



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2018 – 11:45 pm GMT

PDB ID : 1DLO
Title : HUMAN IMMUNODEFICIENCY VIRUS TYPE 1
Authors : Hsiou, Y.; Ding, J.; Das, K.; Hughes, S.; Arnold, E.
Deposited on : 1996-04-17
Resolution : 2.70 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30686

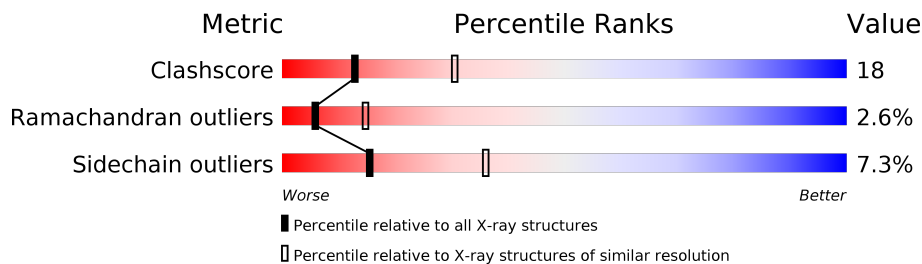
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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))
Clashscore	122078	2755 (2.70-2.70)
Ramachandran outliers	120005	2715 (2.70-2.70)
Sidechain outliers	119972	2715 (2.70-2.70)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	556	
2	B	427	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7691 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 HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 REVERSE TRANSCRIPTASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	556	4370	2835	727	802	6	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	280	SER	CYS	ENGINEERED	UNP P03366

- Molecule 2 is a protein called HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 REVERSE TRANSCRIPTASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	415	3321	2163	549	604	5	0	0	0

There is a discrepancy between the modelled and reference sequences:

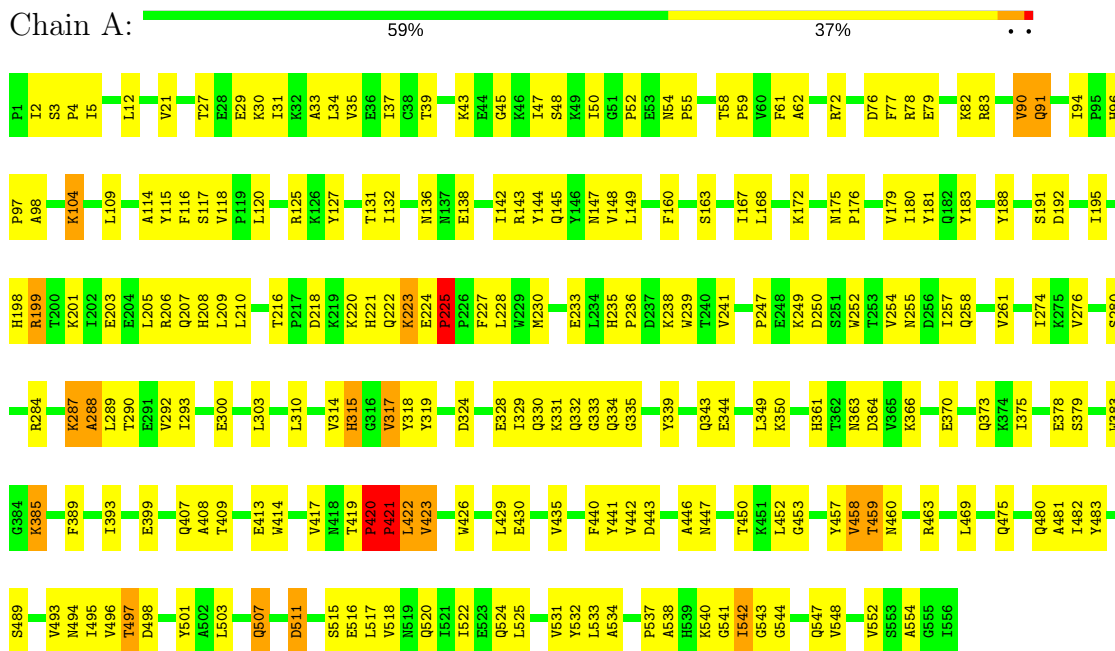
Chain	Residue	Modelled	Actual	Comment	Reference
B	280	SER	CYS	ENGINEERED	UNP P03366

