



Full wwPDB X-ray Structure Validation Report ⓘ

May 22, 2020 – 06:42 am BST

PDB ID : 1KMH
Title : Crystal Structure of spinach chloroplast F1-ATPase complexed with tentoxin
Authors : Groth, G.
Deposited on : 2001-12-16
Resolution : 3.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
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) : 2.11

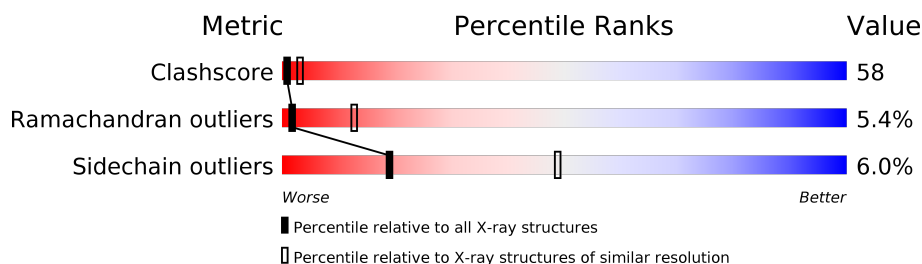
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)

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 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	507	
2	B	498	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 7217 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.

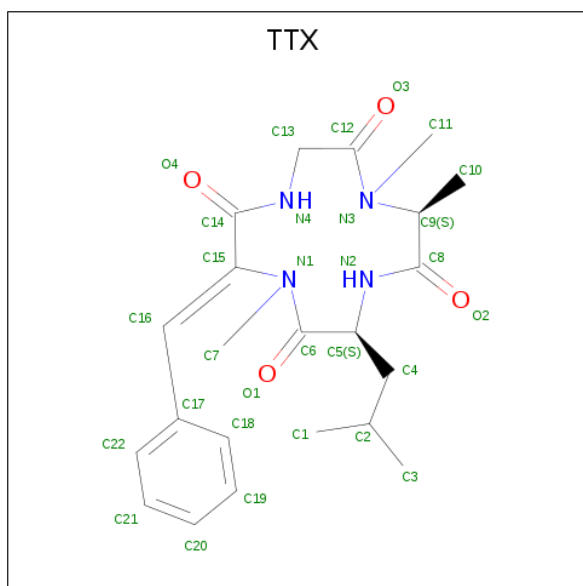
- Molecule 1 is a protein called ATPase alpha subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	477	Total	C	N	O	S	0	0	0
			3647	2296	628	710	13			

- Molecule 2 is a protein called ATPase beta subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	467	Total	C	N	O	S	0	0	0
			3540	2234	612	680	14			

- Molecule 3 is TENTOXIN (three-letter code: TTX) (formula: $C_{22}H_{30}N_4O_4$).



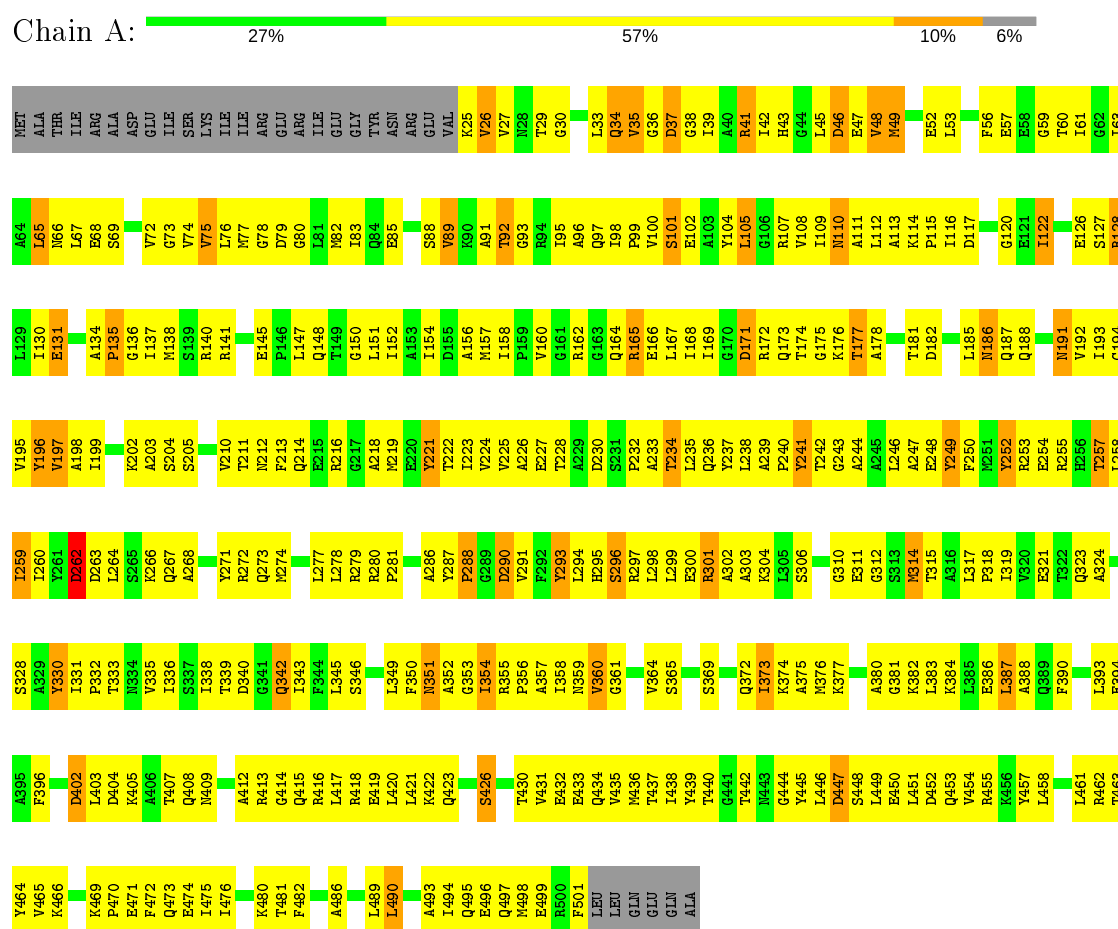
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	B	1	Total	C	N	O	0	0
			30	22	4	4		

3 Residue-property plots

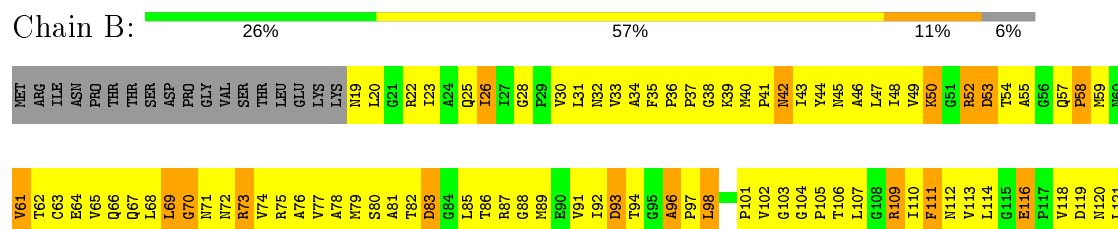
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according 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: ATPase alpha subunit



