



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 08:52 PM UTC

PDB ID : 1PK5 / pdb_00001pk5
Title : Crystal structure of the orphan nuclear receptor LRH-1
Authors : Sablin, E.P.; Krylova, I.N.; Fletterick, R.J.; Ingraham, H.A.
Deposited on : 2003-06-04
Resolution : 2.40 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

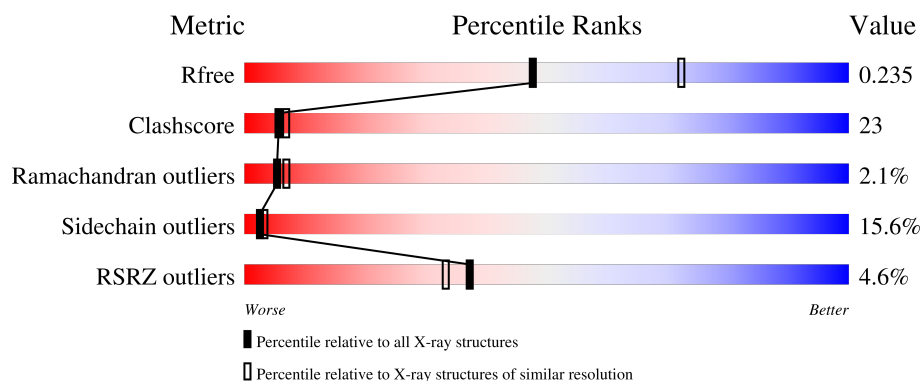
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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	248	3% 56% 33% 6% • •
1	B	248	6% 51% 31% 12% • 5%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 4051 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 Orphan nuclear receptor NR5A2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	242	Total	C	N	O	S	0	0	0
			1972	1264	333	366	9			
1	B	236	Total	C	N	O	S	0	0	0
			1921	1235	321	356	9			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	525	LEU	ILE	SEE REMARK 999	UNP P45448
B	525	LEU	ILE	SEE REMARK 999	UNP P45448

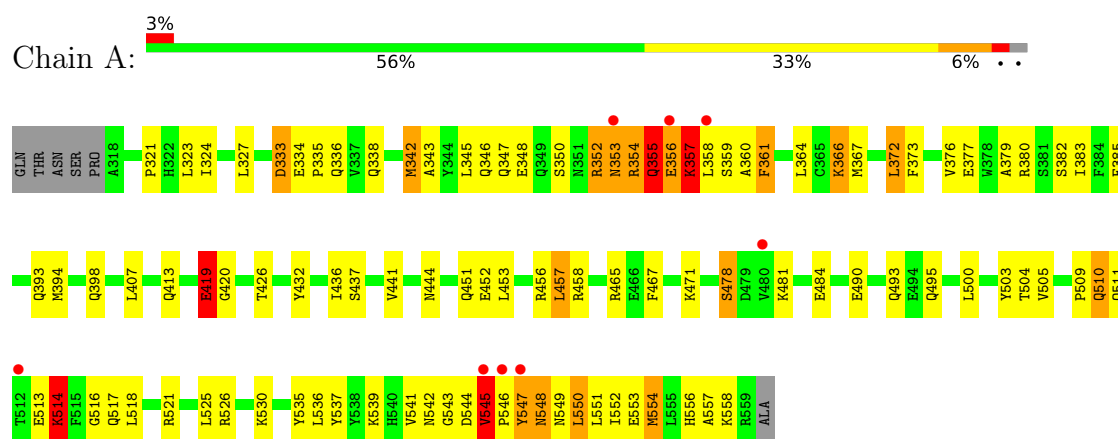
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	91	Total	O	0	0
			91	91		
2	B	67	Total	O	0	0
			67	67		