3 Residue-property plots [i](#)

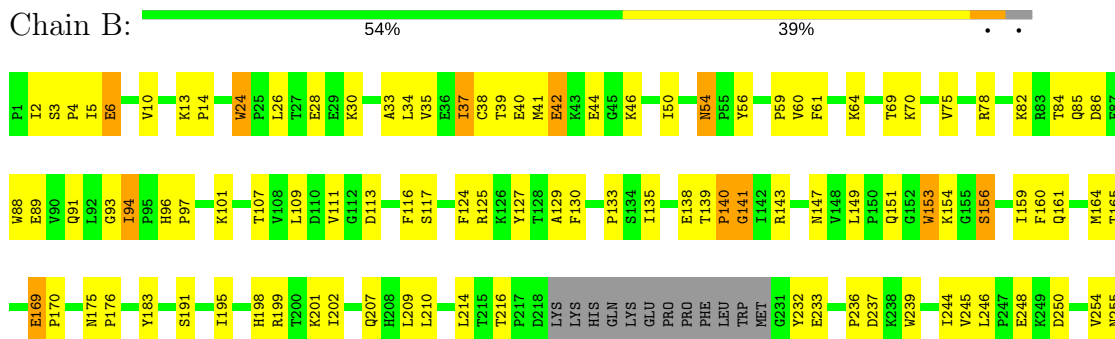
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are 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.

Note EDS was not executed.

- Molecule 1: HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 REVERSE TRANSCRIPTASE



- Molecule 2: HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 REVERSE TRANSCRIPTASE



W337	Q256
T338	L257
Y339	L260
Q340	V261
Q343	A267
E344	S268
P346	Q269
F346	L270
K347	Y271
N348	L274
L349	K350
K350	T351
T351	K276
G352	V276
K353	R277
Y354	Q278
M357	L279
	S280
	L283
T362	T286
N363	
D364	
V365	L289
K366	T290
Q367	L293
L368	P294
T369	L295
Q373	T296
K374	E297
I376	E298
T376	A299
I377	E300
E378	L301
	E302
V381	L303
K385	R307
T386	E308
F389	I309
	L310
I393	K311
Q394	E312
K395	F313
E396	V314
T397	H315
W398	G316
E399	V317
T400	F316
W401	Y319
W402	D320
T403	P321
E404	A327
Y405	
W410	Q332
E413	Q336
W414	
E415	
F416	
V417	
P420	
P421	
Y427	

4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	235.50Å 70.30Å 93.30Å 90.00° 106.10° 90.00°	Depositor
Resolution (Å)	8.00 – 2.70	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-2.70)	Depositor
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.249 , 0.336	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	7691	wwPDB-VP
Average B, all atoms (Å ²)	44.0	wwPDB-VP

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	0.69	0/4486	0.87	5/6119 (0.1%)
2	B	0.72	0/3415	0.90	1/4652 (0.0%)
All	All	0.70	0/7901	0.89	6/10771 (0.1%)

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
2	B	0	2
All	All	0	3

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	90	VAL	N-CA-C	5.73	126.48	111.00
1	A	91	GLN	N-CA-C	5.54	125.95	111.00
1	A	136	ASN	N-CA-C	-5.26	96.80	111.00
2	B	54	ASN	N-CA-C	-5.25	96.82	111.00
1	A	120	LEU	CA-CB-CG	5.11	127.05	115.30
1	A	421	PRO	CA-N-CD	-5.08	104.39	111.50

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	501	TYR	Sidechain
2	B	127	TYR	Sidechain
2	B	183	TYR	Sidechain

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	4370	0	4315	151	0
2	B	3321	0	3293	135	0
All	All	7691	0	7608	270	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 18.

