Sidechain outliers	187428	1547 (3.20-3.20)
RSRZ outliers	180081	1466 (3.20-3.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 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	276	
1	B	276	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 3935 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 Peroxisome proliferator-activated receptor gamma.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	254	Total	C	N	O	S	0	0	0
			1976	1275	320	372	9			
1	B	246	Total	C	N	O	S	0	0	0
			1934	1252	314	359	9			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	202	GLY	-	expression tag	UNP P37231
A	203	ALA	-	expression tag	UNP P37231
A	288	HIS	ARG	engineered mutation	UNP P37231
B	202	GLY	-	expression tag	UNP P37231
B	203	ALA	-	expression tag	UNP P37231
B	288	HIS	ARG	engineered mutation	UNP P37231

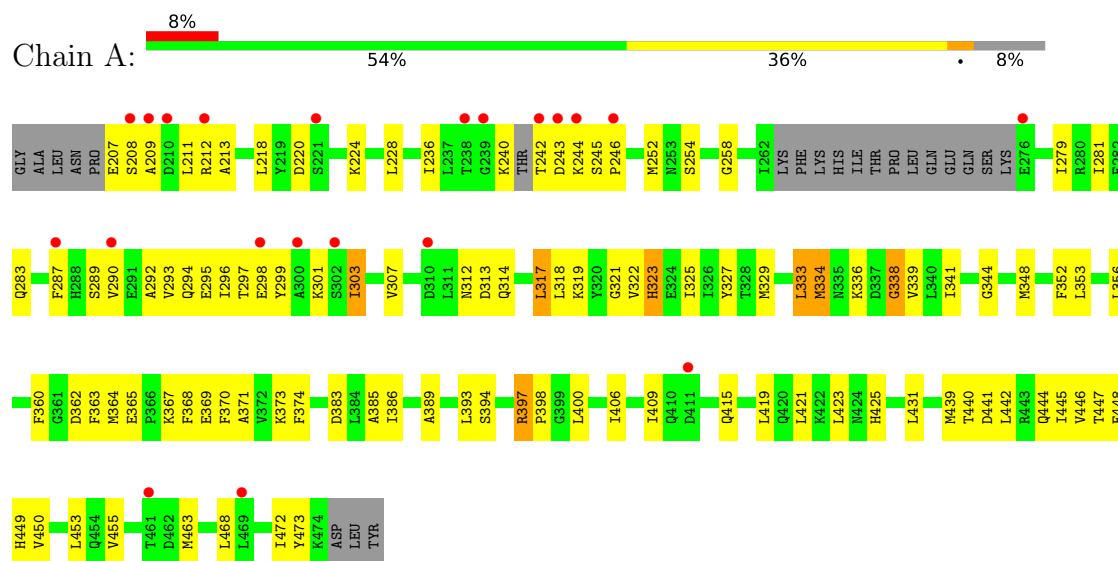
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	15	Total	O	0	0
			15	15		
2	B	10	Total	O	0	0
			10	10		

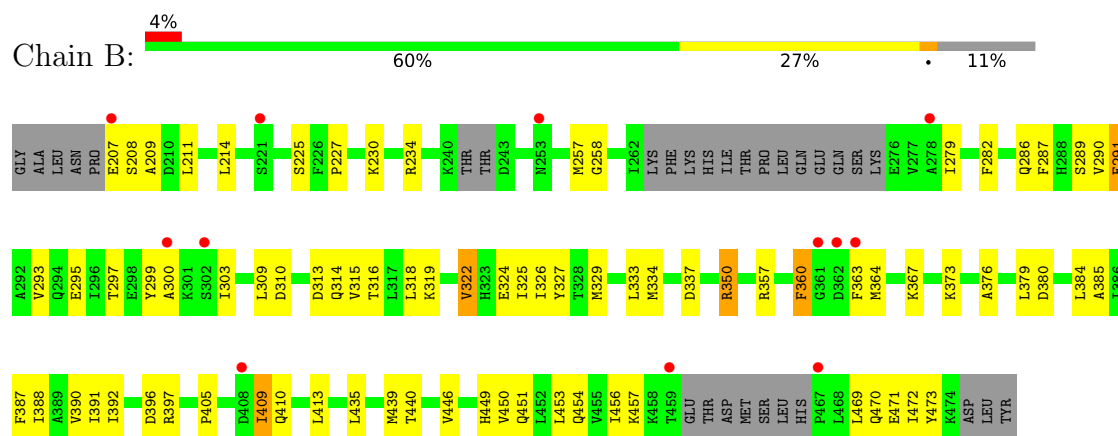
3 Residue-property plots [i](#)