• Molecule 2: ATPase beta subunit



L469	K392	S320	L254	I186	R122
P470	E393	I321	T256	P123	
E471	T394	S322	M256		
	L395	S323	A257	T126	
Q472	Q396	I324	E258	R127	
A473	R397	Q325	Y259	T128	
F474	Y398	A326	F260	T129	
Y475	K399	Y327	R261	S130	
L476	E400	Y328	D262	P131	
V477	L401	V329	V263	H132	
	Q402		N264	S197	
I480	D403	D333	E265	R134	
D481	I404	L334	Q266	S135	
E482	I405	T335	L267	A136	
T484	A406		V268	P137	
A483	I407	A338	L269	A138	
A485	L408		L270	F139	
LYS	G409	T341	F271	T140	
ALA	L410	T342	D272	R205	
NET	D411	F343	D273	L142	
ASN	E412	A344	N274	D143	
LEU	L413	H345	I275	T144	
GLU	S414	L346	F276	K145	
NET		D347	R277	L146	
GLU	D417		F278	S147	
SER	R418	T350	V279	I148	
LYS	L419	V351	Q280	F149	
LEU	T420	L352	A281		
LYS	V421	S353	G282		
LYS	A422		S283	G152	
	R423	L356	E284	I153	
	A424	A357	V285	K154	
	R425		S286	V155	
	K426	I361	A287	V156	
	I427	Y362	L288	N157	
	E428	P363	L289	L158	
	R429	A364	G289	I159	
	F430		R291	A160	
	L431	P367		P161	
	S432	L368	V296	Y162	
	Q433	D369	G297	R163	
	P434		Y298	R164	
	F435	S372	Q299	G165	
		T373	P300	G166	
		M374	T301	K167	
		L375	L302	I168	
		Q376		G169	
		P377	E305	L170	
		R378		F171	
		I379	S308		
		V380	L309	G175	
		G381	Q310	V176	
			E311	G177	
			R246	K178	
			R312	T179	
			I313	V180	
			T314	L181	
			S315	I182	
			T316	M183	
				E184	
				T251	
				G253	
				A253	

4 Data and refinement statistics

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

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α , β , γ	146.89Å 146.89Å 381.68Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	6.00 – 3.40	Depositor
% Data completeness (in resolution range)	92.5 (6.00-3.40)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	REFMAC 5.0, CNS	Depositor
R, R_{free}	0.297 , 0.319	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	7217	wwPDB-VP
Average B, all atoms (Å ²)	139.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

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

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	1.13	10/3695 (0.3%)	1.02	11/5002 (0.2%)
2	B	1.16	12/3598 (0.3%)	1.06	16/4883 (0.3%)
All	All	1.15	22/7293 (0.3%)	1.04	27/9885 (0.3%)

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	73	ARG	CZ-NH1	9.20	1.45	1.33
1	A	196	TYR	CE2-CZ	-8.64	1.27	1.38
1	A	197	VAL	CB-CG1	8.01	1.69	1.52
1	A	221	TYR	CG-CD2	-7.17	1.29	1.39
2	B	237	GLY	C-O	-6.61	1.13	1.23
2	B	77	VAL	CA-CB	-6.32	1.41	1.54
2	B	80	SER	CB-OG	6.24	1.50	1.42
2	B	28	GLY	C-O	-5.97	1.14	1.23
2	B	244	GLY	C-O	5.95	1.33	1.23
1	A	252	TYR	CG-CD1	-5.92	1.31	1.39
1	A	75	VAL	C-O	-5.89	1.12	1.23
1	A	241	TYR	CG-CD2	-5.78	1.31	1.39
2	B	111	PHE	CE1-CZ	-5.73	1.26	1.37
2	B	232	VAL	CB-CG1	-5.63	1.41	1.52
1	A	293	TYR	CB-CG	-5.55	1.43	1.51
1	A	74	VAL	CB-CG2	-5.50	1.41	1.52
1	A	72	VAL	CA-CB	-5.30	1.43	1.54
1	A	63	ILE	CA-CB	-5.26	1.42	1.54
2	B	96	ALA	C-O	-5.17	1.13	1.23
2	B	109	ARG	CG-CD	-5.16	1.39	1.51
2	B	305	GLU	CD-OE1	5.09	1.31	1.25
2	B	34	ALA	CA-CB	-5.03	1.41	1.52

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	73	ARG	NE-CZ-NH2	-12.08	114.26	120.30
2	B	83	ASP	CB-CG-OD2	9.97	127.27	118.30
1	A	117	ASP	CB-CG-OD2	7.85	125.36	118.30
1	A	301	ARG	NE-CZ-NH1	-6.93	116.83	120.30
2	B	333	ASP	CB-CG-OD2	6.69	124.32	118.30
1	A	259	ILE	CG1-CB-CG2	-6.43	97.24	111.40
2	B	116	GLU	OE1-CD-OE2	6.30	130.86	123.30
2	B	305	GLU	OE1-CD-OE2	6.17	130.71	123.30
1	A	79	ASP	CB-CG-OD2	6.16	123.85	118.30
2	B	369	ASP	CB-CG-OD2	6.12	123.81	118.30
1	A	171	ASP	CB-CG-OD2	5.97	123.67	118.30
1	A	290	ASP	CB-CG-OD2	5.97	123.67	118.30
1	A	165	ARG	NE-CZ-NH1	5.71	123.16	120.30
2	B	50	LYS	N-CA-C	5.67	126.32	111.00
2	B	93	ASP	CB-CG-OD1	5.63	123.37	118.30
2	B	347	ASP	CB-CG-OD2	5.59	123.33	118.30
2	B	277	ARG	NE-CZ-NH1	-5.57	117.51	120.30
1	A	262	ASP	CB-CG-OD2	5.46	123.21	118.30
1	A	314	MET	CG-SD-CE	-5.44	91.50	100.20
2	B	73	ARG	NE-CZ-NH1	5.43	123.02	120.30
1	A	165	ARG	NE-CZ-NH2	-5.30	117.65	120.30
2	B	53	ASP	CB-CG-OD2	5.29	123.06	118.30
1	A	402	ASP	CB-CG-OD2	5.22	123.00	118.30
2	B	273	ASP	CB-CG-OD2	5.13	122.92	118.30
2	B	70	GLY	N-CA-C	-5.13	100.28	113.10
2	B	83	ASP	OD1-CG-OD2	-5.08	113.64	123.30
2	B	26	ILE	CG1-CB-CG2	-5.00	100.39	111.40

There are no chirality outliers.

There are no planarity outliers.

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	3647	0	3715	432	1
2	B	3540	0	3589	423	0
3	B	30	0	29	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	7217	0	7333	844	1

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 58.