All (270) 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)
2:B:260:LEU:HD21	2:B:303:LEU:HD21	1.58	0.86
1:A:420:PRO:HB3	1:A:421:PRO:HD2	1.57	0.85
1:A:420:PRO:CB	1:A:421:PRO:HD2	2.06	0.85
1:A:393:ILE:HB	1:A:423:VAL:HG22	1.57	0.83
2:B:255:ASN:HB2	2:B:289:LEU:HB3	1.61	0.80
2:B:348:ASN:HD22	2:B:351:THR:HG22	1.45	0.80
1:A:435:VAL:HA	2:B:290:THR:HG21	1.64	0.80
2:B:198:HIS:O	2:B:202:ILE:HG12	1.84	0.78
1:A:228:LEU:HD23	1:A:233:GLU:HG3	1.66	0.77
1:A:543:GLY:HA2	2:B:283:LEU:O	1.84	0.77
2:B:250:ASP:OD2	2:B:303:LEU:HD13	1.84	0.76
1:A:442:VAL:HG13	1:A:481:ALA:HB1	1.69	0.75
1:A:50:ILE:HG21	1:A:145:GLN:HE21	1.51	0.74
2:B:209:LEU:HD22	2:B:214:LEU:HD12	1.68	0.74
1:A:261:VAL:HG13	1:A:276:VAL:HG11	1.71	0.72
1:A:199:ARG:HD3	1:A:199:ARG:O	1.91	0.71
1:A:34:LEU:HB3	1:A:132:ILE:HD12	1.72	0.71
1:A:276:VAL:HG12	1:A:280:SER:OG	1.92	0.69
1:A:254:VAL:HG22	1:A:293:ILE:HD11	1.74	0.68
2:B:195:ILE:HG12	2:B:199:ARG:NE	2.07	0.68
2:B:109:LEU:HD22	2:B:216:THR:HG21	1.75	0.68
1:A:206:ARG:HH22	1:A:218:ASP:HA	1.60	0.67
2:B:195:ILE:HG12	2:B:199:ARG:HE	1.59	0.67
1:A:532:TYR:CE1	1:A:534:ALA:HB2	2.31	0.66
1:A:116:PHE:O	1:A:148:VAL:HG21	1.95	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:24:TRP:CZ3	2:B:403:THR:HG21	2.32	0.65
1:A:457:TYR:O	1:A:458:VAL:HG23	1.98	0.64
1:A:109:LEU:HD22	1:A:216:THR:HG21	1.80	0.63
1:A:223:LYS:HD2	1:A:227:PHE:HZ	1.64	0.62
2:B:89:GLU:O	2:B:91:GLN:HG2	1.99	0.62
1:A:104:LYS:HB2	1:A:192:ASP:HA	1.80	0.62
1:A:257:ILE:HD12	1:A:293:ILE:HD12	1.81	0.62
2:B:140:PRO:O	2:B:141:GLY:O	2.17	0.61
1:A:125:ARG:HD3	1:A:147:ASN:HA	1.81	0.61
1:A:199:ARG:HE	1:A:220:LYS:HE2	1.64	0.61
2:B:209:LEU:HB3	2:B:214:LEU:HB2	1.81	0.61
2:B:348:ASN:ND2	2:B:351:THR:HG22	2.15	0.61
1:A:447:ASN:HB3	1:A:450:THR:OG1	2.00	0.61
2:B:60:VAL:HG11	2:B:130:PHE:CD2	2.35	0.61
2:B:191:SER:OG	2:B:198:HIS:CD2	2.54	0.60
2:B:40:GLU:O	2:B:44:GLU:HG3	2.01	0.60
1:A:541:GLY:O	2:B:280:SER:HB3	2.02	0.60
2:B:298:GLU:O	2:B:301:LEU:HB3	2.02	0.60
2:B:420:PRO:HB2	2:B:421:PRO:CD	2.32	0.60
1:A:426:TRP:HE1	1:A:511:ASP:HB2	1.67	0.59
1:A:518:VAL:O	1:A:522:ILE:HG12	2.02	0.59
1:A:34:LEU:HD21	1:A:62:ALA:HB2	1.83	0.59
2:B:28:GLU:HG3	2:B:135:ILE:CD1	2.33	0.59
1:A:168:LEU:HD13	1:A:180:ILE:HG21	1.85	0.58
2:B:395:LYS:O	2:B:399:GLU:HG3	2.03	0.58
2:B:363:ASN:O	2:B:367:GLN:HG3	2.03	0.58
1:A:331:LYS:HG2	1:A:332:GLN:N	2.17	0.58
2:B:24:TRP:HH2	2:B:61:PHE:CD1	2.22	0.58
1:A:235:HIS:HB2	1:A:238:LYS:O	2.03	0.58
2:B:207:GLN:OE1	2:B:210:LEU:HD23	2.04	0.58
1:A:203:GLU:O	1:A:207:GLN:HB2	2.03	0.57
2:B:254:VAL:HA	2:B:257:ILE:HD12	1.86	0.57
2:B:244:ILE:HB	2:B:310:LEU:HD22	1.86	0.57
2:B:319:TYR:OH	2:B:385:LYS:HE2	2.05	0.57
2:B:420:PRO:HB2	2:B:421:PRO:HD2	1.86	0.57
1:A:469:LEU:HD11	1:A:480:GLN:HG2	1.86	0.57
1:A:441:TYR:O	1:A:548:VAL:HG21	2.04	0.57
1:A:252:TRP:O	1:A:292:VAL:HG13	2.05	0.57
1:A:495:ILE:HD12	1:A:495:ILE:H	1.70	0.57
1:A:495:ILE:HG22	1:A:496:VAL:N	2.20	0.57
2:B:365:VAL:HG11	2:B:401:TRP:HB2	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:107:THR:HA	2:B:232:TYR:O	2.04	0.57
