



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 3, 2023 – 04:15 AM EDT

PDB ID : 1GGY
Title : HUMAN FACTOR XIII WITH YTTERBIUM BOUND IN THE ION SITE
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Deposited on : 1998-07-23
Resolution : 2.50 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 : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.34

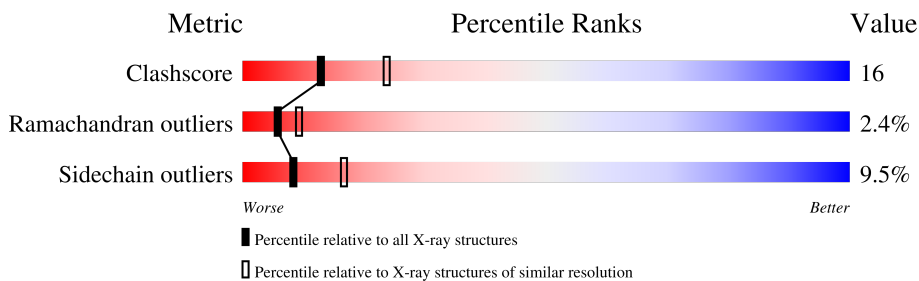
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	731	 58% 34% 5% 3%
1	B	731	 59% 32% 5% 4%

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 11569 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 PROTEIN (COAGULATION FACTOR XIII).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	702	5637	3577	968	1066	26	0	0	0
1	B	705	5659	3589	973	1071	26	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	651	GLU	GLN	conflict	UNP P00488
B	651	GLU	GLN	conflict	UNP P00488

- Molecule 2 is YTTERBIUM (III) ION (three-letter code: Yb) (formula: Yb).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	5	Total	Yb	0	0
			5	5		
2	B	3	Total	Yb	0	0
			3	3		

- Molecule 3 is water.

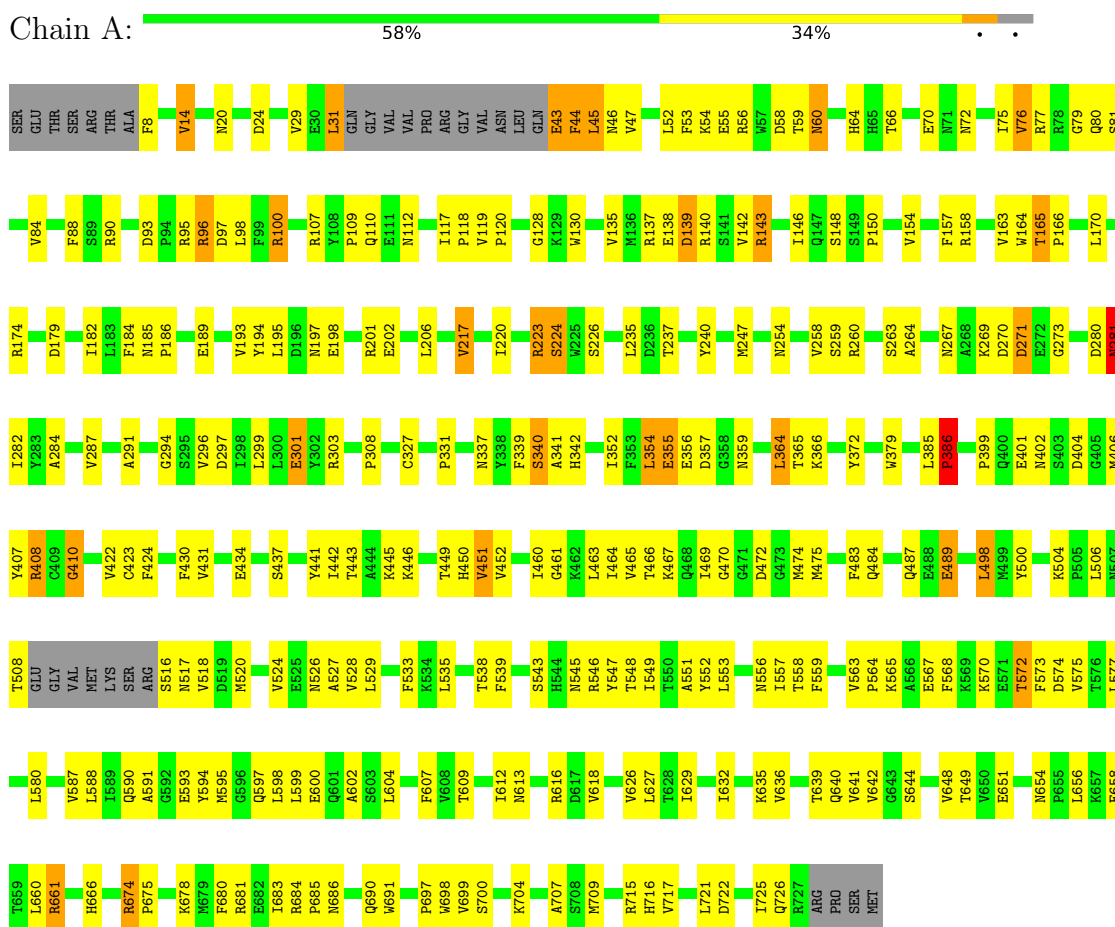
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	139	Total	O	0	0
			139	139		
3	B	126	Total	O	0	0
			126	126		

3 Residue-property plots [i](#)

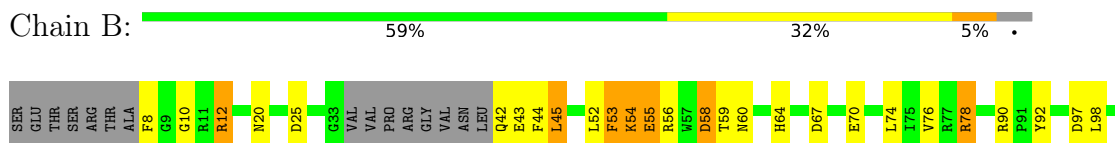
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: PROTEIN (COAGULATION FACTOR XIII)