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



- Molecule 1: Peroxisome proliferator-activated receptor gamma



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	91.04Å 60.92Å 116.73Å 90.00° 102.24° 90.00°	Depositor
Resolution (Å)	114.08 – 3.20 114.08 – 3.20	Depositor EDS
% Data completeness (in resolution range)	97.1 (114.08-3.20) 97.1 (114.08-3.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.58 (at 3.18Å)	Xtriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.234 , 0.313 0.235 , 0.310	Depositor DCC
R_{free} test set	519 reflections (4.94%)	wwPDB-VP
Wilson B-factor (Å ²)	49.2	Xtriage
Anisotropy	0.341	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 37.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	3935	wwPDB-VP
Average B, all atoms (Å ²)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.01% 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 [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	0.90	0/2009	1.20	11/2720 (0.4%)
1	B	0.96	0/1965	1.21	9/2650 (0.3%)
All	All	0.93	0/3974	1.21	20/5370 (0.4%)

There are no bond length outliers.

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	322	VAL	N-CA-C	12.02	121.96	110.42
1	A	334	MET	N-CA-C	8.14	121.45	109.07
1	B	409	ILE	N-CA-CB	7.13	118.71	110.65
1	A	397	ARG	N-CA-C	6.35	117.89	109.83
1	A	338	GLY	N-CA-C	6.35	119.88	110.42
1	A	213	ALA	CA-C-N	6.20	128.59	120.28
1	A	213	ALA	C-N-CA	6.20	128.59	120.28
1	B	360	PHE	N-CA-C	5.97	117.79	111.28
1	B	303	ILE	CA-C-N	-5.63	114.12	119.76
1	B	303	ILE	C-N-CA	-5.63	114.12	119.76
1	B	409	ILE	N-CA-C	-5.56	105.19	110.42
1	B	225	SER	N-CA-C	5.45	117.97	111.71
1	A	213	ALA	N-CA-C	5.37	117.21	111.36
1	A	312	ASN	N-CA-C	5.34	117.85	111.71
1	B	380	ASP	N-CA-CB	-5.31	102.59	111.20
1	A	317	LEU	O-C-N	5.28	127.72	122.12
1	A	362	ASP	N-CA-C	5.17	118.37	111.75
1	A	317	LEU	CA-C-N	5.17	127.16	120.44
1	A	317	LEU	C-N-CA	5.17	127.16	120.44
1	B	315	VAL	CB-CA-C	-5.10	105.44	111.97

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	1976	0	1962	102	0
1	B	1934	0	1954	63	0
2	A	15	0	0	0	0
2	B	10	0	0	0	0
All	All	3935	0	3916	163	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 21.