1:A:419:THR:O	1:A:422:LEU:HD23	2.04	0.56
1:A:493:VAL:HG22	1:A:494:ASN:N	2.21	0.56
2:B:354:TYR:CD1	2:B:374:LYS:HD2	2.41	0.56
1:A:366:LYS:O	1:A:370:GLU:HG3	2.05	0.56
2:B:354:TYR:CE1	2:B:374:LYS:HD2	2.40	0.56
1:A:132:ILE:HB	1:A:142:ILE:HB	1.88	0.56
2:B:296:THR:O	2:B:300:GLU:HG2	2.05	0.56
1:A:225:PRO:HB3	1:A:236:PRO:HD3	1.88	0.56
2:B:41:MET:HG3	2:B:46:LYS:HD2	1.87	0.56
2:B:24:TRP:CH2	2:B:61:PHE:CD1	2.93	0.55
2:B:239:TRP:CH2	2:B:378:GLU:HG2	2.42	0.55
1:A:98:ALA:HB1	1:A:349:LEU:HB3	1.88	0.55
1:A:276:VAL:HG12	1:A:280:SER:HG	1.72	0.55
2:B:260:LEU:HD23	2:B:279:LEU:HD13	1.89	0.54
1:A:458:VAL:HG12	2:B:286:THR:HG21	1.88	0.54
2:B:396:GLU:O	2:B:400:THR:HG23	2.07	0.54
1:A:131:THR:HG23	1:A:143:ARG:HG2	1.88	0.54
2:B:64:LYS:HE2	2:B:69:THR:H	1.73	0.54
1:A:435:VAL:CA	2:B:290:THR:HG21	2.36	0.54
2:B:393:ILE:HG21	2:B:398:TRP:HB2	1.89	0.54
1:A:417:VAL:O	1:A:417:VAL:HG13	2.08	0.54
1:A:115:TYR:O	1:A:149:LEU:HB2	2.07	0.54
2:B:64:LYS:HE2	2:B:69:THR:N	2.23	0.54
1:A:261:VAL:HG13	1:A:276:VAL:CG1	2.37	0.54
1:A:125:ARG:HB3	1:A:145:GLN:OE1	2.08	0.54
1:A:319:TYR:HE1	1:A:343:GLN:NE2	2.07	0.53
1:A:495:ILE:N	1:A:495:ILE:HD12	2.24	0.53
1:A:344:GLU:HA	1:A:344:GLU:OE1	2.07	0.53
1:A:503:LEU:O	1:A:507:GLN:HB2	2.07	0.53
1:A:408:ALA:HB1	2:B:364:ASP:HB3	1.91	0.53
1:A:333:GLY:O	1:A:335:GLY:N	2.42	0.53
1:A:520:GLN:O	1:A:524:GLN:HG2	2.09	0.53
1:A:317:VAL:HG13	1:A:318:TYR:N	2.22	0.52
2:B:96:HIS:CE1	2:B:381:VAL:O	2.63	0.52
2:B:332:GLN:O	2:B:336:GLN:HB3	2.08	0.52
1:A:329:ILE:HD11	1:A:375:ILE:HD12	1.91	0.52
1:A:407:GLN:NE2	2:B:417:VAL:O	2.43	0.52
2:B:376:THR:HG23	2:B:386:THR:HG22	1.92	0.52
1:A:480:GLN:O	1:A:483:TYR:HB3	2.10	0.52
1:A:90:VAL:HG23	1:A:91:GLN:N	2.25	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:293:ILE:HG23	2:B:294:PRO:HD2	1.92	0.51
1:A:27:THR:O	1:A:31:ILE:HG13	2.11	0.51
2:B:139:THR:O	2:B:141:GLY:N	2.44	0.51
2:B:26:LEU:HD12	2:B:133:PRO:CG	2.40	0.51
2:B:338:THR:HA	2:B:353:LYS:HA	1.90	0.51
1:A:223:LYS:HD2	1:A:227:PHE:CZ	2.44	0.51
1:A:389:PHE:O	1:A:414:TRP:HA	2.11	0.51
2:B:160:PHE:CD2	2:B:160:PHE:O	2.63	0.51
2:B:101:LYS:O	2:B:236:PRO:HB2	2.11	0.51
1:A:440:PHE:CZ	1:A:489:SER:HB2	2.46	0.51
2:B:278:GLN:HB2	2:B:302:GLU:OE1	2.11	0.51
1:A:183:TYR:CD2	1:A:230:MET:SD	3.04	0.50
1:A:350:LYS:HE2	1:A:378:GLU:OE2	2.11	0.50
2:B:111:VAL:HG12	2:B:111:VAL:O	2.11	0.50
1:A:319:TYR:OH	1:A:385:LYS:HD3	2.12	0.50
2:B:3:SER:O	2:B:5:ILE:HG13	2.11	0.50
1:A:408:ALA:HB2	2:B:337:TRP:HH2	1.77	0.50
1:A:442:VAL:CG1	1:A:443:ASP:N	2.75	0.50
1:A:59:PRO:HB2	1:A:76:ASP:HB3	1.94	0.50
2:B:191:SER:OG	2:B:198:HIS:HD2	1.94	0.50
2:B:257:ILE:O	2:B:261:VAL:HG23	2.11	0.49
2:B:60:VAL:HG12	2:B:75:VAL:HG22	1.94	0.49
1:A:27:THR:OG1	1:A:30:LYS:HG3	2.12	0.49
2:B:271:TYR:HD1	2:B:271:TYR:H	1.59	0.49
2:B:175:ASN:OD1	2:B:201:LYS:NZ	2.44	0.49
1:A:459:THR:HG23	1:A:463:ARG:HB3	1.94	0.49
1:A:61:PHE:CE1	1:A:290:THR:HG23	2.48	0.49
2:B:314:VAL:HG12	2:B:315:HIS:N	2.28	0.49
1:A:35:VAL:O	1:A:39:THR:HG23	2.11	0.49