All (844) 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)
3:B:499:TTX:C7	3:B:499:TTX:H181	1.32	1.57
1:A:274:MET:SD	1:A:274:MET:CE	2.01	1.48
1:A:131:GLU:HG2	1:A:297:ARG:NH1	1.41	1.33
1:A:131:GLU:CG	1:A:297:ARG:NH1	1.92	1.32
3:B:499:TTX:C7	3:B:499:TTX:C18	2.14	1.25
3:B:499:TTX:H73	3:B:499:TTX:C18	1.74	1.17
1:A:131:GLU:CG	1:A:297:ARG:HH12	1.56	1.15
3:B:499:TTX:H72	3:B:499:TTX:C18	1.80	1.09
3:B:499:TTX:H73	3:B:499:TTX:H181	1.14	1.08
3:B:499:TTX:H72	3:B:499:TTX:H181	1.11	1.08
1:A:131:GLU:HG3	1:A:297:ARG:CZ	1.86	1.06
1:A:131:GLU:HG3	1:A:297:ARG:NH1	1.71	1.06
2:B:275:ILE:O	2:B:278:PHE:HB3	1.56	1.03
2:B:243:PRO:HA	2:B:246:ARG:HH21	1.19	1.03
1:A:240:PRO:HB2	1:A:298:LEU:HD21	1.44	1.00
1:A:152:ILE:H	1:A:423:GLN:HE22	1.04	0.99
2:B:19:ASN:HB3	2:B:39:LYS:HD3	1.43	0.99
1:A:39:ILE:HD11	1:A:277:LEU:HB3	1.43	0.99
1:A:131:GLU:CG	1:A:297:ARG:CZ	2.40	0.97
1:A:39:ILE:CD1	1:A:277:LEU:HB3	1.97	0.94
2:B:41:PRO:HG2	2:B:74:VAL:HG11	1.51	0.92
2:B:69:LEU:HD21	2:B:75:ARG:HE	1.34	0.91
2:B:238:GLN:HE21	2:B:238:GLN:HA	1.33	0.90
2:B:46:ALA:O	2:B:94:THR:HG22	1.71	0.88
2:B:222:ILE:HG22	2:B:223:ASN:H	1.38	0.88
1:A:437:THR:HG21	1:A:462:ARG:HH21	1.40	0.87
2:B:251:LEU:HD21	2:B:309:LEU:HD22	1.56	0.86
2:B:185:LEU:HD13	2:B:324:ILE:HG21	1.56	0.86
1:A:188:GLN:O	1:A:191:ASN:HB2	1.75	0.85
1:A:240:PRO:CB	1:A:298:LEU:HD21	2.06	0.85
1:A:152:ILE:H	1:A:423:GLN:NE2	1.73	0.85
2:B:96:ALA:HB1	2:B:97:PRO:HD2	1.59	0.85
1:A:131:GLU:HG2	1:A:297:ARG:HH12	0.72	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:155:VAL:HG22	2:B:431:LEU:HD22	1.59	0.85
2:B:132:ILE:HA	2:B:255:THR:OG1	1.77	0.84
2:B:134:ARG:H	2:B:312:ARG:NH1	1.75	0.84
2:B:246:ARG:HB2	2:B:246:ARG:CZ	2.08	0.84
1:A:152:ILE:N	1:A:423:GLN:HE22	1.77	0.83
1:A:174:THR:HA	1:A:350:PHE:HZ	1.45	0.81
1:A:393:LEU:HD13	1:A:407:THR:HG23	1.60	0.81
2:B:69:LEU:HD12	2:B:73:ARG:HG2	1.62	0.81
2:B:104:GLY:N	2:B:105:PRO:HD2	1.96	0.81
2:B:122:ARG:HB3	2:B:123:PRO:HD2	1.62	0.81
2:B:30:VAL:HG21	2:B:288:LEU:HD22	1.63	0.81
1:A:440:THR:HG22	1:A:446:LEU:HG	1.62	0.80
1:A:373:ILE:HG22	1:A:374:LYS:H	1.46	0.80
1:A:232:PRO:HG2	1:A:235:LEU:HD12	1.63	0.79
1:A:381:GLY:HA2	1:A:384:LYS:HD2	1.64	0.79
2:B:152:GLY:H	2:B:157:ASN:HD21	1.29	0.79
2:B:207:ARG:HH11	2:B:207:ARG:HB3	1.47	0.79
2:B:247:MET:SD	2:B:282:GLY:HA2	2.21	0.79
2:B:390:ARG:HA	2:B:393:GLU:OE1	1.83	0.79
2:B:158:LEU:HD22	2:B:454:THR:HG22	1.65	0.78
2:B:388:ALA:O	2:B:392:LYS:HG3	1.84	0.78
1:A:174:THR:HA	1:A:350:PHE:CZ	2.18	0.78
1:A:197:VAL:HG12	1:A:199:ILE:HD11	1.63	0.78
2:B:105:PRO:HG3	2:B:126:THR:HA	1.64	0.78
2:B:147:SER:O	2:B:374:MET:HE1	1.83	0.78
1:A:264:LEU:HB3	1:A:295:HIS:CE1	2.19	0.78
1:A:53:LEU:HD11	1:A:96:ALA:HA	1.64	0.78
2:B:302:LEU:HD23	2:B:302:LEU:O	1.83	0.78
2:B:41:PRO:HB2	2:B:65:VAL:HG21	1.65	0.78
2:B:285:VAL:O	2:B:289:LEU:HD12	1.84	0.77
1:A:68:GLU:HA	2:B:25:GLN:HG2	1.67	0.77
2:B:109:ARG:NE	2:B:119:ASP:OD2	2.16	0.77
2:B:245:ALA:O	2:B:249:VAL:HG13	1.85	0.77
1:A:445:TYR:HB3	1:A:498:MET:SD	2.24	0.77
1:A:131:GLU:HB3	1:A:297:ARG:HH22	1.49	0.76
1:A:216:ARG:NH1	1:A:426:SER:HB2	2.00	0.76
2:B:389:GLN:O	2:B:393:GLU:HG3	1.84	0.76
2:B:243:PRO:HA	2:B:246:ARG:NH2	1.99	0.76
1:A:65:LEU:HD22	3:B:499:TTX:C18	2.15	0.76
2:B:387:ILE:O	2:B:391:VAL:HG23	1.85	0.76
2:B:429:ARG:HE	2:B:472:GLN:NE2	1.82	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:260:PHE:HB2	2:B:268:VAL:HG21	1.67	0.75
1:A:354:ILE:HG22	1:A:357:ALA:HA	1.69	0.75
1:A:296:SER:HB2	2:B:239:MET:HB3	1.69	0.75
2:B:276:PHE:CD2	2:B:328:TYR:HB3	2.22	0.75
2:B:429:ARG:HE	2:B:472:GLN:HE22	1.35	0.74
1:A:293:TYR:OH	2:B:246:ARG:NH2	2.20	0.74
2:B:275:ILE:HG22	2:B:327:VAL:HG22	1.69	0.74
2:B:310:GLN:HA	2:B:313:ILE:HD12	1.69	0.74
1:A:287:TYR:HB3	1:A:291:VAL:HG21	1.68	0.74
2:B:425:ARG:HD3	2:B:471:GLU:OE2	1.87	0.74
2:B:466:LEU:HB3	2:B:469:LEU:HD12	1.70	0.74
2:B:82:THR:O	2:B:85:LEU:HG	1.86	0.74
2:B:207:ARG:HB3	2:B:207:ARG:NH1	2.01	0.74
2:B:269:LEU:HD22	2:B:322:THR:HB	1.70	0.73
2:B:33:VAL:HG13	2:B:91:VAL:HG21	1.70	0.73
1:A:187:GLN:HE22	1:A:258:LEU:HD22	1.51	0.73
1:A:262:ASP:HA	1:A:319:ILE:HD12	1.69	0.73
2:B:343:PHE:HA	2:B:346:LEU:HD12	1.68	0.73
2:B:41:PRO:CG	2:B:74:VAL:HG11	2.18	0.73
1:A:413:ARG:HA	1:A:416:ARG:HD2	1.70	0.73
1:A:95:ILE:HG12	1:A:95:ILE:O	1.88	0.73
1:A:446:LEU:HA	1:A:449:LEU:HD12	1.69	0.73
