



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 14, 2017 – 11:11 am 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

<http://wwpdb.org/validation/2016/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 : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

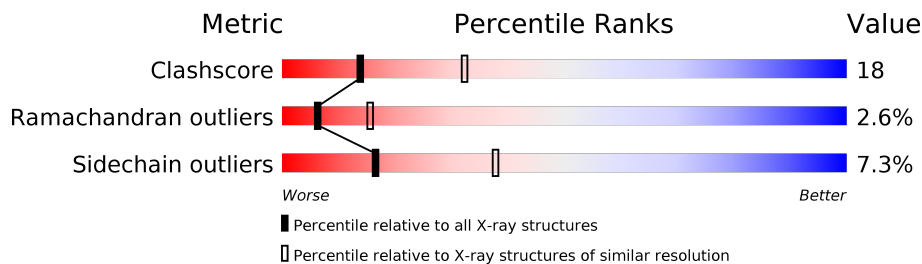
1 Overall quality at a glance

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	112137	2590 (2.70-2.70)
Ramachandran outliers	110173	2550 (2.70-2.70)
Sidechain outliers	110143	2550 (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:

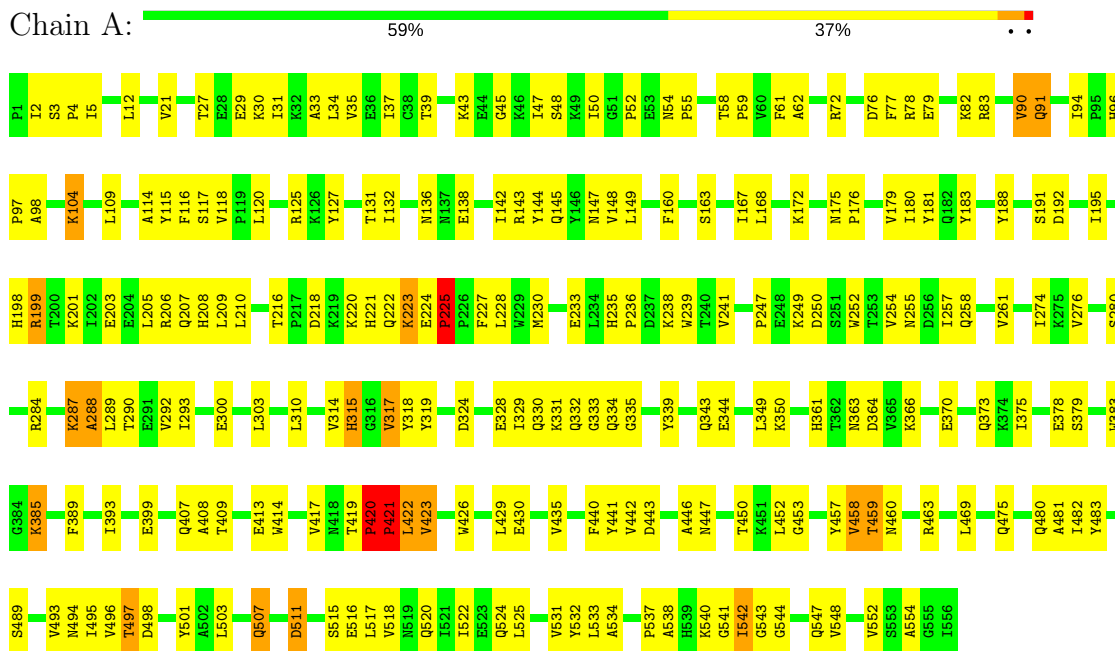
Chain	Residue	Modelled	Actual	Comment	Reference
B	280	SER	CYS	ENGINEERED	UNP P03366

3 Residue-property plots [i](#)

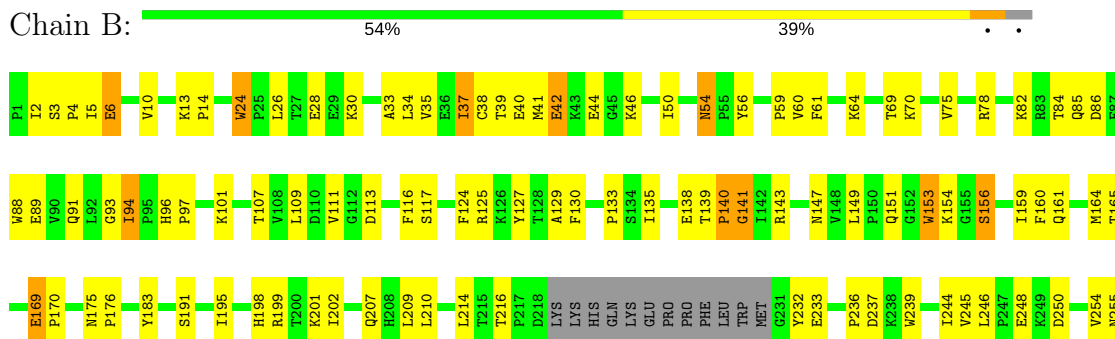
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are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



- Molecule 2: HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 REVERSE TRANSCRIP-TASE