2:B:28:GLU:CB	2:B:135:ILE:HD11	2.43	0.49
1:A:446:ALA:HA	1:A:453:GLY:HA3	1.95	0.49
1:A:542:ILE:HG23	2:B:283:LEU:HD13	1.95	0.48
1:A:191:SER:OG	1:A:198:HIS:HD2	1.97	0.48
1:A:3:SER:OG	1:A:5:ILE:HG22	2.13	0.48
2:B:296:THR:HB	2:B:298:GLU:HG2	1.95	0.48
2:B:2:ILE:HA	2:B:117:SER:O	2.13	0.48
1:A:379:SER:HA	1:A:383:TRP:CE3	2.49	0.48
2:B:357:MET:CB	2:B:367:GLN:NE2	2.76	0.48
1:A:435:VAL:HG13	2:B:290:THR:HG21	1.95	0.48
1:A:175:ASN:N	1:A:176:PRO:HD3	2.28	0.48
2:B:85:GLN:O	2:B:85:GLN:HG3	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:271:TYR:CD1	2:B:271:TYR:N	2.82	0.48
1:A:2:ILE:HD11	1:A:45:GLY:O	2.14	0.47
1:A:94:ILE:O	1:A:94:ILE:HG13	2.14	0.47
2:B:54:ASN:HD21	2:B:129:ALA:HB2	1.78	0.47
1:A:163:SER:O	1:A:167:ILE:HG13	2.14	0.47
1:A:239:TRP:HZ2	1:A:349:LEU:O	1.96	0.47
1:A:319:TYR:CE1	1:A:343:GLN:NE2	2.82	0.47
1:A:109:LEU:HD22	1:A:216:THR:CG2	2.43	0.47
1:A:324:ASP:O	1:A:343:GLN:HG2	2.15	0.47
1:A:47:ILE:HD12	1:A:144:TYR:CD1	2.50	0.47
1:A:361:HIS:HD2	1:A:518:VAL:HG11	1.80	0.47
2:B:267:ALA:O	2:B:270:ILE:N	2.47	0.47
2:B:343:GLN:HG3	2:B:349:LEU:HD11	1.95	0.47
2:B:37:ILE:HG22	2:B:41:MET:HE3	1.96	0.47
2:B:30:LYS:O	2:B:34:LEU:HD12	2.15	0.47
2:B:54:ASN:ND2	2:B:129:ALA:HB2	2.29	0.47
2:B:35:VAL:O	2:B:39:THR:HG23	2.15	0.47
2:B:89:GLU:O	2:B:91:GLN:N	2.48	0.47
1:A:430:GLU:HG2	1:A:531:VAL:O	2.15	0.46
1:A:254:VAL:HB	1:A:289:LEU:HA	1.98	0.46
1:A:50:ILE:HG21	1:A:145:GLN:NE2	2.24	0.46
1:A:460:ASN:HA	2:B:286:THR:O	2.16	0.46
2:B:420:PRO:CB	2:B:421:PRO:CD	2.93	0.46
1:A:222:GLN:O	1:A:224:GLU:N	2.49	0.46
1:A:228:LEU:CD2	1:A:233:GLU:HG3	2.42	0.46
1:A:241:VAL:CG2	1:A:314:VAL:HB	2.46	0.46
1:A:532:TYR:HE1	1:A:534:ALA:HB2	1.79	0.46
1:A:247:PRO:HB2	1:A:249:LYS:HE3	1.98	0.46
1:A:426:TRP:NE1	1:A:511:ASP:HB2	2.31	0.46
2:B:124:PHE:CE2	2:B:153:TRP:CZ2	3.04	0.46
2:B:195:ILE:HG23	2:B:199:ARG:HH21	1.81	0.46
2:B:254:VAL:HB	2:B:289:LEU:HA	1.98	0.46
1:A:225:PRO:O	1:A:227:PHE:N	2.49	0.45
2:B:78:ARG:O	2:B:82:LYS:HG3	2.16	0.45
2:B:56:TYR:O	2:B:143:ARG:NH2	2.49	0.45
1:A:393:ILE:HB	1:A:423:VAL:CG2	2.38	0.45
2:B:125:ARG:HD3	2:B:147:ASN:HA	1.99	0.45
2:B:293:ILE:HG23	2:B:294:PRO:CD	2.47	0.45
1:A:181:TYR:CE2	2:B:138:GLU:HA	2.52	0.45
1:A:429:LEU:HD23	1:A:531:VAL:HB	1.98	0.45
1:A:114:ALA:HB1	1:A:160:PHE:CZ	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:167:ILE:O	1:A:208:HIS:NE2	2.49	0.45
2:B:33:ALA:O	2:B:37:ILE:HG13	2.17	0.45
2:B:13:LYS:HB3	2:B:14:PRO:HD2	1.99	0.45
2:B:5:ILE:HG22	2:B:6:GLU:O	2.17	0.45
1:A:515:SER:OG	1:A:518:VAL:HG23	2.17	0.45
1:A:221:HIS:HB3	1:A:227:PHE:CD1	2.52	0.45
1:A:458:VAL:O	1:A:458:VAL:HG12	2.15	0.44
2:B:124:PHE:CZ	2:B:153:TRP:CZ2	3.04	0.44
2:B:169:GLU:HG2	2:B:170:PRO:N	2.32	0.44
2:B:283:LEU:HD23	2:B:283:LEU:HA	1.79	0.44
1:A:172:LYS:HE2	1:A:180:ILE:HB	2.00	0.44
1:A:542:ILE:CG2	2:B:283:LEU:HD13	2.47	0.44
1:A:255:ASN:HD22	1:A:289:LEU:HD13	1.83	0.44
1:A:328:GLU:O	1:A:339:TYR:HA	2.18	0.44
2:B:28:GLU:HG3	2:B:135:ILE:HD11	1.99	0.44
2:B:38:CYS:O	2:B:42:GLU:HB2	2.17	0.44