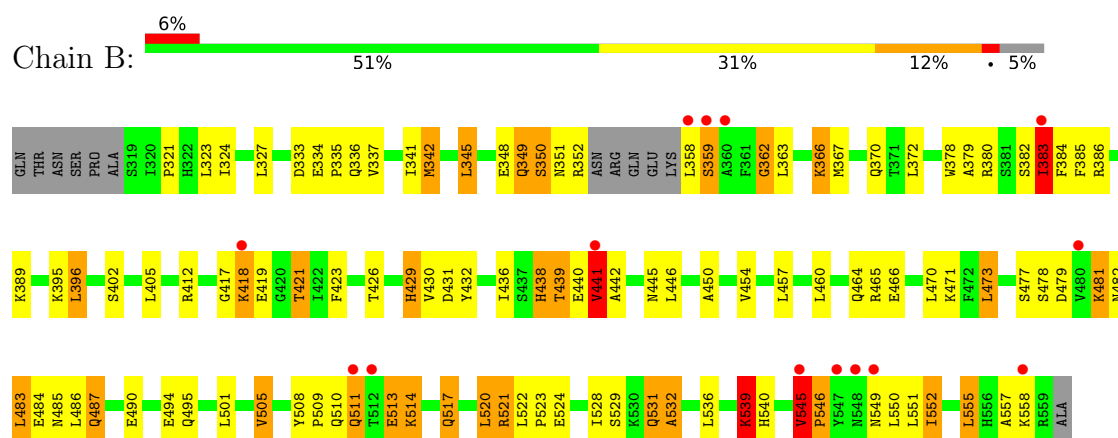
3 Residue-property plots [i](#)

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: Orphan nuclear receptor NR5A2



• Molecule 1: Orphan nuclear receptor NR5A2



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	34.77Å 127.54Å 53.21Å 90.00° 91.72° 90.00°	Depositor
Resolution (Å)	24.55 – 2.40 24.55 – 2.40	Depositor EDS
% Data completeness (in resolution range)	99.1 (24.55-2.40) 99.0 (24.55-2.40)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.08 (at 2.37Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.208 , 0.235 0.207 , 0.235	Depositor DCC
R_{free} test set	693 reflections (3.81%)	wwPDB-VP
Wilson B-factor (Å ²)	36.8	Xtriage
Anisotropy	0.436	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 69.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.077 for h,-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	4051	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.19% 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

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	0.56	0/2008	1.04	10/2717 (0.4%)
1	B	0.61	0/1956	1.11	14/2647 (0.5%)
All	All	0.59	0/3964	1.07	24/5364 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	B	0	4
All	All	0	5

There are no bond length outliers.

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	545	VAL	O-C-N	-12.30	107.08	121.10
1	B	545	VAL	CA-C-N	8.15	130.03	119.84
1	B	545	VAL	C-N-CA	8.15	130.03	119.84
1	B	514	LYS	N-CA-C	-7.64	103.03	111.36
1	A	557	ALA	N-CA-C	-6.91	104.32	112.89
1	B	557	ALA	N-CA-C	-6.38	103.94	111.03
1	A	514	LYS	N-CA-C	-6.35	104.23	112.23
1	B	383	ILE	O-C-N	-6.31	114.68	122.57
1	B	430	VAL	N-CA-C	6.15	117.68	109.37
1	B	532	ALA	N-CA-C	-6.09	104.55	112.23
1	B	350	SER	N-CA-C	-5.90	104.49	111.03
1	A	361	PHE	N-CA-C	-5.75	103.76	112.04
1	A	355	GLN	O-C-N	-5.70	115.08	122.77
1	A	364	LEU	N-CA-C	-5.62	105.24	111.71

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	478	SER	N-CA-C	5.61	119.38	112.54
1	B	441	VAL	O-C-N	5.60	129.57	122.57
1	B	439	THR	N-CA-C	5.53	116.66	108.86
1	B	438	HIS	CA-C-N	-5.50	113.67	122.53
1	B	438	HIS	C-N-CA	-5.50	113.67	122.53
1	B	362	GLY	O-C-N	-5.48	116.49	122.68
1	B	539	LYS	N-CA-C	-5.21	105.60	111.28
1	A	543	GLY	CA-C-N	-5.04	114.23	122.54
1	A	543	GLY	C-N-CA	-5.04	114.23	122.54
1	A	360	ALA	N-CA-C	-5.03	108.42	114.75

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	545	VAL	Mainchain
1	B	383	ILE	Mainchain
1	B	421	THR	Mainchain
1	B	441	VAL	Mainchain
1	B	546	PRO	Mainchain

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	1972	0	1981	84	0
1	B	1921	0	1929	101	0
2	A	91	0	0	0	0
2	B	67	0	0	1	0
All	All	4051	0	3910	183	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 23.