1:A:66:ASN:HD22	1:A:68:GLU:CD	1.92	0.72
1:A:364:VAL:HG12	1:A:365:SER:H	1.51	0.72
2:B:160:ALA:HA	2:B:372:SER:HB3	1.71	0.72
2:B:333:ASP:OD2	2:B:335:THR:OG1	2.08	0.72
1:A:281:PRO:HB2	2:B:287:ALA:HB1	1.70	0.72
1:A:293:TYR:CD1	1:A:293:TYR:N	2.53	0.72
1:A:210:VAL:HG13	1:A:219:MET:HE1	1.72	0.72
2:B:131:PRO:HD2	2:B:134:ARG:HH21	1.55	0.72
1:A:187:GLN:OE1	1:A:192:VAL:HB	1.90	0.72
1:A:204:SER:OG	1:A:205:SER:N	2.20	0.72
1:A:158:ILE:HG21	1:A:343:ILE:HG12	1.71	0.71
1:A:461:LEU:CD2	1:A:497:GLN:HB3	2.19	0.71
1:A:49:MET:HG3	1:A:52:GLU:OE1	1.89	0.71
2:B:222:ILE:HG22	2:B:223:ASN:N	2.05	0.71
2:B:310:GLN:NE2	2:B:325:GLN:OE1	2.21	0.71
1:A:138:MET:SD	2:B:119:ASP:C	2.68	0.71
1:A:271:TYR:HD2	1:A:294:LEU:HD11	1.55	0.70
2:B:36:PRO:HD2	2:B:39:LYS:HB2	1.72	0.70
1:A:211:THR:O	1:A:213:PHE:N	2.25	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:247:ALA:HB1	1:A:257:THR:HG21	1.74	0.70
1:A:197:VAL:HG22	1:A:225:VAL:HB	1.71	0.70
2:B:286:SER:HA	2:B:291:ARG:NH1	2.07	0.70
2:B:395:LEU:HD21	2:B:428:GLU:HG2	1.73	0.70
2:B:167:LYS:HB3	2:B:325:GLN:NE2	2.05	0.70
1:A:264:LEU:HB3	1:A:295:HIS:HE1	1.54	0.69
2:B:35:PHE:HB3	2:B:36:PRO:HD2	1.73	0.69
1:A:211:THR:C	1:A:213:PHE:H	1.95	0.69
2:B:149:PHE:CD1	2:B:164:ARG:HG2	2.27	0.69
2:B:398:TYR:HA	2:B:401:LEU:HD12	1.74	0.69
1:A:131:GLU:CB	1:A:297:ARG:HH22	2.05	0.69
1:A:444:GLY:HA2	1:A:447:ASP:OD1	1.92	0.69
1:A:135:PRO:HB2	1:A:140:ARG:HH21	1.58	0.69
1:A:198:ALA:HB3	1:A:226:ALA:HB1	1.73	0.69
1:A:162:ARG:NH1	1:A:192:VAL:HG22	2.07	0.69
1:A:182:ASP:HA	1:A:185:LEU:HD12	1.75	0.69
2:B:82:THR:HB	2:B:85:LEU:HD12	1.75	0.68
1:A:131:GLU:CG	1:A:297:ARG:NH2	2.57	0.68
2:B:19:ASN:O	2:B:92:ILE:HG13	1.93	0.68
1:A:350:PHE:HB3	1:A:355:ARG:NH2	2.09	0.68
2:B:118:VAL:HG12	2:B:118:VAL:O	1.92	0.68
2:B:37:PRO:HA	2:B:72:ASN:OD1	1.93	0.68
2:B:474:PHE:O	2:B:477:VAL:HG22	1.94	0.68
2:B:264:ASN:O	2:B:266:GLN:N	2.27	0.68
2:B:423:ARG:O	2:B:427:ILE:HG13	1.94	0.68
1:A:39:ILE:HD11	1:A:277:LEU:HD13	1.74	0.68
1:A:434:GLN:O	1:A:438:ILE:HG12	1.94	0.68
1:A:486:ALA:HA	1:A:489:LEU:HB2	1.76	0.68
1:A:293:TYR:OH	2:B:246:ARG:CZ	2.42	0.68
1:A:356:PRO:HD2	1:A:423:GLN:H	1.59	0.67
1:A:126:GLU:O	1:A:127:SER:OG	2.13	0.67
1:A:198:ALA:HB3	1:A:226:ALA:CB	2.25	0.67
1:A:340:ASP:CG	2:B:207:ARG:HE	1.97	0.67
1:A:450:GLU:HB2	1:A:453:GLN:OE1	1.94	0.67
1:A:250:PHE:O	1:A:255:ARG:HB2	1.94	0.67
2:B:353:SER:HB3	2:B:356:LEU:HB2	1.76	0.66
2:B:264:ASN:HB2	2:B:266:GLN:HG3	1.75	0.66
1:A:271:TYR:CD2	1:A:294:LEU:HD11	2.30	0.66
1:A:291:VAL:HA	1:A:294:LEU:HD11	1.78	0.66
2:B:148:ILE:HD13	2:B:451:LEU:HD11	1.78	0.66
2:B:25:GLN:HB2	2:B:32:ASN:HD22	1.60	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:293:TYR:CE1	2:B:284:GLU:OE2	2.48	0.66
2:B:104:GLY:N	2:B:105:PRO:CD	2.58	0.66
1:A:216:ARG:HH12	1:A:426:SER:HB2	1.58	0.66
1:A:131:GLU:CB	1:A:297:ARG:NH2	2.59	0.66
1:A:39:ILE:HD11	1:A:277:LEU:CB	2.22	0.66
2:B:79:MET:SD	2:B:244:GLY:O	2.54	0.66
1:A:197:VAL:HG12	1:A:199:ILE:CD1	2.25	0.66
1:A:187:GLN:NE2	1:A:194:CYS:SG	2.68	0.66
1:A:187:GLN:NE2	1:A:258:LEU:HD22	2.11	0.66
1:A:381:GLY:O	1:A:384:LYS:HB2	1.95	0.66
1:A:430:THR:HG22	1:A:431:VAL:H	1.60	0.66
2:B:107:LEU:HD21	2:B:196:VAL:HG13	1.76	0.66
2:B:310:GLN:HE22	2:B:325:GLN:CD	1.98	0.66
2:B:104:GLY:O	2:B:107:LEU:HD12	1.96	0.65
2:B:435:PHE:HB2	2:B:438:ALA:HB3	1.78	0.65
1:A:295:HIS:CD2	1:A:335:VAL:HG22	2.31	0.65
1:A:33:LEU:HD21	1:A:43:HIS:HB2	1.78	0.65
1:A:356:PRO:HD2	1:A:423:GLN:N	2.10	0.65
1:A:42:ILE:HG21	1:A:45:LEU:HD12	1.78	0.65
1:A:293:TYR:HE1	2:B:284:GLU:OE2	1.80	0.65
2:B:302:LEU:C	2:B:302:LEU:HD23	2.16	0.65
2:B:83:ASP:OD1	3:B:499:TTX:O3	2.15	0.65
1:A:167:LEU:N	1:A:339:THR:HG21	2.12	0.65
2:B:171:PHE:HZ	2:B:342:THR:HB	1.63	0.64
2:B:178:LYS:O	2:B:181:LEU:HB3	1.98	0.64
2:B:149:PHE:HB2	2:B:162:TYR:O	1.96	0.64
2:B:83:ASP:OD1	3:B:499:TTX:C12	2.45	0.64
1:A:232:PRO:HG2	1:A:235:LEU:CD1	2.28	0.64
2:B:216:MET:CE	2:B:232:VAL:HG21	2.28	0.64
2:B:396:GLN:HE21	2:B:400:GLU:CD	2.00	0.64
1:A:160:VAL:HA	1:A:164:GLN:OE1	1.98	0.64
1:A:61:ILE:HG22	1:A:77:MET:SD	2.38	0.64
2:B:101:PRO:HB2	2:B:126:THR:HG21	1.80	0.64
1:A:65:LEU:HD11	1:A:75:VAL:CG2	2.28	0.63
1:A:126:GLU:OE2	1:A:253:ARG:NH2	2.31	0.63
2:B:286:SER:HA	2:B:291:ARG:HH12	1.63	0.63
1:A:135:PRO:HB2	1:A:140:ARG:HE	1.62	0.63
1:A:364:VAL:HG12	1:A:365:SER:N	2.12	0.63
1:A:376:MET:SD	1:A:435:VAL:HG22	2.38	0.63