1:A:495:ILE:CG2	1:A:496:VAL:N	2.81	0.44
2:B:369:THR:HG22	2:B:373:GLN:HE21	1.82	0.44
1:A:315:HIS:ND1	1:A:315:HIS:N	2.66	0.43
2:B:327:ALA:HA	2:B:340:GLN:O	2.18	0.43
1:A:79:GLU:HG3	1:A:83:ARG:HE	1.83	0.43
2:B:94:ILE:H	2:B:94:ILE:HD13	1.82	0.43
1:A:361:HIS:CD2	1:A:518:VAL:HG11	2.53	0.43
2:B:270:ILE:HG22	2:B:271:TYR:CD1	2.53	0.43
2:B:376:THR:CG2	2:B:386:THR:HG22	2.47	0.43
2:B:41:MET:HG2	2:B:46:LYS:HB2	2.01	0.43
1:A:241:VAL:HG23	1:A:314:VAL:HB	1.99	0.43
1:A:78:ARG:HD3	1:A:258:GLN:NE2	2.33	0.43
2:B:317:VAL:HG12	2:B:347:LYS:HB3	2.00	0.43
2:B:362:THR:HA	2:B:367:GLN:HE21	1.83	0.43
1:A:181:TYR:HB2	1:A:188:TYR:HB3	2.00	0.43
2:B:111:VAL:CG1	2:B:111:VAL:O	2.67	0.43
1:A:205:LEU:O	1:A:209:LEU:HG	2.19	0.42
2:B:160:PHE:HE2	2:B:164:MET:HE2	1.84	0.42
1:A:544:GLY:O	1:A:547:GLN:N	2.51	0.42
1:A:79:GLU:HG3	1:A:83:ARG:HH21	1.84	0.42
2:B:96:HIS:HE1	2:B:381:VAL:O	2.01	0.42
1:A:480:GLN:CA	1:A:517:LEU:HD21	2.50	0.42
1:A:498:ASP:HB2	1:A:538:ALA:HB2	2.00	0.42
2:B:116:PHE:CZ	2:B:151:GLN:HG3	2.54	0.42
2:B:93:GLY:HA2	2:B:161:GLN:OE1	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:540:LYS:HZ3	2:B:276:VAL:HG11	1.85	0.42
1:A:78:ARG:O	1:A:82:LYS:HG3	2.18	0.42
2:B:337:TRP:CZ3	2:B:368:LEU:HD13	2.54	0.42
1:A:33:ALA:O	1:A:37:ILE:HG13	2.19	0.42
2:B:24:TRP:NE1	2:B:59:PRO:HB3	2.34	0.42
1:A:515:SER:HB3	1:A:518:VAL:CG2	2.49	0.42
2:B:26:LEU:HD12	2:B:133:PRO:CD	2.49	0.42
2:B:309:ILE:HD12	2:B:312:GLU:OE2	2.20	0.42
2:B:389:PHE:O	2:B:415:GLU:N	2.52	0.42
1:A:175:ASN:HD21	1:A:201:LYS:NZ	2.18	0.42
2:B:246:LEU:HD21	2:B:310:LEU:HD11	2.02	0.42
2:B:50:ILE:CD1	2:B:54:ASN:HD22	2.33	0.42
1:A:2:ILE:HA	1:A:117:SER:O	2.20	0.42
1:A:118:VAL:O	1:A:148:VAL:HG22	2.20	0.41
1:A:58:THR:HG21	1:A:77:PHE:CD1	2.55	0.41
2:B:107:THR:OG1	2:B:198:HIS:HE1	2.03	0.41
1:A:220:LYS:HE3	1:A:222:GLN:HG3	2.03	0.41
1:A:96:HIS:HA	1:A:97:PRO:HD3	1.90	0.41
2:B:195:ILE:HG13	2:B:233:GLU:OE1	2.21	0.41
2:B:344:GLU:HA	2:B:345:PRO:HD2	1.87	0.41
1:A:482:ILE:HD11	1:A:497:THR:HG21	2.02	0.41
1:A:537:PRO:HG2	1:A:542:ILE:HD11	2.01	0.41
1:A:373:GLN:NE2	2:B:397:THR:HG23	2.35	0.41
2:B:277:ARG:HG2	2:B:278:GLN:NE2	2.35	0.41
2:B:410:TRP:O	2:B:410:TRP:CE3	2.74	0.41
1:A:21:VAL:HB	1:A:59:PRO:HD3	2.02	0.41
1:A:142:ILE:N	1:A:142:ILE:HD13	2.36	0.41
1:A:317:VAL:CG1	1:A:318:TYR:N	2.84	0.41
2:B:84:THR:HB	2:B:154:LYS:HE2	2.02	0.41
1:A:138:GLU:HG2	1:A:138:GLU:O	2.21	0.41
1:A:274:ILE:HD11	1:A:310:LEU:HD21	2.03	0.41
2:B:149:LEU:HD13	2:B:156:SER:HA	2.02	0.41
1:A:54:ASN:HA	1:A:55:PRO:HD3	1.83	0.40
2:B:149:LEU:HD21	2:B:159:ILE:HD12	2.02	0.40
1:A:181:TYR:CZ	2:B:138:GLU:HB2	2.57	0.40
2:B:270:ILE:HG22	2:B:271:TYR:N	2.35	0.40
1:A:12:LEU:HD11	1:A:127:TYR:CZ	2.57	0.40
1:A:287:LYS:O	1:A:288:ALA:C	2.60	0.40
1:A:525:LEU:HD23	1:A:531:VAL:HG21	2.03	0.40
2:B:357:MET:CB	2:B:367:GLN:CD	2.90	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	554/556 (100%)	490 (88%)	50 (9%)	14 (2%)	6	16
2	B	411/427 (96%)	353 (86%)	47 (11%)	11 (3%)	5	14
All	All	965/983 (98%)	843 (87%)	97 (10%)	25 (3%)	6	15

