



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 21, 2018 – 05:07 pm GMT

PDB ID : 1GGY
Title : HUMAN FACTOR XIII WITH YTTERBIUM BOUND IN THE ION SITE
Authors : Fox, B.A.; Yee, V.C.; Pederson, L.C.; Trong, I.L.; Bishop, P.D.; Stenkamp, R.E.; Teller, D.C.
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 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

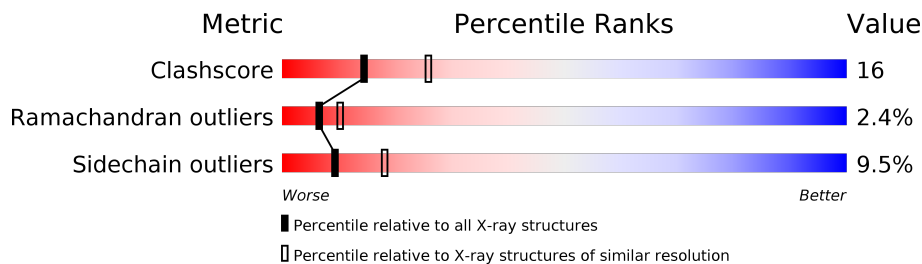
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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	122078	4826 (2.50-2.50)
Ramachandran outliers	120005	4734 (2.50-2.50)
Sidechain outliers	119972	4736 (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 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	731	
1	B	731	

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
			Total	Yb		
2	B	3	3	3	0	0
2	A	5	5	5	0	0

- Molecule 3 is water.

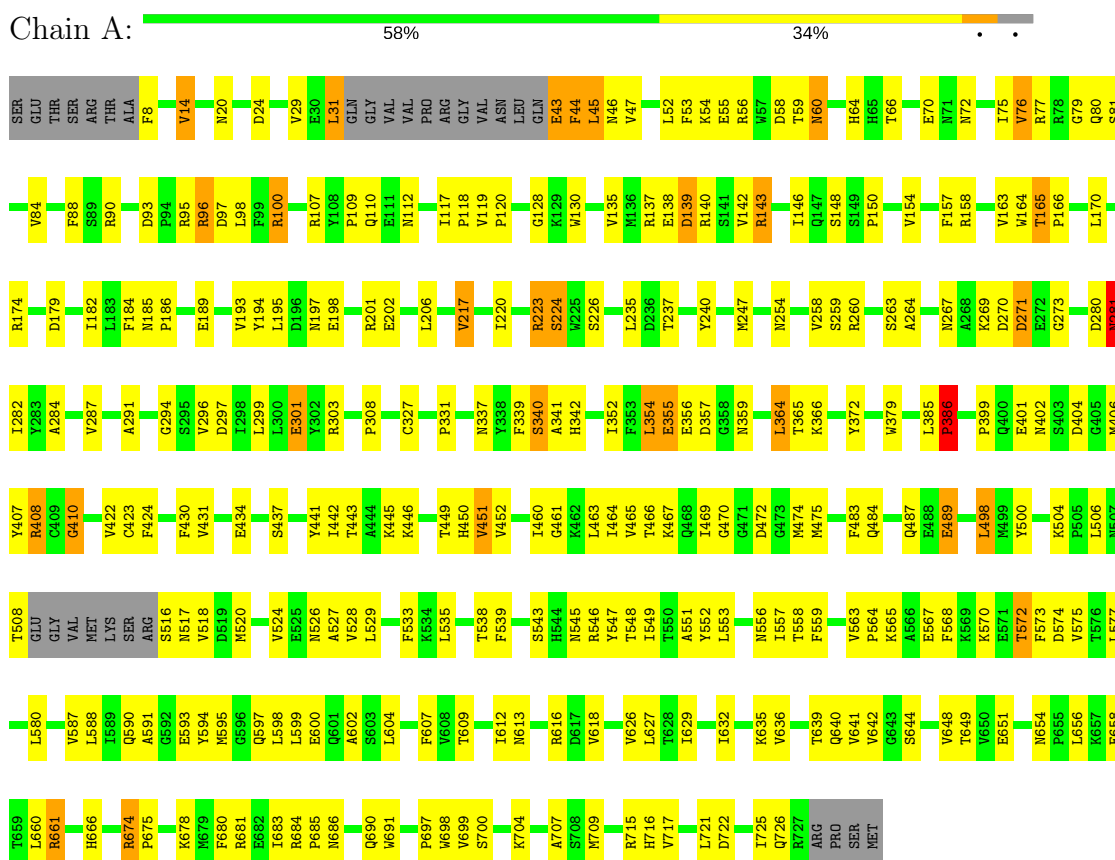
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	139	139	139	0	0
3	B	126	126	126	0	0