- Molecule 1: PROTEIN (COAGULATION FACTOR XIII)



V101	V102	Y103	V104	I105	N112	K113	G114	T115	P118	I121	E124	L125	Q126	S127	G128	K129	V135	M136	R137	E138	D139	R140	S141	V142	R143	S148	I153	V154	F157	R158	M159	Y160	P166	Y167	T172	S173	R174	T178	D179	T180	Y181	I182	L183	F184	M185	C188						
A192	V193	D196	E200	L206	V211	I212	F213	V217	N218	D219	L125	K221	T222	R223	Q229	L235	D236	T237	Y240	S141	R252	P255	R260	A268	G273	V274	L275	D280	N281	I282	Y283	A284	V287	S290	A291	W292	D297	E301	Y302	R303	E306											
N307	P308	V309	R310	Y311	C314	L325	R326	C327	L328	P331	A332	R333	I334	V335	T336	N337	Y338	F339	S340	A341	H342	D343	N344	D345	A346	N347	L348	Q349	M350	E356	N359	K363	K366	V369	Y372	E377	W379	M380	T381	R382	W392	E401	M402	G405	M406							
Y407	R408	P411	Q415	H419	G420	H421	Q425	F426	F430	V431	I334	E434	V435	K436	S437	T443	K446	H450	V451	V452	T458	K462	L463	K467	Q468	I469	G470	G473	M474	I477	E485	G486	Q487	E490	R491	L492	L498	K503	K504	T508	GLU											
GLY	VAL	MET	LYS	ARG	SE116	D519	M520	D521	F522	E525	M526	A527	V528	L529	G530	K531	D532	F533	K534	L535	S536	I537	T538	F539	R540	N541	M542	S543	H544	N545	T548	I549	T550	A551	Y552	L553	S554	A555	M556	I557	T558	F559	V563	P564	K565	F568	K569	F573	D574	V575	T576	L577
E578	F579	L580	S581	F582	K583	K584	L588	I589	Q590	A591	Y594	Q597	L598	L599	E600	L604	H605	F606	F607	V608	T609	A610	R611	T612	K613	R616	A620	K623	S624	I633	I634	K635	V636	R637	G638	T639	Q640	V641	V642	M646	T647	V648	T649	V650	E651	L656	T659					
V672	F673	R674	P675	M676	K677	K678	M679	R684	P685	P697	S700	G701	H702	R703	K704	L705	I706	A707	S713	L714	R715	H716	L721	D722	V723	Q724	I725	Q726	R727	ARG	PRO	SER	MET																			

4 Data and refinement statistics

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

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	101.06Å 72.39Å 135.99Å 90.00° 106.09° 90.00°	Depositor
Resolution (Å)	10.00 – 2.50	Depositor
% Data completeness (in resolution range)	75.9 (10.00-2.50)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.188 , 0.281	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	11569	wwPDB-VP
Average B, all atoms (Å ²)	36.0	wwPDB-VP

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0/5770	0.78	2/7830 (0.0%)
1	B	0.55	0/5792	0.80	2/7859 (0.0%)
All	All	0.56	0/11562	0.79	4/15689 (0.0%)

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	B	0	1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	269	LYS	N-CA-C	-5.48	96.20	111.00
1	B	405	GLY	N-CA-C	5.20	126.09	113.10
1	A	518	VAL	N-CA-C	-5.18	97.00	111.00
1	B	604	LEU	CA-CB-CG	5.01	126.82	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	181	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	5637	0	5489	189	0
1	B	5659	0	5508	183	0
2	A	5	0	0	0	0
2	B	3	0	0	0	0
3	A	139	0	0	7	0
3	B	126	0	0	9	0
All	All	11569	0	10997	368	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 16.