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	195	ILE
1	A	223	LYS
1	A	225	PRO
1	A	334	GLN
1	A	420	PRO
1	A	421	PRO
1	A	458	VAL
1	A	542	ILE
2	B	88	TRP
2	B	140	PRO
2	B	141	GLY
2	B	153	TRP
1	A	104	LYS
1	A	288	ALA
2	B	420	PRO
1	A	52	PRO
1	A	554	ALA
2	B	37	ILE
2	B	277	ARG
2	B	278	GLN
1	A	4	PRO
1	A	413	GLU
2	B	97	PRO
2	B	4	PRO
2	B	270	ILE

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	458/496 (92%)	425 (93%)	33 (7%)	16	37
2	B	353/389 (91%)	327 (93%)	26 (7%)	15	35
All	All	811/885 (92%)	752 (93%)	59 (7%)	15	36

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	GLU
1	A	43	LYS
1	A	48	SER
1	A	72	ARG
1	A	179	VAL
1	A	199	ARG
1	A	210	LEU
1	A	225	PRO
1	A	250	ASP
1	A	284	ARG
1	A	287	LYS
1	A	300	GLU
1	A	303	LEU
1	A	315	HIS
1	A	317	VAL
1	A	330	GLN
1	A	363	ASN
1	A	364	ASP
1	A	385	LYS
1	A	399	GLU
1	A	409	THR
1	A	420	PRO
1	A	422	LEU
1	A	423	VAL
1	A	452	LEU
1	A	459	THR
1	A	475	GLN