All (183) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:419:GLU:HG2	1:A:420:GLY:H	1.06	1.15
1:B:545:VAL:H	1:B:546:PRO:HD2	1.10	1.12
1:B:418:LYS:HG3	1:B:421:THR:CG2	1.86	1.06
1:B:536:LEU:HD23	1:B:555:LEU:HD11	1.36	1.05
1:A:419:GLU:HG2	1:A:420:GLY:N	1.83	0.92
1:A:366:LYS:HD2	1:A:548:ASN:HD21	1.38	0.89
1:B:513:GLU:OE1	1:B:513:GLU:HA	1.74	0.88
1:B:545:VAL:N	1:B:546:PRO:HD2	1.87	0.87
1:B:477:SER:C	1:B:479:ASP:H	1.82	0.87
1:B:508:TYR:HB3	1:B:511:GLN:HG3	1.54	0.86
1:A:419:GLU:CG	1:A:420:GLY:H	1.87	0.85
1:A:353:ASN:C	1:A:353:ASN:HD22	1.83	0.85
1:B:442:ALA:HA	1:B:445:ASN:ND2	1.94	0.83
1:B:418:LYS:HG3	1:B:421:THR:HG22	1.61	0.83
1:B:478:SER:HB2	1:B:490:GLU:HG2	1.60	0.82
1:B:545:VAL:H	1:B:546:PRO:CD	1.93	0.80
1:B:441:VAL:HG22	1:B:442:ALA:N	1.96	0.80
1:B:417:GLY:C	1:B:418:LYS:HG2	2.10	0.77
1:B:539:LYS:HB3	1:B:545:VAL:CG2	2.14	0.77
1:A:398:GLN:HA	1:A:554:MET:CE	2.14	0.77
1:A:353:ASN:O	1:A:354:ARG:HB2	1.84	0.77
1:B:539:LYS:HE3	1:B:539:LYS:HA	1.66	0.76
1:A:398:GLN:HG2	1:A:554:MET:HE1	1.66	0.75
1:B:487:GLN:H	1:B:487:GLN:CD	1.91	0.75
1:B:349:GLN:HE22	1:B:363:LEU:HD11	1.49	0.75
1:A:353:ASN:C	1:A:353:ASN:ND2	2.46	0.73
1:B:442:ALA:HA	1:B:445:ASN:HD22	1.52	0.73
1:A:352:ARG:HG2	1:A:352:ARG:O	1.89	0.72
1:B:395:LYS:HE2	1:B:482:ASN:HB2	1.70	0.72
1:A:398:GLN:HA	1:A:554:MET:HE1	1.69	0.72
1:A:407:LEU:HB2	1:A:525:LEU:HD21	1.72	0.70
1:B:510:GLN:NE2	1:B:510:GLN:HA	2.06	0.70
1:B:466:GLU:OE2	1:B:514:LYS:HE3	1.90	0.70
1:B:539:LYS:HB3	1:B:545:VAL:HG21	1.73	0.70
1:B:520:LEU:O	1:B:523:PRO:HD2	1.92	0.69
1:A:419:GLU:CG	1:A:420:GLY:N	2.50	0.67
1:B:478:SER:CB	1:B:490:GLU:HG2	2.24	0.67
1:A:355:GLN:O	1:A:356:GLU:HB2	1.95	0.67
1:B:441:VAL:HG13	1:B:442:ALA:H	1.61	0.66
1:A:549:ASN:O	1:A:553:GLU:HB2	1.97	0.65
1:B:418:LYS:HG3	1:B:421:THR:HG21	1.77	0.65
1:B:379:ALA:O	1:B:382:SER:HB3	1.95	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:362:GLY:O	1:B:366:LYS:HD2	1.97	0.64
1:B:545:VAL:N	1:B:546:PRO:CD	2.58	0.64
1:A:545:VAL:HG12	1:A:546:PRO:HD2	1.79	0.64
1:B:333:ASP:O	1:B:337:VAL:HG23	2.00	0.61