All (163) 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:318:LEU:O	1:B:322:VAL:HG23	1.32	1.28
1:A:292:ALA:O	1:A:296:ILE:HG13	1.50	1.11
1:B:293:VAL:HG22	1:B:322:VAL:HG11	1.46	0.97
1:A:323:HIS:NE2	1:A:473:TYR:HE1	1.63	0.95
1:A:211:LEU:HD11	1:A:415:GLN:HG2	1.49	0.92
1:A:293:VAL:HG11	1:A:468:LEU:HD21	1.49	0.92
1:A:446:VAL:O	1:A:450:VAL:HG23	1.74	0.88
1:A:295:GLU:O	1:A:298:GLU:HG2	1.73	0.87
1:A:211:LEU:CD1	1:A:415:GLN:HG2	2.04	0.86
1:A:323:HIS:NE2	1:A:473:TYR:CE1	2.39	0.85
1:A:369:GLU:O	1:A:373:LYS:HG2	1.74	0.85
1:A:440:THR:HG22	1:B:440:THR:HA	1.60	0.83
1:A:323:HIS:HE2	1:A:473:TYR:HE1	0.89	0.80
1:A:440:THR:O	1:A:444:GLN:HG2	1.83	0.79
1:B:293:VAL:HG22	1:B:322:VAL:CG1	2.12	0.78
1:B:318:LEU:O	1:B:322:VAL:CG2	2.26	0.77
1:A:236:ILE:HG23	1:A:244:LYS:O	1.85	0.77
1:A:212:ARG:HD3	1:A:419:LEU:CD2	2.15	0.76
1:B:282:PHE:HE1	1:B:363:PHE:CE1	2.07	0.72
1:A:449:HIS:CE1	1:A:453:LEU:HD11	2.26	0.71
1:A:293:VAL:HG22	1:A:322:VAL:HG21	1.73	0.70
1:A:212:ARG:NE	1:A:423:LEU:HD12	2.07	0.70
1:A:212:ARG:HD3	1:A:419:LEU:HG	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:GLU:HG3	1:A:209:ALA:H	1.60	0.67
1:A:293:VAL:HG22	1:A:322:VAL:CG2	2.27	0.65
1:B:453:LEU:HA	1:B:456:ILE:HG22	1.80	0.64
1:B:390:VAL:CG1	1:B:439:MET:HE1	2.28	0.64
1:A:212:ARG:HD3	1:A:419:LEU:CG	2.28	0.63
1:A:228:LEU:HD23	1:A:333:LEU:HD21	1.81	0.63
1:A:442:LEU:O	1:A:446:VAL:HG23	1.99	0.63
1:A:370:PHE:HB2	1:A:445:ILE:HD11	1.81	0.62
1:A:281:ILE:HD12	1:A:356:LEU:HD21	1.80	0.62
1:B:227:PRO:CD	1:B:295:GLU:OE2	2.46	0.62
1:A:236:ILE:HG23	1:A:246:PRO:HD3	1.82	0.60
1:B:390:VAL:HG12	1:B:439:MET:HE1	1.84	0.60
1:A:449:HIS:HE1	1:A:473:TYR:OH	1.85	0.59
1:A:228:LEU:HD23	1:A:333:LEU:CD2	2.32	0.59
1:A:236:ILE:CG2	1:A:246:PRO:HD3	2.33	0.58
1:B:287:PHE:CE2	1:B:291:GLU:OE1	2.57	0.58
1:B:282:PHE:CE1	1:B:363:PHE:CE1	2.91	0.58
1:A:220:ASP:O	1:A:224:LYS:HG3	2.03	0.58
1:A:334:MET:HB3	1:A:339:VAL:HA	1.85	0.57
1:A:449:HIS:O	1:A:453:LEU:HG	2.04	0.57
1:A:440:THR:HG22	1:B:440:THR:CA	2.32	0.57
1:B:309:LEU:O	1:B:310:ASP:C	2.46	0.57
1:B:230:LYS:O	1:B:234:ARG:HG2	2.04	0.57
1:B:409:ILE:O	1:B:410:GLN:C	2.48	0.56
1:A:207:GLU:HG3	1:A:208:SER:N	2.20	0.56
1:B:309:LEU:CD2	1:B:405:PRO:HB2	2.35	0.56
1:B:379:LEU:HD11	1:B:435:LEU:HD13	1.87	0.56
1:A:211:LEU:HD13	1:A:415:GLN:HG2	1.88	0.55
1:A:218:LEU:HD21	1:A:303:ILE:HG23	1.88	0.55
1:A:421:LEU:HD22	1:A:431:LEU:HD23	1.88	0.55
1:B:207:GLU:O	1:B:211:LEU:HG	2.06	0.54
1:B:451:GLN:O	1:B:454:GLN:HB3	2.06	0.54