D266	D267	D268	D269	D270	D271	D272	D273	D274	D275	D276	D277	D278	D279	D280	D281	D282	D283	D284	D285	D286	D287	D288	D289	D290	D291	D292	D293	D294	D295	D296	D297	D298	D299	D300	D301	D302	D303	D304	D305	D306	D307	D308	D309	D310	D311	D312	D313	D314	D315	D316	D317	D318	D319	D320	D321	D322	D323	D324	D325	D326	D327	D328	D329	D330	D331	D332	D333	D334	D335	D336	D337	D338	D339	D340	D341	D342	D343	D344	D345	D346	D347	D348	D349	D350	D351	D352	D353	D354	D355	D356	D357	D358	D359	D360	D361	D362	D363	D364	D365	D366	D367	D368	D369	D370	D371	D372	D373	D374	D375	D376	D377	D378	D379	D380	D381	D382	D383	D384	D385	D386	D387	D388	D389	D390	D391	D392	D393	D394	D395	D396	D397	D398	D399	D400	D401	D402	D403	D404	D405	D406	D407	D408	D409	D410	D411	D412	D413	D414	D415	D416	D417	D418	D419	D420	D421	D422	D423	D424	D425	D426	D427	D428	D429	D430	D431	D432	D433	D434	D435	D436	D437	D438	D439	D440	D441	D442	D443	D444	D445	D446	D447	D448	D449	D450	D451	D452	D453	D454	D455	D456	D457	D458	D459	D460	D461	D462	D463	D464	D465	D466	D467	D468	D469	D470	D471	D472	D473	D474	D475	D476	D477	D478	D479	D480	D481	D482	D483	D484	D485	D486	D487	D488	D489	D490	D491	D492	D493	D494	D495	D496	D497	D498	D499	D500	D501	D502	D503	D504	D505	D506	D507	D508	D509	D510	D511	D512	D513	D514	D515	D516	D517	D518	D519	D520	D521	D522	D523	D524	D525	D526	D527	D528	D529	D530	D531	D532	D533	D534	D535	D536	D537	D538	D539	D540	D541	D542	D543	D544	D545	D546	D547	D548	D549	D550	D551	D552	D553	D554	D555	D556	D557	D558	D559	D560	D561	D562	D563	D564	D565	D566	D567	D568	D569	D570	D571	D572	D573	D574	D575	D576	D577	D578	D579	D580	D581	D582	D583	D584	D585	D586	D587	D588	D589	D590	D591	D592	D593	D594	D595	D596	D597	D598	D599	D600	D601	D602	D603	D604	D605	D606	D607	D608	D609	D610	D611	D612	D613	D614	D615	D616	D617	D618	D619	D620	D621	D622	D623	D624	D625	D626	D627	D628	D629	D630	D631	D632	D633	D634	D635	D636	D637	D638	D639	D640	D641	D642	D643	D644	D645	D646	D647	D648	D649	D650	D651	D652	D653	D654	D655	D656	D657	D658	D659	D660	D661	D662	D663	D664	D665	D666	D667	D668	D669	D670	D671	D672	D673	D674	D675	D676	D677	D678	D679	D680	D681	D682	D683	D684	D685	D686	D687	D688	D689	D690	D691	D692	D693	D694	D695	D696	D697	D698	D699	D700	D701	D702	D703	D704	D705	D706	D707	D708	D709	D710	D711	D712	D713	D714	D715	D716	D717	D718	D719	D720	D721	D722	D723	D724	D725	D726	D727	D728	D729	D730	D731	D732	D733	D734	D735	D736	D737	D738	D739	D740	D741	D742	D743	D744	D745	D746	D747	D748	D749	D750	D751	D752	D753	D754	D755	D756	D757	D758	D759	D760	D761	D762	D763	D764	D765	D766	D767	D768	D769	D770	D771	D772	D773	D774	D775	D776	D777	D778	D779	D780	D781	D782	D783	D784	D785	D786	D787	D788	D789	D790	D791	D792	D793	D794	D795	D796	D797	D798	D799	D800	D801	D802	D803	D804	D805	D806	D807	D808	D809	D810	D811	D812	D813	D814	D815	D816	D817	D818	D819	D820	D821	D822	D823	D824	D825	D826	D827	D828	D829	D830	D831	D832	D833	D834	D835	D836	D837	D838	D839	D840	D841	D842	D843	D844	D845	D846	D847	D848	D849	D850	D851	D852	D853	D854	D855	D856	D857	D858	D859	D860	D861	D862	D863	D864	D865	D866	D867	D868	D869	D870	D871	D872	D873	D874	D875	D876	D877	D878	D879	D880	D881	D882	D883	D884	D885	D886	D887	D888	D889	D890	D891	D892	D893	D894	D895	D896	D897	D898	D899	D900	D901	D902	D903	D904	D905	D906	D907	D908	D909	D910	D911	D912	D913	D914	D915	D916	D917	D918	D919	D920	D921	D922	D923	D924	D925	D926	D927	D928	D929	D930	D931	D932	D933	D934	D935	D936	D937	D938	D939	D940	D941	D942	D943	D944	D945	D946	D947	D948	D949	D950	D951	D952	D953	D954	D955	D956	D957	D958	D959	D960	D961	D962	D963	D964	D965	D966	D967	D968	D969	D970	D971	D972	D973	D974	D975	D976	D977	D978	D979	D980	D981	D982	D983	D984	D985	D986	D987	D988	D989	D990	D991	D992	D993	D994	D995	D996	D997	D998	D999	D1000
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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 (i)

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	17
2	B	411/427 (96%)	353 (86%)	47 (11%)	11 (3%)	6	15
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%)	17	39
2	B	353/389 (91%)	327 (93%)	26 (7%)	16	37
All	All	811/885 (92%)	752 (93%)	59 (7%)	16	38

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.