2:B:163:ARG:HE	2:B:374:MET:CB	2.11	0.63
2:B:69:LEU:HD22	2:B:75:ARG:HH21	1.63	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:422:LYS:HD3	1:A:455:ARG:HH21	1.62	0.63
2:B:170:LEU:HD22	2:B:181:LEU:HD21	1.79	0.63
1:A:53:LEU:CD1	1:A:96:ALA:HA	2.28	0.63
1:A:138:MET:SD	2:B:120:ASN:N	2.72	0.63
2:B:296:VAL:O	2:B:296:VAL:HG12	1.98	0.63
2:B:167:LYS:HB3	2:B:325:GLN:HE21	1.63	0.63
1:A:462:ARG:HB3	1:A:466:LYS:HE3	1.80	0.63
2:B:410:LEU:O	2:B:418:ARG:CZ	2.47	0.63
1:A:461:LEU:O	1:A:465:VAL:HG23	1.99	0.62
2:B:163:ARG:HE	2:B:374:MET:CG	2.13	0.62
1:A:34:GLN:HG3	1:A:41:ARG:HB2	1.81	0.62
2:B:399:LYS:HA	2:B:402:GLN:HE21	1.65	0.62
1:A:156:ALA:O	1:A:380:ALA:HB1	2.00	0.62
1:A:461:LEU:HD22	1:A:497:GLN:HB3	1.81	0.62
2:B:219:SER:OG	2:B:221:VAL:HG23	2.00	0.62
1:A:194:CYS:O	1:A:222:THR:HA	1.99	0.62
2:B:61:VAL:HG21	2:B:85:LEU:HD21	1.81	0.62
1:A:338:ILE:HG12	2:B:239:MET:HE1	1.82	0.62
1:A:137:ILE:HG21	2:B:110:ILE:HD13	1.82	0.62
1:A:150:GLY:N	1:A:186:ASN:ND2	2.47	0.61
1:A:45:LEU:HB3	1:A:48:VAL:HG13	1.82	0.61
2:B:101:PRO:HA	2:B:129:THR:HA	1.81	0.61
2:B:136:ALA:HB1	2:B:311:GLU:O	2.01	0.61
1:A:263:ASP:H	1:A:319:ILE:HB	1.64	0.61
2:B:149:PHE:HB3	2:B:162:TYR:HB2	1.83	0.61
1:A:67:LEU:O	2:B:87:ARG:HD3	1.99	0.61
2:B:179:THR:O	2:B:182:ILE:HG22	2.01	0.61
2:B:105:PRO:CG	2:B:126:THR:HA	2.31	0.61
2:B:163:ARG:HH21	2:B:374:MET:HG3	1.66	0.61
1:A:110:ASN:HB2	1:A:114:LYS:O	2.00	0.60
2:B:245:ALA:O	2:B:249:VAL:CG1	2.49	0.60
1:A:346:SER:HB3	1:A:359:ASN:HD21	1.66	0.60
2:B:458:PHE:HA	2:B:461:ILE:HD12	1.83	0.60
2:B:49:VAL:HG22	2:B:91:VAL:HG13	1.83	0.60
1:A:359:ASN:O	1:A:361:GLY:N	2.34	0.60
2:B:378:ARG:O	2:B:379:ILE:HD13	2.01	0.60
3:B:499:TTX:C7	3:B:499:TTX:C17	2.62	0.60
2:B:167:LYS:HE2	2:B:325:GLN:HE22	1.67	0.60
1:A:100:VAL:HG23	1:A:246:LEU:HD23	1.83	0.60
2:B:42:ASN:HB2	2:B:45:ASN:OD1	2.01	0.60
2:B:81:ALA:HB1	3:B:499:TTX:H111	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:181:THR:HG23	1:A:213:PHE:CE1	2.36	0.60
1:A:66:ASN:HD22	1:A:68:GLU:CG	2.15	0.60
2:B:203:GLY:HA3	2:B:277:ARG:HB3	1.84	0.60
1:A:130:ILE:HG23	1:A:241:TYR:HB3	1.84	0.60
2:B:422:ALA:HB1	2:B:426:LYS:NZ	2.17	0.59
2:B:471:GLU:C	2:B:473:ALA:H	2.03	0.59
1:A:225:VAL:HG21	1:A:243:GLY:HA2	1.83	0.59
2:B:319:GLY:O	2:B:320:SER:HB2	2.02	0.59
2:B:308:SER:O	2:B:309:LEU:HD23	2.02	0.59
2:B:46:ALA:O	2:B:94:THR:CG2	2.46	0.59
1:A:386:GLU:C	1:A:388:ALA:H	2.06	0.59
2:B:163:ARG:HE	2:B:374:MET:HB2	1.67	0.59
1:A:128:ARG:HH12	1:A:252:TYR:HE1	1.51	0.59
2:B:121:LEU:O	2:B:122:ARG:HB2	2.03	0.59
2:B:38:GLY:O	2:B:40:MET:HG3	2.02	0.59
3:B:499:TTX:H73	3:B:499:TTX:C17	2.28	0.59
1:A:65:LEU:HD22	3:B:499:TTX:C19	2.33	0.59
2:B:397:ARG:O	2:B:401:LEU:HG	2.02	0.59
1:A:351:ASN:C	1:A:353:GLY:H	2.05	0.58
1:A:104:TYR:O	1:A:105:LEU:C	2.41	0.58
1:A:181:THR:HG23	1:A:213:PHE:HE1	1.67	0.58
1:A:258:LEU:C	1:A:259:ILE:HD12	2.24	0.58
1:A:239:ALA:HB3	1:A:240:PRO:CD	2.33	0.58
1:A:296:SER:N	1:A:338:ILE:HD13	2.17	0.58
2:B:156:VAL:O	2:B:158:LEU:N	2.36	0.58
1:A:237:TYR:O	1:A:240:PRO:HD2	2.02	0.58
1:A:293:TYR:OH	2:B:246:ARG:NH1	2.37	0.58
1:A:145:GLU:OE1	1:A:304:LYS:NZ	2.31	0.58
1:A:138:MET:SD	2:B:119:ASP:CA	2.92	0.58
1:A:249:TYR:O	1:A:253:ARG:HG3	2.04	0.58
1:A:346:SER:OG	1:A:349:LEU:HB2	2.03	0.58
1:A:158:ILE:HD11	1:A:360:VAL:HG13	1.84	0.58
2:B:69:LEU:HD21	2:B:75:ARG:HB2	1.85	0.58
1:A:233:ALA:C	1:A:235:LEU:H	2.08	0.57
1:A:274:MET:CG	1:A:274:MET:CE	2.81	0.57
2:B:141:GLN:O	2:B:316:THR:HB	2.05	0.57
1:A:210:VAL:HG13	1:A:219:MET:CE	2.34	0.57
2:B:240:ASN:N	2:B:240:ASN:HD22	2.02	0.57
2:B:398:TYR:O	2:B:402:GLN:HG3	2.04	0.57
2:B:463:SER:OG	2:B:465:GLU:HG3	2.04	0.57
2:B:48:ILE:HG22	2:B:92:ILE:CG2	2.35	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:336:ILE:HG23	1:A:342:GLN:HE22	1.69	0.57
2:B:275:ILE:N	2:B:326:ALA:O	2.30	0.57
2:B:471:GLU:O	2:B:473:ALA:N	2.37	0.57
2:B:64:GLU:CD	2:B:248:ARG:HE	2.08	0.57
1:A:375:ALA:HB2	1:A:480:LYS:O	2.04	0.57
1:A:108:VAL:HA	1:A:224:VAL:HB	1.87	0.57
1:A:111:ALA:C	1:A:112:LEU:HD23	2.25	0.57
1:A:495:GLN:HA	1:A:498:MET:HE2	1.87	0.57
2:B:278:PHE:CZ	2:B:309:LEU:HD12	2.40	0.57
2:B:196:VAL:HG11	2:B:260:PHE:CE2	2.40	0.57
2:B:285:VAL:O	2:B:289:LEU:CD1	2.52	0.57
2:B:53:ASP:OD1	2:B:58:PRO:HG3	2.04	0.56
1:A:167:LEU:H	1:A:339:THR:HG21	1.68	0.56
1:A:56:PHE:CD1	1:A:89:VAL:CG1	2.88	0.56
2:B:85:LEU:HD22	2:B:89:MET:HE1	1.87	0.56