1:B:389:LYS:HE2	1:B:484:GLU:OE2	2.00	0.61
1:B:460:LEU:HD11	1:B:517:GLN:HB3	1.81	0.61
1:A:345:LEU:HD11	1:A:367:MET:HB3	1.82	0.61
1:B:485:ASN:OD1	1:B:487:GLN:HG2	2.00	0.61
1:B:418:LYS:HD3	1:B:429:HIS:NE2	2.15	0.60
1:A:379:ALA:O	1:A:382:SER:HB3	2.02	0.60
1:B:446:LEU:HD21	1:B:531:GLN:HG2	1.83	0.60
1:A:323:LEU:HD22	1:A:495:GLN:HG2	1.83	0.60
1:A:372:LEU:O	1:A:376:VAL:HG23	2.02	0.60
1:B:412:ARG:HD2	1:B:423:PHE:O	2.01	0.59
1:B:349:GLN:NE2	1:B:363:LEU:HD11	2.17	0.59
1:A:513:GLU:HA	1:A:513:GLU:OE1	2.01	0.59
1:A:334:GLU:O	1:A:338:GLN:HG3	2.03	0.58
1:A:321:PRO:HG2	1:A:324:ILE:HD12	1.85	0.58
1:A:554:MET:HE3	1:A:554:MET:HA	1.85	0.58
1:A:453:LEU:O	1:A:457:LEU:HD22	2.03	0.57
1:A:398:GLN:CG	1:A:554:MET:HE1	2.34	0.57
1:A:452:GLU:O	1:A:456:ARG:HG3	2.05	0.57
1:A:546:PRO:O	1:A:547:TYR:HB2	2.04	0.57
1:A:511:GLN:HG2	1:A:514:LYS:HB3	1.87	0.57
1:B:418:LYS:HD3	1:B:429:HIS:CE1	2.40	0.56
1:B:487:GLN:CD	1:B:487:GLN:N	2.62	0.56
1:A:413:GLN:HG3	1:A:451:GLN:HE22	1.71	0.56
1:A:478:SER:OG	1:A:490:GLU:HG2	2.06	0.56
1:A:511:GLN:CG	1:A:514:LYS:HB3	2.36	0.56
1:A:342:MET:HG2	1:A:426:THR:HB	1.87	0.55
1:A:535:TYR:O	1:A:539:LYS:HG2	2.07	0.55
1:A:394:MET:O	1:A:398:GLN:HG3	2.07	0.55
1:B:359:SER:O	1:B:363:LEU:HD12	2.06	0.54
1:B:510:GLN:HA	1:B:510:GLN:HE21	1.71	0.54
1:B:402:SER:HB3	2:B:20:HOH:O	2.07	0.54
1:A:366:LYS:HD2	1:A:548:ASN:ND2	2.17	0.53
1:B:540:HIS:CD2	1:B:546:PRO:HB3	2.43	0.53
1:B:552:ILE:HA	1:B:555:LEU:HD13	1.91	0.53
1:A:355:GLN:O	1:A:356:GLU:CB	2.56	0.53
1:A:398:GLN:HA	1:A:554:MET:HE2	1.89	0.53
1:A:398:GLN:HG2	1:A:554:MET:CE	2.39	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:345:LEU:CD1	1:B:363:LEU:HD23	2.39	0.52
1:A:511:GLN:HG2	1:A:514:LYS:CB	2.39	0.52
1:B:323:LEU:O	1:B:327:LEU:HG	2.10	0.52
1:B:396:LEU:CD1	1:B:483:LEU:HD21	2.39	0.52
1:B:486:LEU:O	1:B:490:GLU:HG3	2.10	0.52
1:A:500:LEU:O	1:A:504:THR:HG23	2.11	0.51
1:A:545:VAL:HG12	1:A:546:PRO:CD	2.41	0.50
1:A:441:VAL:O	1:A:444:ASN:HB2	2.12	0.50
1:A:478:SER:OG	1:A:493:GLN:NE2	2.45	0.50
1:A:432:TYR:HE2	1:A:451:GLN:HG3	1.76	0.50