All (368) 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:220:ILE:HD13	1:B:474:MET:HE1	1.37	1.04
1:B:575:VAL:HG13	1:B:583:LYS:HD3	1.43	1.01
1:B:356:GLU:HG3	1:B:446:LYS:HD2	1.48	0.96
1:A:331:PRO:HG2	1:A:379:TRP:HB3	1.46	0.96
1:B:211:VAL:HG22	1:B:467:LYS:HD2	1.49	0.93
1:A:356:GLU:HG3	1:A:446:LYS:HG2	1.52	0.92
1:A:437:SER:HB2	1:A:460:ILE:HD12	1.55	0.87
1:B:659:THR:HG22	1:B:684:ARG:HA	1.60	0.84
1:B:44:PHE:O	1:B:45:LEU:HB2	1.78	0.83
1:A:651:GLU:HB3	1:A:690:GLN:HG3	1.60	0.81
1:B:548:THR:HB	1:B:613:ASN:HD21	1.44	0.81
1:A:95:ARG:HG2	1:A:96:ARG:HG3	1.63	0.80
1:A:8:PHE:O	1:B:563:VAL:HG11	1.85	0.77
1:A:341:ALA:HB2	1:A:460:ILE:HD13	1.64	0.76
1:B:331:PRO:HB2	1:B:379:TRP:HB3	1.68	0.75
1:A:100:ARG:HG2	1:A:164:TRP:HE1	1.50	0.75
1:A:100:ARG:HG2	1:A:164:TRP:NE1	2.01	0.75
1:B:281:ASN:OD1	1:B:600:GLU:HG3	1.88	0.73
1:A:635:LYS:HG3	1:A:649:THR:HB	1.69	0.73
1:A:64:HIS:HE1	1:A:80:GLN:HB3	1.53	0.73
1:B:345:ASP:O	1:B:503:LYS:HE2	1.88	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:544:HIS:HA	1:B:579:PRO:HB3	1.71	0.72
1:A:443:THR:HB	1:A:451:VAL:HG13	1.70	0.72
1:A:483:PHE:HB3	1:A:487:GLN:HE21	1.55	0.72
1:A:44:PHE:HD2	1:A:90:ARG:HE	1.39	0.71
1:A:527:ALA:HB2	1:A:533:PHE:HB3	1.73	0.71
1:A:549:ILE:HB	1:A:575:VAL:HB	1.73	0.71
1:B:213:PHE:CD1	1:B:222:THR:HG22	2.25	0.71
1:A:29:VAL:HG22	1:A:31:LEU:HD22	1.73	0.70
1:B:537:ILE:HD12	1:B:573:PHE:HZ	1.54	0.69
1:B:678:LYS:HD3	1:B:679:MET:H	1.57	0.69
1:A:337:ASN:HD21	1:A:461:GLY:HA2	1.57	0.69
1:A:467:LYS:HE2	1:A:472:ASP:HA	1.73	0.69
1:A:198:GLU:O	1:A:202:GLU:HG3	1.92	0.68
1:A:559:PHE:HZ	1:B:8:PHE:CD1	2.11	0.68
1:A:98:LEU:HD23	1:A:164:TRP:HB2	1.74	0.68
1:B:290:SER:OG	1:B:716:HIS:HD2	1.76	0.68
1:B:633:ILE:HB	1:B:651:GLU:HG3	1.76	0.68
1:B:541:ASN:HB2	1:B:577:LEU:HB3	1.75	0.67
1:A:44:PHE:O	1:A:45:LEU:HB2	1.94	0.67
1:B:126:GLN:HG3	1:B:127:SER:N	2.09	0.67
1:A:636:VAL:HG12	1:A:648:VAL:HA	1.77	0.66
1:A:64:HIS:CE1	1:A:80:GLN:HB3	2.30	0.66
1:A:90:ARG:HH11	1:A:90:ARG:HG3	1.60	0.66
1:B:527:ALA:HB2	1:B:533:PHE:HB3	1.77	0.66
1:B:172:THR:HB	3:B:3044:HOH:O	1.95	0.66
1:B:642:VAL:HG21	1:B:700:SER:HB3	1.77	0.66
1:A:557:ILE:HG21	1:A:597:GLN:O	1.96	0.66
1:B:565:LYS:HE2	1:B:597:GLN:HB2	1.79	0.65
1:A:235:LEU:HA	1:A:327:CYS:SG	2.37	0.65
1:A:157:PHE:CD1	1:A:182:ILE:HD12	2.31	0.65
1:B:78:ARG:HG2	1:B:183:LEU:O	1.97	0.65
1:B:591:ALA:HA	1:B:594:TYR:CE2	2.33	0.64
1:B:522:PHE:O	1:B:623:LYS:HE3	1.98	0.63
1:B:280:ASP:OD2	1:B:282:ILE:HB	1.99	0.63
1:A:465:VAL:HG13	1:A:474:MET:HG3	1.79	0.63
1:B:638:GLY:HA3	1:B:646:MET:HA	1.81	0.63
1:A:237:THR:HG22	1:A:303:ARG:HD2	1.81	0.62
1:A:524:VAL:HG22	1:A:535:LEU:HG	1.80	0.62
1:B:528:VAL:HB	1:B:531:LYS:HG2	1.79	0.62
1:A:465:VAL:CG1	1:A:474:MET:HG3	2.30	0.62
1:B:557:ILE:HG21	1:B:597:GLN:O	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:52:LEU:O	1:B:54:LYS:HG3	2.00	0.62
1:A:263:SER:OG	1:A:408:ARG:HD3	1.98	0.62
1:A:135:VAL:HG12	1:A:143:ARG:O	1.99	0.62
1:B:127:SER:O	1:B:129:LYS:HG3	2.01	0.61
1:A:356:GLU:HB2	1:A:446:LYS:HE2	1.83	0.61
1:B:678:LYS:HD3	1:B:679:MET:N	2.16	0.60
1:B:535:LEU:HD11	1:B:606:PHE:CD1	2.37	0.60
1:A:139:ASP:O	1:A:140:ARG:HG2	2.02	0.59
1:A:280:ASP:O	1:A:282:ILE:N	2.36	0.59
1:B:105:ILE:HD11	1:B:157:PHE:CE2	2.38	0.59
1:B:136:MET:HB3	1:B:143:ARG:HB3	1.84	0.59
1:A:254:ASN:O	1:A:258:VAL:HG23	2.03	0.58
1:B:335:VAL:HG13	1:B:477:ILE:HD11	1.85	0.57
1:B:468:GLN:HG2	1:B:473:GLY:O	2.04	0.57
1:A:547:TYR:HB3	1:A:612:ILE:HG23	1.87	0.57
1:B:193:VAL:HG13	1:B:193:VAL:O	2.04	0.57
1:B:349:GLN:HE21	1:B:504:LYS:HG3	1.69	0.57
1:B:558:THR:HG22	1:B:564:PRO:HA	1.86	0.57
1:A:90:ARG:HG3	1:A:90:ARG:NH1	2.18	0.57
1:B:656:LEU:HA	3:B:6075:HOH:O	2.04	0.56
1:A:112:ASN:HB2	3:A:3003:HOH:O	2.05	0.56
1:A:24:ASP:O	1:A:158:ARG:NH2	2.38	0.56
1:A:237:THR:HG22	1:A:303:ARG:CD	2.35	0.56
1:A:422:VAL:HG23	1:A:500:TYR:HB2	1.87	0.56
1:B:611:ARG:HD2	1:B:616:ARG:NH1	2.20	0.56
1:A:117:ILE:HG21	1:A:130:TRP:CD2	2.41	0.55
1:B:684:ARG:HB3	1:B:685:PRO:HD2	1.87	0.55
1:A:698:TRP:CD1	1:A:699:VAL:HG23	2.41	0.55
1:B:105:ILE:CD1	1:B:115:THR:HA	2.35	0.55
1:B:356:GLU:HB2	1:B:446:LYS:NZ	2.21	0.55