1:A:167:LEU:HG	1:A:169:ILE:HG13	1.87	0.56
1:A:233:ALA:O	1:A:235:LEU:N	2.37	0.56
1:A:300:GLU:C	1:A:302:ALA:H	2.08	0.56
1:A:433:GLU:OE2	1:A:466:LYS:HE2	2.05	0.56
2:B:222:ILE:CG2	2:B:223:ASN:H	2.12	0.56
1:A:266:LYS:NZ	1:A:321:GLU:OE1	2.38	0.56
2:B:204:GLU:C	2:B:239:MET:HG3	2.26	0.56
2:B:310:GLN:HE22	2:B:325:GLN:NE2	2.03	0.56
1:A:254:GLU:HG2	1:A:310:GLY:CA	2.35	0.56
1:A:437:THR:HG23	1:A:458:LEU:HD22	1.88	0.56
1:A:446:LEU:HA	1:A:449:LEU:CD1	2.36	0.56
2:B:111:PHE:HB2	2:B:235:VAL:HG22	1.86	0.56
1:A:239:ALA:HB3	1:A:240:PRO:HD3	1.86	0.56
1:A:259:ILE:HD13	1:A:314:MET:HG3	1.87	0.56
1:A:162:ARG:HA	1:A:315:THR:OG1	2.06	0.56
1:A:451:LEU:O	1:A:453:GLN:N	2.39	0.56
1:A:148:GLN:HE21	1:A:431:VAL:HG21	1.70	0.56
1:A:472:PHE:O	1:A:476:ILE:HG12	2.06	0.56
1:A:236:GLN:O	1:A:267:GLN:HG3	2.05	0.56
1:A:431:VAL:O	1:A:434:GLN:HB2	2.06	0.56
2:B:186:ILE:HG23	2:B:190:ALA:HB3	1.88	0.56
2:B:83:ASP:CG	3:B:499:TTX:O3	2.44	0.56
2:B:195:GLY:O	2:B:231:LYS:HE2	2.06	0.56
2:B:134:ARG:O	2:B:312:ARG:HD2	2.06	0.56
2:B:35:PHE:HB3	2:B:36:PRO:CD	2.36	0.56
1:A:287:TYR:CZ	1:A:331:ILE:HD13	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:68:LEU:O	2:B:69:LEU:C	2.44	0.55
1:A:419:GLU:HA	1:A:422:LYS:HG3	1.87	0.55
1:A:227:GLU:OE2	1:A:239:ALA:HA	2.06	0.55
2:B:167:LYS:CE	2:B:310:GLN:NE2	2.69	0.55
2:B:237:GLY:HA3	2:B:249:VAL:HG11	1.88	0.55
2:B:280:GLN:O	2:B:284:GLU:HG3	2.06	0.55
1:A:37:ASP:O	1:A:277:LEU:HD13	2.07	0.55
2:B:96:ALA:HB1	2:B:97:PRO:CD	2.34	0.55
1:A:211:THR:C	1:A:213:PHE:N	2.60	0.55
2:B:148:ILE:HG12	2:B:149:PHE:H	1.71	0.55
1:A:197:VAL:HA	1:A:225:VAL:O	2.07	0.55
2:B:240:ASN:N	2:B:240:ASN:ND2	2.55	0.55
2:B:274:ASN:HA	2:B:326:ALA:O	2.07	0.55
2:B:299:GLN:H	2:B:299:GLN:NE2	2.04	0.55
1:A:138:MET:SD	2:B:119:ASP:HA	2.47	0.55
1:A:196:TYR:CZ	1:A:262:ASP:OD2	2.60	0.55
1:A:340:ASP:OD1	2:B:207:ARG:NE	2.31	0.55
1:A:493:ALA:HB1	1:A:497:GLN:NE2	2.21	0.55
1:A:101:SER:OG	1:A:102:GLU:N	2.39	0.54
2:B:299:GLN:H	2:B:299:GLN:HE21	1.54	0.54
2:B:327:VAL:HG21	2:B:342:THR:HG21	1.89	0.54
1:A:241:TYR:HE1	1:A:267:GLN:HE22	1.55	0.54
1:A:387:LEU:HD13	1:A:421:LEU:HD11	1.90	0.54
1:A:47:GLU:O	1:A:48:VAL:C	2.44	0.54
2:B:103:GLY:C	2:B:105:PRO:HD2	2.27	0.54
2:B:158:LEU:HD22	2:B:454:THR:CG2	2.36	0.54
2:B:146:LEU:HD13	2:B:163:ARG:NH2	2.21	0.54
2:B:269:LEU:HD12	2:B:271:PHE:CZ	2.41	0.54
1:A:193:ILE:N	1:A:193:ILE:HD12	2.23	0.54
1:A:210:VAL:O	1:A:214:GLN:HG3	2.06	0.54
1:A:216:ARG:CZ	1:A:426:SER:HB2	2.37	0.54
2:B:270:LEU:HD22	2:B:313:ILE:HG23	1.89	0.54
1:A:387:LEU:HD21	1:A:417:LEU:HB2	1.89	0.54
1:A:496:GLU:O	1:A:499:GLU:HB2	2.08	0.54
1:A:111:ALA:HB2	1:A:227:GLU:CG	2.38	0.54
1:A:244:ALA:O	1:A:248:GLU:HG3	2.08	0.54
1:A:39:ILE:HD11	1:A:277:LEU:CD1	2.38	0.54
2:B:255:THR:HA	2:B:258:GLU:HG2	1.88	0.54
1:A:375:ALA:HB2	1:A:481:THR:HA	1.88	0.54
1:A:152:ILE:HG22	1:A:421:LEU:HD23	1.90	0.54
1:A:196:TYR:CE1	1:A:262:ASP:OD2	2.61	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:199:ILE:HD12	1:A:199:ILE:N	2.22	0.54
1:A:210:VAL:HG22	1:A:224:VAL:HG21	1.89	0.54
2:B:182:ILE:O	2:B:186:ILE:HG13	2.07	0.54
2:B:275:ILE:O	2:B:275:ILE:HG13	2.08	0.53
2:B:52:ARG:HD2	2:B:61:VAL:HG23	1.89	0.53
1:A:111:ALA:HB2	1:A:227:GLU:CD	2.28	0.53
2:B:368:LEU:HD12	2:B:399:LYS:HD3	1.91	0.53
2:B:171:PHE:CZ	2:B:342:THR:HB	2.43	0.53
2:B:183:MET:CE	2:B:212:LEU:HB2	2.38	0.53
2:B:300:PRO:HG2	2:B:301:THR:HG23	1.90	0.53
2:B:470:PRO:HG2	2:B:473:ALA:HB2	1.90	0.53
2:B:351:VAL:HB	2:B:369:ASP:O	2.09	0.53
2:B:362:TYR:HA	2:B:363:PRO:C	2.29	0.53
2:B:45:ASN:O	2:B:65:VAL:HG23	2.08	0.53
1:A:430:THR:HG22	1:A:431:VAL:N	2.24	0.53
1:A:115:PRO:HG3	1:A:120:GLY:O	2.09	0.53
1:A:131:GLU:HG2	1:A:297:ARG:CZ	2.21	0.53
1:A:451:LEU:C	1:A:453:GLN:H	2.11	0.53
1:A:182:ASP:O	1:A:185:LEU:HB2	2.08	0.53
1:A:302:ALA:HA	1:A:314:MET:HE2	1.90	0.53
2:B:278:PHE:HZ	2:B:309:LEU:HD12	1.74	0.53
1:A:390:PHE:O	1:A:394:GLU:HG3	2.08	0.53
1:A:412:ALA:HB1	1:A:416:ARG:NH2	2.24	0.53
1:A:457:TYR:O	1:A:461:LEU:HG	2.09	0.53
1:A:65:LEU:HB2	1:A:280:ARG:HH22	1.74	0.53
2:B:106:THR:O	2:B:111:PHE:HE1	1.92	0.53
2:B:183:MET:HE1	2:B:212:LEU:HB2	1.90	0.53
2:B:201:GLY:O	2:B:249:VAL:HG21	2.08	0.53
2:B:429:ARG:HD2	2:B:471:GLU:HB3	1.90	0.53
2:B:171:PHE:HZ	2:B:342:THR:CB	2.22	0.52
2:B:361:ILE:N	2:B:361:ILE:HD12	2.24	0.52
2:B:396:GLN:NE2	2:B:400:GLU:CD	2.62	0.52