1:B:385:PHE:HE1	1:B:396:LEU:HD23	1.77	0.50
1:B:438:HIS:O	1:B:439:THR:CG2	2.60	0.50
1:A:373:PHE:O	1:A:377:GLU:HG3	2.12	0.49
1:A:552:ILE:HG23	1:A:556:HIS:HD2	1.77	0.49
1:A:432:TYR:O	1:A:436:ILE:HG12	2.13	0.49
1:B:342:MET:HG2	1:B:426:THR:HB	1.94	0.49
1:B:521:ARG:N	1:B:521:ARG:CD	2.76	0.48
1:B:477:SER:HB3	1:B:479:ASP:HB3	1.96	0.48
1:B:522:LEU:HB2	1:B:523:PRO:HD3	1.96	0.48
1:B:524:GLU:O	1:B:528:ILE:HG13	2.13	0.48
1:B:536:LEU:CD2	1:B:555:LEU:HD11	2.27	0.48
1:B:334:GLU:HB2	1:B:335:PRO:HD3	1.96	0.48
1:A:343:ALA:O	1:A:347:GLN:HG2	2.13	0.48
1:A:356:GLU:O	1:A:357:LYS:HB2	2.13	0.48
1:B:540:HIS:HA	1:B:545:VAL:HB	1.96	0.48
1:A:334:GLU:HB3	1:A:335:PRO:HD3	1.95	0.48
1:B:350:SER:C	1:B:352:ARG:H	2.22	0.47
1:A:547:TYR:O	1:A:552:ILE:HD13	2.15	0.47
1:A:380:ARG:HH11	1:A:380:ARG:HG3	1.79	0.47
1:B:383:ILE:HG12	1:B:384:PHE:CE2	2.49	0.47
1:B:539:LYS:HA	1:B:539:LYS:CE	2.41	0.47
1:A:348:GLU:CD	1:A:366:LYS:HE3	2.39	0.47
1:A:467:PHE:CZ	1:A:471:LYS:HD2	2.49	0.47
1:B:551:LEU:O	1:B:555:LEU:HD12	2.15	0.47
1:B:501:LEU:C	1:B:501:LEU:HD23	2.40	0.46
1:B:521:ARG:NH1	1:B:524:GLU:OE2	2.48	0.46
1:A:357:LYS:HD3	1:A:357:LYS:HA	1.45	0.46
1:B:432:TYR:CE2	1:B:436:ILE:HG13	2.51	0.45
1:B:438:HIS:C	1:B:439:THR:HG23	2.41	0.45
1:A:465:ARG:HD2	1:A:503:TYR:CZ	2.52	0.45
1:B:450:ALA:O	1:B:454:VAL:HG23	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:383:ILE:O	1:B:386:ARG:HG2	2.17	0.45
1:B:378:TRP:CZ2	1:B:471:LYS:HE2	2.51	0.45
1:B:383:ILE:HG23	1:B:384:PHE:H	1.82	0.45
1:B:511:GLN:HB3	1:B:514:LYS:HB2	1.99	0.45
1:B:349:GLN:NE2	1:B:363:LEU:HD21	2.31	0.45
1:B:521:ARG:HA	1:B:521:ARG:HD2	1.66	0.44
1:A:346:GLN:O	1:A:350:SER:N	2.50	0.44
1:A:419:GLU:CB	1:B:464:GLN:HE22	2.30	0.44
1:A:465:ARG:HD2	1:A:503:TYR:OH	2.17	0.44
1:B:520:LEU:C	1:B:523:PRO:HD2	2.42	0.44
1:A:353:ASN:O	1:A:354:ARG:CB	2.61	0.44
1:A:361:PHE:HE2	1:A:545:VAL:HG22	1.82	0.44
1:B:321:PRO:HG2	1:B:324:ILE:HD12	1.98	0.44
1:B:345:LEU:HD13	1:B:363:LEU:HD23	1.99	0.44
1:A:353:ASN:O	1:A:353:ASN:ND2	2.50	0.44
1:B:333:ASP:HB3	1:B:336:GLN:HB2	1.99	0.44