1:B:52:LEU:HD21	1:B:159:MET:SD	2.46	0.55
1:B:401:GLU:HA	1:B:406:MET:H	1.72	0.55
1:B:575:VAL:HG12	1:B:577:LEU:HD12	1.89	0.55
1:B:382:ARG:NH2	1:B:411:PRO:O	2.39	0.54
1:A:163:VAL:HB	1:A:170:LEU:HB2	1.89	0.54
1:B:90:ARG:HG3	1:B:90:ARG:HH11	1.71	0.54
1:B:273:GLY:O	1:B:308:PRO:HG3	2.07	0.54
1:B:549:ILE:HG22	1:B:550:THR:N	2.23	0.54
1:A:539:PHE:HB3	1:A:577:LEU:HD11	1.90	0.54
1:B:297:ASP:O	1:B:301:GLU:HB2	2.07	0.54
1:A:271:ASP:HA	1:A:308:PRO:HG2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:ILE:HD12	1:B:115:THR:HA	1.88	0.54
1:B:485:GLU:HA	1:B:490:GLU:HG2	1.90	0.53
1:B:634:ILE:HG22	1:B:721:LEU:HD12	1.90	0.53
1:A:70:GLU:HB3	3:A:6058:HOH:O	2.07	0.53
1:A:565:LYS:HB2	1:A:599:LEU:HD11	1.90	0.53
1:B:126:GLN:HG3	1:B:127:SER:H	1.71	0.53
1:B:143:ARG:HB2	1:B:143:ARG:NH1	2.23	0.53
1:B:634:ILE:HD11	1:B:707:ALA:HB2	1.90	0.53
1:B:52:LEU:HD11	1:B:178:THR:HA	1.90	0.53
1:B:136:MET:HG2	1:B:137:ARG:N	2.24	0.53
1:B:223:ARG:NH2	3:B:6078:HOH:O	2.42	0.53
1:B:555:ALA:HB3	1:B:569:LYS:HB3	1.90	0.53
1:A:402:ASN:HA	1:A:430:PHE:CZ	2.45	0.52
1:A:385:LEU:HD22	1:A:424:PHE:HB3	1.91	0.52
1:A:354:LEU:HD23	1:A:618:VAL:HG11	1.92	0.52
1:B:52:LEU:O	1:B:54:LYS:N	2.42	0.52
1:B:458:THR:O	1:B:462:LYS:HE3	2.09	0.52
1:B:535:LEU:HD12	1:B:589:ILE:HD11	1.92	0.52
1:B:642:VAL:CG2	1:B:700:SER:HB3	2.40	0.52
1:B:217:VAL:HG22	1:B:338:TYR:HB3	1.92	0.51
1:A:14:VAL:HG21	1:A:110:GLN:NE2	2.26	0.51
1:A:551:ALA:HB3	1:A:573:PHE:HB2	1.92	0.51
1:A:629:ILE:HG21	1:A:717:VAL:HG22	1.92	0.51
1:B:575:VAL:CG1	1:B:583:LYS:HD3	2.30	0.51
1:A:117:ILE:HG21	1:A:130:TRP:CE2	2.46	0.51
1:A:158:ARG:HG2	1:A:174:ARG:NH2	2.26	0.51
1:A:704:LYS:HE2	1:A:722:ASP:OD1	2.11	0.51
1:B:103:TYR:HA	1:B:158:ARG:O	2.11	0.50
1:B:220:ILE:HG21	1:B:474:MET:CE	2.41	0.50
1:B:540:ARG:HA	1:B:582:PHE:HA	1.93	0.50
1:B:101:VAL:O	1:B:118:PRO:O	2.30	0.50
1:B:554:SER:HB3	1:B:607:PHE:HB2	1.92	0.50
1:A:128:GLY:HA2	1:A:150:PRO:CD	2.41	0.50
1:A:632:ILE:HD11	1:A:709:MET:HB2	1.92	0.50
1:A:224:SER:HB2	3:A:3058:HOH:O	2.11	0.50
1:B:715:ARG:HG2	1:B:716:HIS:N	2.25	0.50
1:B:402:ASN:HA	1:B:430:PHE:CE2	2.46	0.50
1:A:53:PHE:O	1:A:60:ASN:HB2	2.12	0.50
1:A:247:MET:HA	3:B:3004:HOH:O	2.11	0.50
1:B:211:VAL:HG23	1:B:467:LYS:HB2	1.93	0.50
1:B:255:PRO:HD2	3:B:3022:HOH:O	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:53:PHE:O	1:B:60:ASN:HB2	2.11	0.50
1:B:260:ARG:NH1	1:B:408:ARG:CZ	2.74	0.50
1:A:165:THR:HB	1:A:166:PRO:HD2	1.93	0.49
1:B:211:VAL:CG2	1:B:467:LYS:HB2	2.42	0.49
1:B:609:THR:HG22	1:B:620:ALA:CB	2.41	0.49
1:A:237:THR:O	1:A:240:TYR:HB3	2.12	0.49
1:A:678:LYS:HD2	1:A:691:TRP:CD1	2.47	0.49
1:B:640:GLN:O	1:B:725:ILE:HA	2.12	0.49
1:A:260:ARG:HH11	1:A:410:GLY:HA3	1.78	0.49
1:B:443:THR:O	1:B:450:HIS:HA	2.12	0.49
1:B:672:VAL:HG11	1:B:705:LEU:HD21	1.92	0.49
1:B:260:ARG:HH12	1:B:408:ARG:CZ	2.24	0.49
1:B:342:HIS:ND1	1:B:434:GLU:OE2	2.44	0.49
1:A:364:LEU:O	1:A:366:LYS:HG2	2.13	0.49
1:A:684:ARG:H	1:A:684:ARG:HD2	1.77	0.49
1:B:54:LYS:O	1:B:55:GLU:O	2.30	0.49
1:B:200:GLU:HG2	1:B:469:ILE:HD11	1.93	0.49
1:A:548:THR:HB	1:A:613:ASN:HB2	1.94	0.49
1:A:641:VAL:HG12	1:A:642:VAL:O	2.13	0.49
1:A:700:SER:HA	1:A:725:ILE:HB	1.93	0.49
1:B:90:ARG:HG3	1:B:90:ARG:NH1	2.28	0.49
1:A:164:TRP:CD1	1:A:164:TRP:N	2.81	0.49
1:A:437:SER:HB2	1:A:460:ILE:CD1	2.36	0.49
1:B:211:VAL:HG22	1:B:467:LYS:CD	2.34	0.49
1:A:629:ILE:CG2	1:A:717:VAL:HG22	2.43	0.48
1:B:545:ASN:C	1:B:579:PRO:HG3	2.33	0.48
1:B:541:ASN:HB3	1:B:578:GLU:O	2.14	0.48
1:A:632:ILE:HG13	1:A:717:VAL:HG12	1.95	0.48
1:A:654:ASN:HB2	1:A:683:ILE:CG2	2.43	0.48
1:A:66:THR:HG21	1:A:75:ILE:HG22	1.96	0.48
1:B:185:ASN:ND2	1:B:188:CYS:HB2	2.28	0.48
1:A:517:ASN:HA	3:A:5040:HOH:O	2.13	0.48
1:A:93:ASP:O	1:A:97:ASP:HB2	2.14	0.48
1:B:705:LEU:O	1:B:706:ILE:HG13	2.14	0.48
1:A:339:PHE:O	1:A:460:ILE:HG23	2.14	0.47
1:A:186:PRO:HA	1:A:194:TYR:HA	1.96	0.47
1:A:220:ILE:HG21	1:A:474:MET:CE	2.44	0.47
1:B:539:PHE:CD1	1:B:539:PHE:N	2.82	0.47
1:A:498:LEU:HD13	1:A:498:LEU:HA	1.75	0.47
1:B:153:ILE:HG23	1:B:252:ARG:HB2	1.96	0.47
1:A:100:ARG:HB2	1:A:119:VAL:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:345:ASP:O	1:B:346:ALA:HB3	2.14	0.47