1:A:212:ARG:HE	1:A:423:LEU:HD12	1.71	0.54
1:A:293:VAL:CG1	1:A:468:LEU:HD21	2.32	0.53
1:A:252:MET:N	1:A:252:MET:SD	2.81	0.53
1:A:450:VAL:HA	1:A:453:LEU:HD12	1.89	0.53
1:A:283:GLN:O	1:A:287:PHE:HB2	2.08	0.53
1:B:297:THR:HG23	1:B:318:LEU:HD13	1.90	0.52
1:A:449:HIS:ND1	1:A:453:LEU:HD11	2.23	0.52
1:B:227:PRO:HD3	1:B:295:GLU:OE2	2.10	0.52
1:A:353:LEU:HD13	1:A:364:MET:HG3	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:444:GLN:O	1:A:448:GLU:HG3	2.11	0.51
1:B:471:GLU:O	1:B:472:ILE:C	2.53	0.51
1:B:322:VAL:O	1:B:326:ILE:HG12	2.11	0.50
1:A:281:ILE:HD12	1:A:356:LEU:HD11	1.93	0.50
1:A:289:SER:O	1:A:293:VAL:HG23	2.12	0.50
1:A:296:ILE:HD12	1:A:322:VAL:HG22	1.93	0.50
1:B:282:PHE:CE1	1:B:363:PHE:CZ	3.00	0.49
1:A:212:ARG:CD	1:A:419:LEU:CD2	2.89	0.49
1:B:309:LEU:HD21	1:B:405:PRO:HB2	1.93	0.49
1:B:290:VAL:HG21	1:B:473:TYR:CD1	2.48	0.49
1:A:297:THR:HG23	1:A:318:LEU:HD11	1.95	0.49
1:B:357:ARG:O	1:B:360:PHE:N	2.45	0.49
1:A:393:LEU:HD13	1:A:409:ILE:CG2	2.43	0.49
1:B:293:VAL:CG2	1:B:322:VAL:HG11	2.32	0.49
1:B:333:LEU:HD12	1:B:333:LEU:N	2.28	0.49
1:B:337:ASP:O	1:B:350:ARG:N	2.45	0.48
1:A:279:ILE:HG23	1:A:463:MET:HE2	1.95	0.48
1:B:325:ILE:HD11	1:B:392:ILE:HG13	1.94	0.48
1:A:228:LEU:CD2	1:A:333:LEU:HD22	2.43	0.48
1:B:379:LEU:HD11	1:B:435:LEU:CD1	2.43	0.48
1:A:254:SER:O	1:A:258:GLY:N	2.41	0.48
1:A:321:GLY:O	1:A:325:ILE:HG12	2.13	0.48
1:A:394:SER:HB2	1:A:397:ARG:CZ	2.43	0.48
1:A:317:LEU:HD21	1:A:406:ILE:HD13	1.95	0.48
1:B:384:LEU:O	1:B:388:ILE:HG12	2.13	0.48
1:A:218:LEU:HD13	1:A:386:ILE:HA	1.96	0.47
1:A:313:ASP:O	1:A:314:GLN:C	2.57	0.47
1:A:334:MET:CE	1:A:371:ALA:HB2	2.45	0.47
1:B:282:PHE:CE2	1:B:456:ILE:HG12	2.50	0.47
1:B:454:GLN:O	1:B:457:LYS:CB	2.63	0.47
1:A:211:LEU:HD11	1:A:415:GLN:CG	2.34	0.46
1:A:303:ILE:HD13	1:A:389:ALA:CB	2.46	0.46
1:B:208:SER:O	1:B:209:ALA:C	2.56	0.46
1:A:303:ILE:HD13	1:A:389:ALA:HB1	1.97	0.46
1:A:468:LEU:O	1:A:468:LEU:HD23	2.16	0.46
1:A:236:ILE:HG22	1:A:246:PRO:HG3	1.97	0.46
1:B:357:ARG:O	1:B:360:PHE:HB2	2.15	0.46
1:B:289:SER:O	1:B:293:VAL:HG23	2.15	0.46
1:A:252:MET:HE3	1:A:252:MET:H	1.81	0.45
1:A:296:ILE:HD13	1:A:325:ILE:HB	1.98	0.45
1:B:310:ASP:O	1:B:313:ASP:HB2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:290:VAL:O	1:A:294:GLN:HG3	2.15	0.45
1:A:360:PHE:O	1:A:363:PHE:CD2	2.70	0.45
1:A:212:ARG:HA	1:A:212:ARG:HD2	1.63	0.45
1:A:228:LEU:CD2	1:A:333:LEU:CD2	2.95	0.45
1:A:252:MET:H	1:A:252:MET:CE	2.28	0.45
1:B:300:ALA:CB	1:B:318:LEU:HD21	2.47	0.45