3 Residue-property plots [i](#)

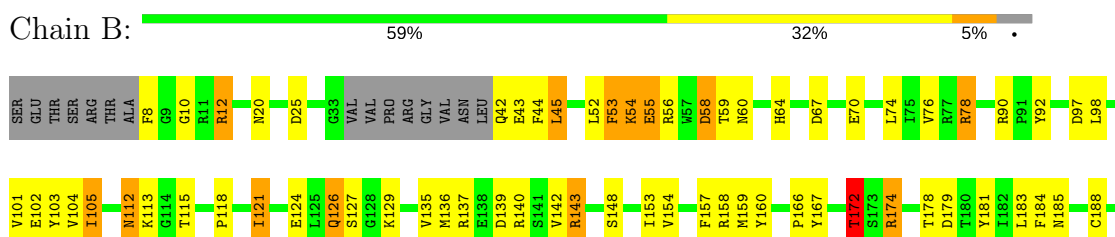
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are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



- Molecule 1: PROTEIN (COAGULATION FACTOR XIII)



V672	N307	Y407	GLY	E578	A192
I673	P308	R408	VAL	P579	V193
R674	V309	P411	MET	L580	D196
P675	R310	Q415	LYS	S581	E200
M676	Y311	H419	SER	F582	L206
K677	C314	G420	ARG	K583	V211
K678	L325	H421	S516	F584	L212
M679	L326	Q425	D519	K584	F213
R684	R327	F426	M520	L588	V217
P685	L328	F430	M525	L589	I218
P687	L331	V431	M527	L590	I219
S700	P331	E434	V528	A591	D220
G701	A332	V435	L529	L594	K221
H702	R333	V436	G530	L598	K222
R703	I334	K438	K531	E600	R223
R707	V335	S437	D532	L604	Q229
K704	T336	T443	F533	H605	A341
L705	M337	K446	K534	F606	I235
L706	Y338	H450	L535	P607	D236
A707	F339	V451	S536	L608	L237
S713	S340	V452	I537	A610	Y240
I714	R341	T458	T538	R611	R252
R715	H342	K462	F539	L613	P255
H716	D343	L463	R540	R616	R260
L721	M344	L467	L541	A620	E356
D722	R347	K468	M542	K623	A268
V723	L349	I469	S543	S624	G273
Q724	Q349	G470	H544	I633	V274
I725	M350	C473	N545	K634	L275
Q726	E356	M474	L548	K635	D280
R727	N359	N477	I549	V636	I281
ARG	E377	E485	T550	R637	L282
PRO	W379	G486	A551	C638	I283
SER	M380	Q487	Y552	T639	A284
MET	T381	E490	L553	V640	V287
	R382	R491	S554	V642	S290
	W392	L492	A555	M646	A291
	D297	L498	M556	T647	W292
	E301	K503	I557	V649	D297
	R302	K504	T558	V650	E301
	R303	T508	F559	E651	R302
	G405	L577	V563	L656	R303
	M406		P564	T659	E306
			K565		
			F568		
			T575		
			L576		
			L577		