1:B:402:ASN:HA	1:B:430:PHE:CZ	2.50	0.47
1:B:192:ALA:O	1:B:381:THR:HG23	2.13	0.47
1:B:356:GLU:HB2	1:B:446:LYS:HZ2	1.78	0.47
1:A:81:SER:HA	1:A:146:ILE:O	2.15	0.47
1:A:516:SER:O	1:A:517:ASN:HB2	2.15	0.47
1:A:128:GLY:HA2	1:A:150:PRO:HD2	1.97	0.47
1:A:549:ILE:HG13	1:A:612:ILE:HD13	1.96	0.47
1:A:567:GLU:OE2	1:A:570:LYS:HD3	2.14	0.47
1:A:642:VAL:HA	1:A:697:PRO:O	2.14	0.47
1:A:117:ILE:HD12	1:A:117:ILE:N	2.29	0.47
1:A:197:ASN:O	1:A:201:ARG:HG3	2.15	0.47
1:A:549:ILE:HG13	1:A:612:ILE:CD1	2.45	0.47
1:A:598:LEU:HD11	1:A:627:LEU:HD12	1.96	0.47
1:B:55:GLU:HB2	1:B:58:ASP:HB2	1.97	0.47
1:B:342:HIS:O	1:B:343:ASP:HB2	2.15	0.47
1:B:64:HIS:CG	1:B:76:VAL:HG22	2.50	0.47
1:B:124:GLU:HB2	3:B:5056:HOH:O	2.14	0.47
1:A:52:LEU:HD23	1:A:84:VAL:HG12	1.97	0.46
1:B:56:ARG:NH1	1:B:67:ASP:O	2.43	0.46
1:B:102:GLU:HB2	1:B:160:TYR:HB2	1.97	0.46
1:B:349:GLN:NE2	1:B:504:LYS:HG3	2.30	0.46
1:A:354:LEU:CD2	1:A:618:VAL:HG11	2.45	0.46
1:B:533:PHE:CE2	1:B:589:ILE:HG13	2.50	0.46
1:A:385:LEU:HB3	1:A:386:PRO:HD2	1.96	0.46
1:A:654:ASN:HB2	1:A:683:ILE:HG21	1.97	0.46
1:B:158:ARG:HG2	1:B:174:ARG:NH2	2.31	0.46
1:B:348:LEU:HA	1:B:437:SER:HB2	1.97	0.46
1:B:535:LEU:HD11	1:B:606:PHE:CE1	2.50	0.46
1:B:237:THR:O	1:B:240:TYR:HB3	2.15	0.46
1:B:380:MET:HG3	1:B:381:THR:O	2.14	0.46
1:B:549:ILE:HG21	1:B:610:ALA:HB1	1.96	0.46
1:A:297:ASP:O	1:A:301:GLU:HB2	2.15	0.46
1:B:240:TYR:OH	1:B:306:GLU:HG2	2.15	0.46
1:B:701:GLY:N	1:B:725:ILE:O	2.47	0.46
1:B:703:ARG:NE	1:B:703:ARG:HA	2.30	0.46
1:A:423:CYS:HB3	1:A:500:TYR:CD1	2.51	0.46
1:A:602:ALA:HB1	1:A:627:LEU:HB2	1.97	0.46
1:A:138:GLU:O	1:A:140:ARG:N	2.49	0.46
1:A:506:LEU:HD23	1:A:506:LEU:HA	1.64	0.46
1:B:44:PHE:N	1:B:44:PHE:CD1	2.84	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:661:ARG:NH2	1:A:681:ARG:O	2.49	0.45
1:A:558:THR:HG22	1:A:564:PRO:HA	1.98	0.45
1:A:220:ILE:HD13	1:A:474:MET:HE1	1.98	0.45
1:B:333:ARG:HG2	1:B:392:TRP:CZ3	2.51	0.45
1:A:100:ARG:HE	1:A:100:ARG:HB3	1.63	0.45
1:A:107:ARG:O	1:A:107:ARG:HG2	2.15	0.45
1:A:590:GLN:HB3	1:A:593:GLU:HG3	1.98	0.45
1:A:29:VAL:HG13	1:A:29:VAL:O	2.16	0.45
1:A:580:LEU:N	1:A:580:LEU:HD12	2.32	0.45
1:A:43:GLU:HA	1:A:165:THR:CG2	2.47	0.45
1:B:542:ASN:O	1:B:580:LEU:HD23	2.15	0.45
1:B:419:HIS:HB2	1:B:421:HIS:HD2	1.82	0.45
1:B:623:LYS:HD3	3:B:6029:HOH:O	2.15	0.45
1:B:674:ARG:HH11	1:B:674:ARG:HG2	1.82	0.45
1:A:76:VAL:O	1:A:182:ILE:HA	2.17	0.45
1:A:352:ILE:HG21	1:A:441:TYR:CE1	2.52	0.45
1:B:54:LYS:HG2	1:B:74:LEU:HB2	1.98	0.45
1:B:549:ILE:CG2	1:B:610:ALA:HB1	2.46	0.45
1:B:575:VAL:HG12	1:B:577:LEU:CD1	2.47	0.45
1:A:483:PHE:CE2	1:A:489:GLU:HB2	2.52	0.44
1:B:174:ARG:NH2	1:B:179:ASP:OD1	2.50	0.44
1:A:337:ASN:ND2	1:A:464:ILE:HG12	2.32	0.44
1:A:573:PHE:HZ	1:A:587:VAL:CG2	2.30	0.44
1:B:310:ARG:HB3	1:B:311:TYR:CD1	2.51	0.44
1:B:532:ASP:OD2	1:B:590:GLN:HA	2.17	0.44
1:A:98:LEU:CD2	1:A:164:TRP:HB2	2.46	0.44
1:B:498:LEU:HD12	1:B:498:LEU:HA	1.84	0.44
1:B:153:ILE:HG22	1:B:154:VAL:N	2.32	0.44
1:B:635:LYS:HG3	1:B:649:THR:HB	1.99	0.44
1:A:674:ARG:HD2	1:A:674:ARG:HA	1.82	0.44
1:B:538:THR:HG22	1:B:584:LYS:HG3	2.00	0.44
1:A:77:ARG:HB3	1:A:185:ASN:HB2	1.99	0.44
1:A:602:ALA:O	1:A:626:VAL:HA	2.18	0.44
1:B:112:ASN:C	1:B:113:LYS:HG2	2.38	0.44
1:B:674:ARG:HG3	1:B:675:PRO:HD2	1.99	0.44
1:A:43:GLU:HA	1:A:165:THR:HG21	2.00	0.44
1:A:401:GLU:HA	1:A:406:MET:H	1.83	0.44
1:A:552:TYR:CD1	1:A:572:THR:HB	2.53	0.44
1:B:287:VAL:HB	1:B:292:TRP:CZ2	2.53	0.44
1:B:337:ASN:O	1:B:372:TYR:HA	2.17	0.44
1:A:154:VAL:HG21	1:A:184:PHE:CD2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:528:VAL:HG12	1:A:529:LEU:N	2.33	0.43
1:B:235:LEU:HA	1:B:327:CYS:SG	2.58	0.43
1:A:639:THR:OG1	1:A:644:SER:HB3	2.18	0.43
1:A:79:GLY:HA2	1:A:148:SER:O	2.18	0.43
1:A:287:VAL:CG1	1:A:291:ALA:HB3	2.49	0.43
1:A:354:LEU:HD22	1:A:441:TYR:HB3	1.99	0.43
1:A:546:ARG:HA	1:A:577:LEU:O	2.18	0.43
1:A:559:PHE:CD2	1:B:10:GLY:HA2	2.53	0.43
1:B:193:VAL:HG22	1:B:331:PRO:HD2	2.00	0.43
1:B:275:LEU:HA	1:B:309:VAL:O	2.19	0.43
1:B:559:PHE:CD1	1:B:599:LEU:HD13	2.54	0.43
1:A:44:PHE:HD2	1:A:90:ARG:NE	2.13	0.43