1:A:122:ILE:H	1:A:122:ILE:HD13	1.73	0.52
1:A:359:ASN:C	1:A:361:GLY:H	2.12	0.52
2:B:260:PHE:HB2	2:B:268:VAL:CG2	2.38	0.52
1:A:350:PHE:HB3	1:A:355:ARG:CZ	2.39	0.52
1:A:386:GLU:O	1:A:388:ALA:N	2.42	0.52
1:A:387:LEU:CD1	1:A:421:LEU:HD11	2.39	0.52
2:B:209:GLY:HA2	2:B:236:TYR:OH	2.09	0.52
2:B:264:ASN:O	2:B:265:GLU:C	2.46	0.52
2:B:473:ALA:O	2:B:483:ALA:HA	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:195:VAL:HG12	1:A:197:VAL:HG23	1.91	0.52
1:A:66:ASN:HB2	1:A:73:GLY:HA3	1.92	0.52
2:B:107:LEU:HA	2:B:232:VAL:O	2.09	0.52
1:A:259:ILE:N	1:A:259:ILE:HD12	2.24	0.52
1:A:291:VAL:HA	1:A:294:LEU:CD1	2.40	0.52
1:A:419:GLU:OE1	1:A:451:LEU:HA	2.10	0.52
1:A:422:LYS:C	1:A:423:GLN:HG3	2.30	0.52
2:B:270:LEU:CD2	2:B:313:ILE:HG23	2.40	0.52
2:B:19:ASN:O	2:B:92:ILE:HA	2.09	0.52
1:A:164:GLN:O	1:A:315:THR:HG23	2.10	0.52
1:A:57:GLU:C	1:A:59:GLY:H	2.13	0.52
2:B:113:VAL:HG22	2:B:249:VAL:HG12	1.90	0.52
2:B:122:ARG:HB3	2:B:123:PRO:CD	2.37	0.52
2:B:246:ARG:HB2	2:B:246:ARG:NH1	2.25	0.52
2:B:274:ASN:H	2:B:326:ALA:HB3	1.73	0.52
1:A:466:LYS:HA	1:A:473:GLN:OE1	2.10	0.52
2:B:198:VAL:HG22	2:B:233:ALA:HB3	1.91	0.52
2:B:52:ARG:HD2	2:B:61:VAL:CG2	2.40	0.52
1:A:262:ASP:O	1:A:263:ASP:HB2	2.09	0.52
1:A:141:ARG:HG3	1:A:306:SER:HA	1.92	0.52
1:A:431:VAL:O	1:A:435:VAL:HG23	2.09	0.52
2:B:144:THR:O	2:B:146:LEU:HG	2.09	0.52
2:B:189:ILE:O	2:B:193:HIS:HB2	2.10	0.52
1:A:258:LEU:HA	1:A:315:THR:O	2.11	0.51
1:A:338:ILE:HA	2:B:239:MET:HE1	1.91	0.51
1:A:331:ILE:HG22	1:A:332:PRO:N	2.23	0.51
2:B:165:GLY:CA	2:B:315:SER:HB3	2.41	0.51
1:A:288:PRO:HG2	1:A:291:VAL:HG22	1.90	0.51
1:A:359:ASN:C	1:A:361:GLY:N	2.64	0.51
1:A:52:GLU:OE2	1:A:91:ALA:HB1	2.10	0.51
2:B:109:ARG:HE	2:B:119:ASP:CG	2.11	0.51
2:B:19:ASN:O	2:B:20:LEU:HD23	2.09	0.51
2:B:202:VAL:HB	2:B:274:ASN:O	2.10	0.51
2:B:184:GLU:OE2	2:B:435:PHE:HA	2.11	0.51
1:A:158:ILE:HD12	1:A:158:ILE:N	2.25	0.51
1:A:237:TYR:O	1:A:267:GLN:NE2	2.43	0.51
1:A:498:MET:HA	1:A:501:PHE:HD1	1.74	0.51
2:B:299:GLN:HB2	2:B:300:PRO:HD2	1.91	0.51
2:B:63:CYS:SG	2:B:78:ALA:HA	2.50	0.51
2:B:255:THR:HA	2:B:258:GLU:OE2	2.10	0.51
1:A:187:GLN:OE1	1:A:194:CYS:SG	2.69	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:167:LYS:HE2	2:B:325:GLN:NE2	2.26	0.51
2:B:167:LYS:HG2	2:B:323:SER:OG	2.10	0.51
1:A:273:GLN:O	1:A:277:LEU:HG	2.10	0.51
1:A:440:THR:CG2	1:A:446:LEU:HG	2.37	0.51
2:B:207:ARG:O	2:B:209:GLY:N	2.44	0.51
2:B:429:ARG:C	2:B:431:LEU:N	2.63	0.51
1:A:219:MET:O	1:A:219:MET:HG2	2.11	0.51
1:A:193:ILE:HD11	1:A:255:ARG:HH11	1.76	0.51
1:A:272:ARG:HG3	1:A:286:ALA:O	2.11	0.51
1:A:36:GLY:O	1:A:37:ASP:CB	2.58	0.51
1:A:109:ILE:HG23	1:A:225:VAL:HA	1.92	0.51
1:A:248:GLU:OE2	1:A:301:ARG:HB3	2.11	0.51
1:A:419:GLU:HG2	1:A:422:LYS:HE3	1.93	0.51
1:A:76:LEU:HD11	1:A:83:ILE:HG13	1.92	0.51
2:B:163:ARG:NE	2:B:374:MET:HB2	2.25	0.51
2:B:176:VAL:HG23	2:B:352:LEU:HD23	1.92	0.51
1:A:254:GLU:HG2	1:A:310:GLY:HA3	1.94	0.50
2:B:112:ASN:HB3	2:B:114:LEU:H	1.76	0.50
1:A:166:GLU:O	1:A:317:LEU:HA	2.12	0.50
1:A:471:GLU:O	1:A:475:ILE:HG12	2.11	0.50
2:B:106:THR:HA	2:B:111:PHE:HZ	1.76	0.50
2:B:302:LEU:C	2:B:302:LEU:CD2	2.79	0.50
2:B:276:PHE:CG	2:B:328:TYR:HB3	2.46	0.50
2:B:377:PRO:HD3	2:B:385:TYR:CE2	2.45	0.50
1:A:152:ILE:HG23	1:A:438:ILE:HD11	1.92	0.50
1:A:300:GLU:C	1:A:302:ALA:N	2.65	0.50
1:A:197:VAL:CG1	1:A:199:ILE:HD11	2.36	0.50
2:B:134:ARG:H	2:B:312:ARG:HH12	1.53	0.50
1:A:278:LEU:O	1:A:279:ARG:HB2	2.11	0.50
1:A:259:ILE:HD13	1:A:314:MET:CG	2.41	0.50
1:A:493:ALA:HB1	1:A:497:GLN:HE22	1.76	0.50
2:B:243:PRO:HB3	2:B:284:GLU:OE1	2.12	0.50
2:B:203:GLY:O	2:B:277:ARG:HG3	2.12	0.50
1:A:165:ARG:HG2	1:A:299:LEU:O	2.12	0.50
1:A:166:GLU:OE1	1:A:166:GLU:HA	2.11	0.50
2:B:251:LEU:HD21	2:B:309:LEU:HD13	1.93	0.50
2:B:410:LEU:O	2:B:418:ARG:NH2	2.45	0.50
2:B:423:ARG:HA	2:B:426:LYS:HD2	1.93	0.50
1:A:65:LEU:CD1	1:A:278:LEU:CD1	2.90	0.50
1:A:166:GLU:O	1:A:318:PRO:HD2	2.12	0.50
1:A:157:MET:SD	1:A:360:VAL:HG11	2.51	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:VAL:O	1:A:219:MET:HE3	2.12	0.50
1:A:436:MET:O	1:A:439:TYR:HB3	2.11	0.50
1:A:100:VAL:O	1:A:101:SER:HB3	2.10	0.50
1:A:351:ASN:O	1:A:353:GLY:N	2.45	0.50
2:B:238:GLN:HE21	2:B:238:GLN:CA	2.08	0.50
2:B:255:THR:O	2:B:258:GLU:HG2	2.12	0.50
2:B:148:ILE:HA	2:B:374:MET:CE	2.42	0.50
1:A:39:ILE:HD13	1:A:277:LEU:HB3	1.89	0.49
2:B:110:ILE:HB	2:B:119:ASP:HB3	1.94	0.49