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Mol	Chain	Res	Type
1	A	497	THR
1	A	507	GLN
1	A	511	ASP
1	A	516	GLU
1	A	533	LEU
1	A	552	VAL
2	B	6	GLU
2	B	10	VAL
2	B	24	TRP
2	B	42	GLU
2	B	70	LYS
2	B	86	ASP
2	B	94	ILE
2	B	113	ASP
2	B	156	SER
2	B	165	THR
2	B	169	GLU
2	B	176	PRO
2	B	237	ASP
2	B	245	VAL
2	B	248	GLU
2	B	268	SER
2	B	271	TYR
2	B	274	ILE
2	B	290	THR
2	B	293	ILE
2	B	307	ARG
2	B	321	PRO
2	B	394	GLN
2	B	405	TYR
2	B	413	GLU
2	B	414	TRP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	57	ASN
1	A	145	GLN
1	A	175	ASN
1	A	198	HIS
1	A	255	ASN
1	A	258	GLN

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Mol	Chain	Res	Type
1	A	306	ASN
1	A	330	GLN
1	A	340	GLN
1	A	361	HIS
1	A	373	GLN
1	A	407	GLN
1	A	474	ASN
1	A	475	GLN
2	B	54	ASN
2	B	57	ASN
2	B	96	HIS
2	B	145	GLN
2	B	147	ASN
2	B	198	HIS
2	B	255	ASN
2	B	278	GLN
2	B	348	ASN
2	B	373	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 carbohydrates 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

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.