1:A:337:ASN:OD1	1:A:340:SER:HB2	2.18	0.43
1:A:678:LYS:HD3	1:A:680:PHE:CZ	2.53	0.43
1:A:220:ILE:HG21	1:A:474:MET:HE1	2.00	0.43
1:A:355:GLU:N	1:A:359:ASN:O	2.52	0.43
1:B:229:GLN:HB2	1:B:327:CYS:HB2	2.01	0.43
1:B:333:ARG:HG2	1:B:392:TRP:CH2	2.54	0.43
1:A:587:VAL:HG12	1:A:588:LEU:N	2.34	0.43
1:B:637:ARG:NH2	1:B:647:THR:HG21	2.33	0.43
1:B:703:ARG:HB2	1:B:723:VAL:HG23	2.00	0.43
1:A:189:GLU:HA	1:A:194:TYR:CG	2.54	0.43
1:A:299:LEU:HD23	1:A:299:LEU:HA	1.91	0.43
1:A:337:ASN:ND2	1:A:461:GLY:HA2	2.30	0.43
1:A:466:THR:O	1:A:475:MET:N	2.52	0.43
1:A:666:HIS:O	1:A:707:ALA:HA	2.19	0.43
1:B:126:GLN:HG2	1:B:129:LYS:HD3	2.01	0.43
1:A:43:GLU:HA	1:A:165:THR:HB	2.01	0.42
1:A:107:ARG:C	1:A:109:PRO:HD3	2.39	0.42
1:A:559:PHE:HD1	1:A:563:VAL:O	2.02	0.42
1:B:703:ARG:HA	1:B:703:ARG:HE	1.83	0.42
1:A:354:LEU:HA	1:A:354:LEU:HD12	1.74	0.42
1:A:709:MET:CE	1:A:717:VAL:HG21	2.49	0.42
1:B:166:PRO:HG2	1:B:167:TYR:CZ	2.53	0.42
1:A:342:HIS:ND1	1:A:434:GLU:OE2	2.52	0.42
1:A:559:PHE:HZ	1:B:8:PHE:CE1	2.36	0.42
1:B:143:ARG:HB2	1:B:143:ARG:HH11	1.83	0.42
1:A:684:ARG:HD2	1:A:684:ARG:N	2.35	0.42
1:A:399:PRO:HA	1:A:407:TYR:O	2.20	0.42
1:A:331:PRO:CG	1:A:379:TRP:HB3	2.34	0.42
1:A:543:SER:O	1:A:580:LEU:HD12	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:674:ARG:O	1:B:676:MET:HG3	2.20	0.42
1:A:88:PHE:HE2	1:A:142:VAL:CG2	2.32	0.42
1:A:193:VAL:HG13	1:A:331:PRO:HD2	2.01	0.42
1:A:281:ASN:ND2	1:A:715:ARG:NH1	2.67	0.42
1:A:445:LYS:HB2	1:A:449:THR:HB	2.00	0.42
1:A:449:THR:HG22	1:A:450:HIS:N	2.35	0.42
1:B:45:LEU:HD12	1:B:45:LEU:HA	1.75	0.42
1:B:126:GLN:HA	1:B:126:GLN:HE21	1.84	0.42
1:B:310:ARG:HA	1:B:311:TYR:HA	1.87	0.42
1:B:705:LEU:C	1:B:706:ILE:HG13	2.40	0.42
1:A:44:PHE:O	1:A:45:LEU:CB	2.66	0.42
1:A:654:ASN:O	1:A:686:ASN:HA	2.20	0.42
1:B:715:ARG:CG	1:B:716:HIS:N	2.82	0.42
1:A:424:PHE:HA	3:A:4006:HOH:O	2.20	0.42
1:B:350:MET:HE3	3:B:3025:HOH:O	2.19	0.42
1:A:64:HIS:CD2	1:A:76:VAL:HG12	2.55	0.42
1:B:158:ARG:HG2	1:B:174:ARG:CZ	2.50	0.42
1:B:401:GLU:HA	1:B:406:MET:N	2.35	0.42
1:B:363:LYS:O	1:B:366:LYS:HE2	2.20	0.41
1:A:174:ARG:NH2	1:A:179:ASP:OD1	2.53	0.41
1:A:264:ALA:HA	1:A:408:ARG:HG2	2.02	0.41
1:A:469:ILE:HD11	3:A:3080:HOH:O	2.19	0.41
1:A:558:THR:C	1:A:599:LEU:HD12	2.41	0.41
1:A:674:ARG:HG3	1:A:675:PRO:HD2	2.03	0.41
1:A:726:GLN:HE21	1:A:726:GLN:HA	1.85	0.41
1:B:325:LEU:HA	1:B:325:LEU:HD23	1.83	0.41
1:A:118:PRO:O	1:A:120:PRO:HD3	2.20	0.41
1:A:193:VAL:HG13	1:A:331:PRO:CD	2.51	0.41
1:A:557:ILE:HG13	1:A:568:PHE:CD1	2.56	0.41
1:B:12:ARG:CB	1:B:12:ARG:HH11	2.32	0.41
1:B:555:ALA:HB1	1:B:568:PHE:CZ	2.55	0.41
1:A:337:ASN:HD22	1:A:464:ILE:HG12	1.86	0.41
1:B:605:HIS:HD2	1:B:624:SER:OG	2.03	0.41
1:A:504:LYS:HE2	1:A:504:LYS:HB3	1.96	0.41
1:A:591:ALA:HA	1:A:594:TYR:CE2	2.56	0.41
1:A:656:LEU:HD12	1:A:660:LEU:HD21	2.03	0.41
1:B:42:GLN:OE1	1:B:44:PHE:HE1	2.04	0.41
1:B:335:VAL:HG21	1:B:377:GLU:HG3	2.03	0.41
1:B:600:GLU:OE2	1:B:715:ARG:HD2	2.21	0.41
1:A:223:ARG:NH2	3:A:5021:HOH:O	2.53	0.41
1:A:658:GLU:C	1:A:685:PRO:HG3	2.41	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:425:GLN:HA	1:B:426:PHE:HA	1.79	0.41
1:B:697:PRO:CB	1:B:725:ILE:HD13	2.51	0.41
1:A:217:VAL:HG11	1:A:339:PHE:CE2	2.56	0.41
1:A:226:SER:HB3	1:A:294:GLY:HA3	2.01	0.41
1:A:337:ASN:O	1:A:372:TYR:HA	2.21	0.41
1:B:307:ASN:HA	1:B:308:PRO:HD3	1.93	0.40
1:A:280:ASP:O	1:A:280:ASP:CG	2.60	0.40
1:A:442:ILE:HG12	1:A:452:VAL:HG12	2.03	0.40
1:A:563:VAL:HA	1:A:564:PRO:HD3	1.85	0.40
1:B:121:ILE:H	1:B:121:ILE:HD13	1.86	0.40
1:B:519:ASP:HB2	3:B:4008:HOH:O	2.19	0.40
1:B:45:LEU:HD22	1:B:97:ASP:HB3	2.02	0.40
1:B:137:ARG:HH11	1:B:137:ARG:HG3	1.86	0.40
1:A:709:MET:HE3	1:A:717:VAL:HG21	2.03	0.40
1:B:105:ILE:HG13	1:B:157:PHE:CD2	2.57	0.40
1:B:184:PHE:HD2	1:B:328:LEU:O	2.05	0.40
1:B:486:GLY:O	1:B:487:GLN:HG3	2.22	0.40
1:B:92:TYR:HD2	1:B:137:ARG:HD3	1.85	0.40
1:B:551:ALA:HA	1:B:610:ALA:HA	2.03	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	696/731 (95%)	617 (89%)	60 (9%)	19 (3%)	5 7
1	B	699/731 (96%)	620 (89%)	65 (9%)	14 (2%)	7 12
All	All	1395/1462 (95%)	1237 (89%)	125 (9%)	33 (2%)	6 9