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:467:LYS:HE2	1:A:472:ASP:HA	1.73	0.69
1:A:337:ASN:HD21	1:A:461:GLY:HA2	1.57	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:HG3	1:A:90:ARG:HH11	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:237:THR:HG22	1:A:303:ARG:CD	2.35	0.56
1:A:24:ASP:O	1:A:158:ARG:NH2	2.38	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: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:B:90:ARG:HH11	1:B:90:ARG:HG3	1.71	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:565:LYS:HB2	1:A:599:LEU:HD11	1.90	0.53
1:A:70:GLU:HB3	3:A:6058:HOH:O	2.07	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:458:THR:O	1:B:462:LYS:HE3	2.09	0.52
1:B:52:LEU:O	1:B:54:LYS:N	2.42	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:260:ARG:NH1	1:B:408:ARG:CZ	2.74	0.50
1:B:53:PHE:O	1:B:60:ASN:HB2	2.11	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:200:GLU:HG2	1:B:469:ILE:HD11	1.93	0.49
1:B:54:LYS:O	1:B:55:GLU:O	2.30	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:NH1	1:B:90:ARG:HG3	2.28	0.49
1:A:164:TRP:N	1:A:164:TRP:CD1	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:N	1:B:539:PHE:CD1	2.82	0.47
1:A:498:LEU:HA	1:A:498:LEU:HD13	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:516:SER:O	1:A:517:ASN:HB2	2.15	0.47
1:A:81:SER:HA	1:A:146:ILE:O	2.15	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: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:117:ILE:N	1:A:117:ILE:HD12	2.29	0.47
1:A:197:ASN:O	1:A:201:ARG:HG3	2.15	0.47
1:A:598:LEU:HD11	1:A:627:LEU:HD12	1.96	0.47
1:A:549:ILE:HG13	1:A:612:ILE:CD1	2.45	0.47
1:B:342:HIS:O	1:B:343:ASP:HB2	2.15	0.47
1:B:55:GLU:HB2	1:B:58:ASP:HB2	1.97	0.47
1:B:124:GLU:HB2	3:B:5056:HOH:O	2.14	0.47
1:B:64:HIS:CG	1:B:76:VAL:HG22	2.50	0.47
1:A:52:LEU:HD23	1:A:84:VAL:HG12	1.97	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:B:56:ARG:NH1	1:B:67:ASP:O	2.43	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:CD1	1:B:44:PHE:N	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:HG2	1:A:107:ARG:O	2.15	0.45
1:A:590:GLN:HB3	1:A:593:GLU:HG3	1.98	0.45
1:A:29:VAL:O	1:A:29:VAL:HG13	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:HG2	1:B:674:ARG:HH11	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:549:ILE:CG2	1:B:610:ALA:HB1	2.46	0.45
1:B:54:LYS:HG2	1:B:74:LEU:HB2	1.98	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:HA	1:A:674:ARG:HD2	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:337:ASN:OD1	1:A:340:SER:HB2	2.18	0.43
1:A:44:PHE:HD2	1:A:90:ARG:NE	2.13	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:107:ARG:C	1:A:109:PRO:HD3	2.39	0.42
1:A:43:GLU:HA	1:A:165:THR:HB	2.01	0.42
1:A:559:PHE:HD1	1:A:563:VAL:O	2.02	0.42
1:B:703:ARG:HE	1:B:703:ARG:HA	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:N	1:A:684:ARG:HD2	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:193:VAL:HG13	1:A:331:PRO:HD2	2.01	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:A:281:ASN:ND2	1:A:715:ARG:NH1	2.67	0.42
1:A:88:PHE:HE2	1:A:142:VAL:CG2	2.32	0.42
1:B:126:GLN:HE21	1:B:126:GLN:HA	1.84	0.42
1:B:310:ARG:HA	1:B:311:TYR:HA	1.87	0.42
1:B:45:LEU:HA	1:B:45:LEU:HD12	1.75	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:HH11	1:B:12:ARG:CB	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:HB3	1:A:504:LYS:HE2	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:335:VAL:HG21	1:B:377:GLU:HG3	2.03	0.41
1:B:42:GLN:OE1	1:B:44:PHE:HE1	2.04	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:697:PRO:CB	1:B:725:ILE:HD13	2.51	0.41
1:B:425:GLN:HA	1:B:426:PHE:HA	1.79	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:A:217:VAL:HG11	1:A:339:PHE:CE2	2.56	0.41
1:B:307:ASN:HA	1:B:308:PRO:HD3	1.93	0.40
1:A:280:ASP:CG	1:A:280:ASP:O	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:137:ARG:HG3	1:B:137:ARG:HH11	1.86	0.40
1:B:45:LEU:HD22	1:B:97:ASP:HB3	2.02	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:551:ALA:HA	1:B:610:ALA:HA	2.03	0.40
1:B:92:TYR:HD2	1:B:137:ARG:HD3	1.85	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 8
1	B	699/731 (96%)	620 (89%)	65 (9%)	14 (2%)	8 13
All	All	1395/1462 (95%)	1237 (89%)	125 (9%)	33 (2%)	6 10

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%)	10	20
1	B	621/644 (96%)	559 (90%)	62 (10%)	8	16
All	All	1240/1288 (96%)	1122 (90%)	118 (10%)	9	18

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

Some 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 carbohydrates 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.