1:A:383:ASP:OD2	1:A:425:HIS:NE2	2.42	0.45
1:B:286:GLN:O	1:B:290:VAL:HG23	2.17	0.45
1:A:293:VAL:HG13	1:A:322:VAL:HG21	1.98	0.44
1:B:327:TYR:OH	1:B:449:HIS:CG	2.70	0.44
1:A:296:ILE:HD12	1:A:322:VAL:CG2	2.48	0.44
1:A:319:LYS:O	1:A:472:ILE:HG23	2.16	0.44
1:A:449:HIS:CE1	1:A:473:TYR:OH	2.69	0.44
1:B:300:ALA:HB2	1:B:318:LEU:HD21	1.98	0.44
1:A:363:PHE:CE1	1:A:364:MET:HG2	2.52	0.44
1:B:387:PHE:CD1	1:B:435:LEU:HD21	2.53	0.44
1:A:370:PHE:CE1	1:A:374:PHE:HB2	2.53	0.44
1:A:439:MET:O	1:A:440:THR:C	2.59	0.44
1:B:396:ASP:O	1:B:397:ARG:C	2.61	0.44
1:B:309:LEU:O	1:B:314:GLN:HG3	2.18	0.44
1:B:327:TYR:OH	1:B:449:HIS:ND1	2.51	0.44
1:B:446:VAL:O	1:B:450:VAL:HG13	2.18	0.44
1:A:212:ARG:HE	1:A:423:LEU:CD1	2.30	0.44
1:A:393:LEU:HD13	1:A:409:ILE:HG21	2.00	0.43
1:A:400:LEU:HD13	1:A:406:ILE:CD1	2.47	0.43
1:B:214:LEU:HD21	1:B:413:LEU:HD23	1.99	0.43
1:A:394:SER:OG	1:A:397:ARG:NH2	2.52	0.43
1:A:472:ILE:HG22	1:A:472:ILE:O	2.19	0.43
1:A:365:GLU:O	1:A:369:GLU:HG3	2.19	0.43
1:A:297:THR:O	1:A:301:LYS:HG3	2.19	0.42
1:B:325:ILE:HD11	1:B:392:ILE:CG1	2.49	0.42
1:B:390:VAL:HG11	1:B:439:MET:HE1	2.00	0.42
1:A:441:ASP:O	1:A:445:ILE:HG13	2.19	0.42
1:A:299:TYR:OH	1:A:385:ALA:O	2.37	0.42
1:A:325:ILE:HG22	1:A:329:MET:HG3	2.01	0.42
1:A:245:SER:HA	1:A:246:PRO:HD3	1.87	0.42
1:A:244:LYS:HZ3	1:A:244:LYS:HG3	1.76	0.42
1:B:373:LYS:O	1:B:376:ALA:HB3	2.20	0.41
1:A:212:ARG:HD3	1:A:419:LEU:HD21	1.98	0.41
1:A:246:PRO:HB3	1:A:344:GLY:O	2.20	0.41
1:B:279:ILE:HD13	1:B:360:PHE:CZ	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:299:TYR:OH	1:B:385:ALA:O	2.37	0.41
1:A:327:TYR:CE1	1:A:367:LYS:HE3	2.55	0.41
1:A:397:ARG:HA	1:A:398:PRO:HD3	1.90	0.41
1:B:257:MET:O	1:B:258:GLY:C	2.63	0.41
1:B:364:MET:O	1:B:367:LYS:N	2.53	0.41
1:A:444:GLN:O	1:A:447:THR:OG1	2.34	0.41
1:B:282:PHE:CD1	1:B:363:PHE:CZ	3.08	0.41
1:B:290:VAL:HG21	1:B:473:TYR:CE1	2.55	0.41
1:B:309:LEU:HD22	1:B:405:PRO:HB2	2.01	0.41
1:A:334:MET:HE2	1:A:371:ALA:HB2	2.03	0.41
1:A:348:MET:HE2	1:A:352:PHE:CE2	2.56	0.41
1:A:334:MET:HE3	1:A:368:PHE:HA	2.01	0.41
1:B:234:ARG:NH1	1:B:334:MET:O	2.54	0.41
1:A:334:MET:CB	1:A:338:GLY:O	2.69	0.41
1:B:469:LEU:O	1:B:470:GLN:C	2.63	0.40
1:A:242:THR:OG1	1:A:243:ASP:N	2.52	0.40
1:B:329:MET:HE2	1:B:329:MET:HB3	1.92	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	248/276 (90%)	236 (95%)	12 (5%)	0	100	100
1	B	238/276 (86%)	220 (92%)	18 (8%)	0	100	100
All	All	486/552 (88%)	456 (94%)	30 (6%)	0	100	100