All (33) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	45	LEU
1	A	139	ASP
1	B	45	LEU
1	B	55	GLU
1	B	600	GLU
1	A	54	LYS
1	A	55	GLU
1	A	56	ARG
1	A	270	ASP
1	A	273	GLY
1	A	281	ASN
1	A	296	VAL
1	A	410	GLY
1	B	53	PHE
1	B	219	ASP
1	B	284	ALA
1	B	314	CYS
1	B	406	MET
1	A	595	MET
1	A	600	GLU
1	B	54	LYS
1	B	268	ALA
1	A	217	VAL
1	A	284	ALA
1	A	365	THR
1	A	716	HIS
1	B	581	SER
1	B	613	ASN
1	A	60	ASN
1	A	386	PRO
1	B	172	THR
1	B	470	GLY
1	A	470	GLY

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	619/644 (96%)	563 (91%)	56 (9%)	9	19
1	B	621/644 (96%)	559 (90%)	62 (10%)	7	15
All	All	1240/1288 (96%)	1122 (90%)	118 (10%)	8	17

All (118) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	VAL
1	A	20	ASN
1	A	31	LEU
1	A	43	GLU
1	A	44	PHE
1	A	46	ASN
1	A	47	VAL
1	A	58	ASP
1	A	59	THR
1	A	72	ASN
1	A	76	VAL
1	A	96	ARG
1	A	100	ARG
1	A	137	ARG
1	A	143	ARG
1	A	165	THR
1	A	195	LEU
1	A	206	LEU
1	A	223	ARG
1	A	224	SER
1	A	259	SER
1	A	267	ASN
1	A	271	ASP
1	A	281	ASN
1	A	301	GLU
1	A	340	SER
1	A	354	LEU
1	A	355	GLU
1	A	357	ASP
1	A	364	LEU
1	A	386	PRO
1	A	404	ASP
1	A	408	ARG
1	A	431	VAL
1	A	451	VAL