1:A:348:GLU:HG3	1:A:352:ARG:NH1	2.33	0.43
1:B:333:ASP:OD2	1:B:336:GLN:NE2	2.52	0.43
1:B:549:ASN:OD1	1:B:550:LEU:N	2.52	0.43
1:A:333:ASP:OD1	1:A:333:ASP:N	2.41	0.43
1:A:478:SER:CB	1:A:493:GLN:HE22	2.32	0.43
1:B:446:LEU:HD11	1:B:532:ALA:HA	2.00	0.43
1:A:352:ARG:HD3	1:A:358:LEU:HD21	1.99	0.43
1:A:514:LYS:O	1:A:518:LEU:HG	2.19	0.43
1:B:396:LEU:HD11	1:B:483:LEU:HD21	2.00	0.42
1:B:511:GLN:CD	1:B:514:LYS:HD2	2.45	0.42
1:A:323:LEU:O	1:A:327:LEU:HG	2.18	0.42
1:B:521:ARG:N	1:B:521:ARG:HD3	2.35	0.42
1:A:536:LEU:HD21	1:A:551:LEU:HD22	2.00	0.42
1:A:355:GLN:O	1:A:355:GLN:HG2	2.20	0.42
1:B:341:ILE:HG12	1:B:370:GLN:HB3	2.02	0.42
1:B:333:ASP:OD1	1:B:335:PRO:HD2	2.20	0.42
1:A:530:LYS:HA	1:A:530:LYS:HD3	1.88	0.42
1:A:398:GLN:CA	1:A:554:MET:HE1	2.42	0.41
1:B:481:LYS:H	1:B:481:LYS:HG2	1.54	0.41
1:A:467:PHE:CE2	1:A:471:LYS:HD2	2.56	0.41
1:B:412:ARG:HG2	1:B:423:PHE:HD2	1.85	0.41
1:B:508:TYR:O	1:B:511:GLN:HB2	2.20	0.41
1:A:379:ALA:O	1:A:385:PHE:HB3	2.21	0.41
1:A:513:GLU:HG3	1:A:516:GLY:H	1.85	0.41
1:A:376:VAL:O	1:A:380:ARG:HG2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:432:TYR:CE1	1:A:436:ILE:HD11	2.56	0.41
1:B:509:PRO:C	1:B:511:GLN:H	2.28	0.41
1:B:483:LEU:HD12	1:B:483:LEU:HA	1.72	0.41
1:A:385:PHE:CE2	1:A:393:GLN:HB3	2.56	0.41
1:B:438:HIS:C	1:B:439:THR:CG2	2.94	0.41
1:A:419:GLU:CD	1:B:464:GLN:HE22	2.29	0.41
1:A:550:LEU:HD23	1:A:550:LEU:HA	1.76	0.41
1:A:509:PRO:HG2	1:A:510:GLN:OE1	2.21	0.40
1:B:473:LEU:HD12	1:B:473:LEU:HA	1.93	0.40
1:B:367:MET:HE2	1:B:426:THR:CG2	2.52	0.40
1:B:501:LEU:O	1:B:505:VAL:HG13	2.20	0.40
1:B:396:LEU:HD13	1:B:483:LEU:HD21	2.02	0.40
1:B:539:LYS:HE3	1:B:539:LYS:CA	2.43	0.40
1:A:358:LEU:HD23	1:A:358:LEU:HA	1.97	0.40
1:B:511:GLN:NE2	1:B:514:LYS:HB2	2.36	0.40
1:A:537:TYR:O	1:A:541:VAL:HG23	2.22	0.40
1:B:438:HIS:O	1:B:439:THR:HG22	2.22	0.40
1:B:477:SER:C	1:B:479:ASP:N	2.55	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	240/248 (97%)	219 (91%)	15 (6%)	6 (2%)	4	5
1	B	232/248 (94%)	211 (91%)	17 (7%)	4 (2%)	7	10
All	All	472/496 (95%)	430 (91%)	32 (7%)	10 (2%)	5	7