There are no Ramachandran outliers to report.

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	213/247 (86%)	205 (96%)	8 (4%)	29	62
1	B	210/247 (85%)	204 (97%)	6 (3%)	37	67
All	All	423/494 (86%)	409 (97%)	14 (3%)	33	65

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	240	LYS
1	A	303	ILE
1	A	307	VAL
1	A	323	HIS
1	A	333	LEU
1	A	336	LYS
1	A	341	ILE
1	A	455	VAL
1	B	291	GLU
1	B	316	THR
1	B	319	LYS
1	B	324	GLU
1	B	350	ARG
1	B	391	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	308	ASN
1	A	335	ASN
1	A	345	GLN
1	A	410	GLN
1	A	437	GLN
1	A	444	GLN
1	A	449	HIS
1	A	454	GLN

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Mol	Chain	Res	Type
1	B	437	GLN
1	B	451	GLN

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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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	254/276 (92%)	0.60	21 (8%)	17 11	26, 42, 68, 85	0
1	B	246/276 (89%)	0.46	12 (4%)	35 22	26, 40, 72, 81	0
All	All	500/552 (90%)	0.53	33 (6%)	24 15	26, 41, 69, 85	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	242	THR	5.6
1	A	210	ASP	4.6
1	B	207	GLU	3.8
1	A	243	ASP	3.7
1	B	467	PRO	3.4
1	A	238	THR	3.3
1	B	363	PHE	3.3
1	B	253	ASN	3.1
1	A	300	ALA	3.1
1	A	310	ASP	3.0
1	A	244	LYS	3.0
1	A	469	LEU	2.9
1	A	302	SER	2.9
1	A	212	ARG	2.9
1	A	276	GLU	2.9
1	B	221	SER	2.8
1	A	298	GLU	2.7
1	B	278	ALA	2.6
1	B	300	ALA	2.6
1	A	246	PRO	2.5
1	A	208	SER	2.5
1	A	411	ASP	2.4
1	A	239	GLY	2.4
1	A	209	ALA	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	459	THR	2.3
1	B	302	SER	2.2
1	A	461	THR	2.2
1	B	362	ASP	2.2
1	B	408	ASP	2.2
1	B	361	GLY	2.2
1	A	290	VAL	2.1
1	A	287	PHE	2.1
1	A	221	SER	2.1

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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.