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Mol	Chain	Res	Type
1	A	463	LEU
1	A	484	GLN
1	A	489	GLU
1	A	498	LEU
1	A	508	THR
1	A	520	MET
1	A	526	ASN
1	A	538	THR
1	A	545	ASN
1	A	553	LEU
1	A	556	ASN
1	A	572	THR
1	A	574	ASP
1	A	604	LEU
1	A	607	PHE
1	A	609	THR
1	A	616	ARG
1	A	640	GLN
1	A	661	ARG
1	A	674	ARG
1	A	721	LEU
1	B	12	ARG
1	B	20	ASN
1	B	25	ASP
1	B	43	GLU
1	B	58	ASP
1	B	59	THR
1	B	70	GLU
1	B	78	ARG
1	B	98	LEU
1	B	104	VAL
1	B	105	ILE
1	B	112	ASN
1	B	121	ILE
1	B	126	GLN
1	B	135	VAL
1	B	139	ASP
1	B	140	ARG
1	B	142	VAL
1	B	143	ARG
1	B	148	SER
1	B	172	THR

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Mol	Chain	Res	Type
1	B	174	ARG
1	B	193	VAL
1	B	196	ASP
1	B	206	LEU
1	B	217	VAL
1	B	223	ARG
1	B	235	LEU
1	B	301	GLU
1	B	303	ARG
1	B	340	SER
1	B	359	ASN
1	B	363	LYS
1	B	369	VAL
1	B	408	ARG
1	B	415	GLN
1	B	431	VAL
1	B	435	VAL
1	B	452	VAL
1	B	463	LEU
1	B	490	GLU
1	B	492	LEU
1	B	498	LEU
1	B	519	ASP
1	B	520	MET
1	B	525	GLU
1	B	526	ASN
1	B	529	LEU
1	B	535	LEU
1	B	540	ARG
1	B	542	ASN
1	B	553	LEU
1	B	573	PHE
1	B	576	THR
1	B	588	LEU
1	B	604	LEU
1	B	613	ASN
1	B	639	THR
1	B	640	GLN
1	B	674	ARG
1	B	713	SER
1	B	721	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	ASN
1	A	72	ASN
1	A	337	ASN
1	A	373	HIS
1	A	556	ASN
1	A	726	GLN
1	B	72	ASN
1	B	112	ASN
1	B	126	GLN
1	B	421	HIS
1	B	545	ASN
1	B	605	HIS
1	B	613	ASN
1	B	686	ASN
1	B	716	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 8 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 [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.