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	354	ARG
1	A	356	GLU
1	A	547	TYR
1	A	357	LYS
1	A	419	GLU
1	B	351	ASN
1	B	383	ILE
1	B	441	VAL
1	B	545	VAL
1	A	548	ASN

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	220/226 (97%)	191 (87%)	29 (13%)	4	5
1	B	215/226 (95%)	176 (82%)	39 (18%)	2	2
All	All	435/452 (96%)	367 (84%)	68 (16%)	2	3

All (68) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	333	ASP
1	A	336	GLN
1	A	342	MET
1	A	352	ARG
1	A	353	ASN
1	A	355	GLN
1	A	357	LYS
1	A	359	SER
1	A	366	LYS
1	A	372	LEU
1	A	383	ILE
1	A	419	GLU
1	A	437	SER
1	A	457	LEU

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Mol	Chain	Res	Type
1	A	458	ARG
1	A	481	LYS
1	A	484	GLU
1	A	505	VAL
1	A	510	GLN
1	A	514	LYS
1	A	517	GLN
1	A	521	ARG
1	A	526	ARG
1	A	542	ASN
1	A	544	ASP
1	A	545	VAL
1	A	550	LEU
1	A	554	MET
1	A	558	LYS
1	B	342	MET
1	B	345	LEU
1	B	348	GLU
1	B	349	GLN
1	B	358	LEU
1	B	359	SER
1	B	366	LYS
1	B	372	LEU
1	B	380	ARG
1	B	383	ILE
1	B	396	LEU
1	B	405	LEU
1	B	418	LYS
1	B	419	GLU
1	B	429	HIS
1	B	431	ASP
1	B	440	GLU
1	B	441	VAL
1	B	457	LEU
1	B	465	ARG
1	B	470	LEU
1	B	473	LEU
1	B	481	LYS
1	B	483	LEU
1	B	487	GLN
1	B	494	GLU
1	B	495	GLN

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Mol	Chain	Res	Type
1	B	505	VAL
1	B	511	GLN
1	B	513	GLU
1	B	517	GLN
1	B	520	LEU
1	B	521	ARG
1	B	529	SER
1	B	531	GLN
1	B	539	LYS
1	B	552	ILE
1	B	555	LEU
1	B	558	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	349	GLN
1	A	353	ASN
1	A	398	GLN
1	A	416	HIS
1	A	451	GLN
1	A	464	GLN
1	A	493	GLN
1	A	549	ASN
1	A	556	HIS
1	B	346	GLN
1	B	349	GLN
1	B	370	GLN
1	B	445	ASN
1	B	451	GLN
1	B	464	GLN
1	B	482	ASN
1	B	495	GLN
1	B	510	GLN
1	B	511	GLN
1	B	531	GLN
1	B	540	HIS

5.3.3 RNA ⓘ

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	242/248 (97%)	-0.03	8 (3%) 49 45	19, 42, 78, 83	0
1	B	236/248 (95%)	0.21	14 (5%) 28 24	23, 47, 82, 83	0
All	All	478/496 (96%)	0.09	22 (4%) 37 33	19, 44, 81, 83	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	547	TYR	4.0
1	B	358	LEU	3.9
1	B	545	VAL	3.5
1	B	359	SER	3.3
1	A	546	PRO	3.2
1	B	383	ILE	3.2
1	B	480	VAL	2.9
1	B	360	ALA	2.8
1	A	480	VAL	2.6
1	A	545	VAL	2.6
1	A	547	TYR	2.6
1	A	512	THR	2.5
1	A	353	ASN	2.5
1	B	441	VAL	2.5
1	B	418	LYS	2.5
1	B	558	LYS	2.4
1	B	511	GLN	2.4
1	B	512	THR	2.3
1	A	358	LEU	2.3
1	A	356	GLU	2.2
1	B	548	ASN	2.2
1	B	549	ASN	2.2

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.