1:A:345:LEU:CD2	1:A:358:ILE:HD13	2.42	0.49
1:A:131:GLU:CD	3:B:499:TTX:H42	2.33	0.49
1:A:210:VAL:O	1:A:210:VAL:CG1	2.60	0.49
2:B:275:ILE:CG2	2:B:327:VAL:HG22	2.41	0.49
1:A:339:THR:HG22	1:A:340:ASP:N	2.26	0.49
2:B:235:VAL:HG11	2:B:252:THR:CG2	2.43	0.49
1:A:33:LEU:CD2	1:A:43:HIS:HB2	2.43	0.49
1:A:47:GLU:O	1:A:48:VAL:O	2.30	0.49
1:A:57:GLU:OE2	1:A:88:SER:N	2.33	0.49
2:B:48:ILE:O	2:B:92:ILE:HG22	2.13	0.49
1:A:260:ILE:HA	1:A:317:LEU:O	2.13	0.49
2:B:279:VAL:O	2:B:282:GLY:N	2.42	0.49
1:A:263:ASP:HA	1:A:319:ILE:O	2.13	0.49
1:A:56:PHE:CE1	1:A:89:VAL:HG11	2.48	0.49
2:B:197:SER:O	2:B:232:VAL:HA	2.12	0.49
1:A:240:PRO:HB2	1:A:298:LEU:CD2	2.29	0.48
2:B:94:THR:HG23	2:B:96:ALA:H	1.78	0.48
1:A:35:VAL:HG11	1:A:83:ILE:HB	1.94	0.48
2:B:251:LEU:CD2	2:B:309:LEU:HD22	2.37	0.48
1:A:386:GLU:OE2	1:A:442:THR:HG23	2.14	0.48
2:B:475:TYR:CE1	2:B:476:LEU:HG	2.48	0.48
1:A:440:THR:HG23	1:A:494:ILE:HG21	1.96	0.48
1:A:95:ILE:O	1:A:95:ILE:HG23	2.12	0.48
2:B:196:VAL:HG11	2:B:260:PHE:CD2	2.49	0.48
2:B:216:MET:HE1	2:B:232:VAL:HG21	1.94	0.48
2:B:75:ARG:CG	2:B:76:ALA:N	2.76	0.48
1:A:498:MET:HA	1:A:501:PHE:CD1	2.48	0.48
2:B:139:PHE:O	2:B:142:LEU:HD12	2.14	0.48
2:B:391:VAL:HG13	2:B:427:ILE:CG2	2.44	0.48
2:B:69:LEU:CD2	2:B:75:ARG:HH21	2.26	0.48
1:A:295:HIS:C	1:A:297:ARG:N	2.67	0.48
2:B:186:ILE:HA	2:B:190:ALA:HB3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:422:ALA:HB1	2:B:426:LYS:HZ1	1.79	0.48
1:A:295:HIS:C	1:A:297:ARG:H	2.17	0.48
1:A:69:SER:HB3	2:B:25:GLN:HE21	1.79	0.48
2:B:286:SER:HB2	2:B:299:GLN:HB3	1.95	0.48
1:A:405:LYS:HA	1:A:408:GLN:HG3	1.96	0.48
2:B:207:ARG:CB	2:B:207:ARG:NH1	2.75	0.48
2:B:85:LEU:CD2	2:B:89:MET:HE1	2.43	0.48
2:B:247:MET:O	2:B:248:ARG:HG2	2.14	0.47
2:B:251:LEU:HD21	2:B:309:LEU:CD2	2.34	0.47
2:B:276:PHE:C	2:B:278:PHE:H	2.18	0.47
2:B:31:LEU:O	2:B:76:ALA:N	2.47	0.47
2:B:411:ASP:C	2:B:418:ARG:HH22	2.17	0.47
2:B:42:ASN:ND2	2:B:45:ASN:ND2	2.62	0.47
1:A:36:GLY:O	1:A:37:ASP:HB2	2.14	0.47
1:A:396:PHE:N	1:A:396:PHE:CD1	2.82	0.47
2:B:149:PHE:HB3	2:B:162:TYR:CB	2.44	0.47
1:A:218:ALA:HA	1:A:221:TYR:CE2	2.49	0.47
2:B:413:LEU:HD22	2:B:417:ASP:HB3	1.96	0.47
1:A:80:GLY:C	1:A:82:MET:N	2.68	0.47
2:B:381:GLY:O	2:B:385:TYR:HB2	2.15	0.47
1:A:383:LEU:HD12	1:A:417:LEU:HD13	1.96	0.47
1:A:463:THR:HA	1:A:466:LYS:HD2	1.96	0.47
2:B:207:ARG:O	2:B:208:GLU:C	2.52	0.47
2:B:168:ILE:O	2:B:325:GLN:HG3	2.14	0.47
2:B:47:LEU:HD23	2:B:93:ASP:HA	1.97	0.47
2:B:333:ASP:OD1	2:B:335:THR:OG1	2.33	0.47
3:B:499:TTX:H71	3:B:499:TTX:H21	1.96	0.47
1:A:223:ILE:N	1:A:223:ILE:HD12	2.30	0.47
2:B:26:ILE:HD12	2:B:26:ILE:N	2.30	0.47
1:A:33:LEU:HB2	1:A:41:ARG:O	2.14	0.47
1:A:439:TYR:CD1	1:A:490:LEU:HD13	2.49	0.47
1:A:432:GLU:OE2	1:A:473:GLN:O	2.32	0.47
2:B:163:ARG:HG2	2:B:374:MET:SD	2.54	0.47
2:B:386:GLU:OE1	2:B:390:ARG:NH2	2.48	0.47
2:B:19:ASN:CB	2:B:39:LYS:HD3	2.31	0.47
2:B:62:THR:O	2:B:79:MET:HG2	2.15	0.47
2:B:264:ASN:C	2:B:266:GLN:N	2.68	0.47
2:B:391:VAL:HG13	2:B:427:ILE:HG21	1.96	0.47
1:A:135:PRO:HB2	1:A:140:ARG:NH2	2.28	0.47
1:A:65:LEU:CD1	1:A:278:LEU:HD11	2.45	0.47
2:B:184:GLU:HB2	2:B:435:PHE:CD2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:LEU:O	1:A:239:ALA:C	2.51	0.46
1:A:242:THR:O	1:A:244:ALA:N	2.48	0.46
1:A:430:THR:O	1:A:434:GLN:HG3	2.14	0.46
1:A:349:LEU:O	1:A:354:ILE:HB	2.15	0.46
1:A:469:LYS:N	1:A:470:PRO:CD	2.78	0.46
2:B:361:ILE:HD12	2:B:361:ILE:H	1.80	0.46
3:B:499:TTX:H72	3:B:499:TTX:C17	2.35	0.46
1:A:197:VAL:HG21	1:A:243:GLY:HA3	1.98	0.46
1:A:27:VAL:HG13	1:A:47:GLU:HG3	1.96	0.46
1:A:176:LYS:HG2	1:A:345:LEU:HD12	1.97	0.46
1:A:33:LEU:CG	1:A:43:HIS:HB2	2.45	0.46
2:B:466:LEU:HD13	2:B:480:ILE:HD11	1.97	0.46
2:B:86:THR:HG22	2:B:87:ARG:N	2.30	0.46
1:A:233:ALA:C	1:A:235:LEU:N	2.69	0.46
3:B:499:TTX:C6	3:B:499:TTX:HN41	2.28	0.46
1:A:323:GLN:O	1:A:324:ALA:HB3	2.16	0.46
1:A:454:VAL:O	1:A:457:TYR:HB2	2.15	0.46
1:A:165:ARG:NH2	2:B:205:ARG:HD3	2.30	0.46
1:A:151:LEU:HA	1:A:423:GLN:HE22	1.81	0.46
1:A:199:ILE:HG13	1:A:239:ALA:CB	2.46	0.46
1:A:272:ARG:HD2	1:A:286:ALA:HB3	1.97	0.46
1:A:356:PRO:CD	1:A:423:GLN:H	2.25	0.46
1:A:417:LEU:O	1:A:421:LEU:HG	2.16	0.46
1:A:457:TYR:HA	1:A:501:PHE:CZ	2.51	0.46
2:B:148:ILE:HG12	2:B:149:PHE:N	2.30	0.46
1:A:264:LEU:HD11	1:A:318:PRO:HB2	1.96	0.46
1:A:351:ASN:C	1:A:353:GLY:N	2.69	0.46
1:A:91:ALA:O	1:A:93:GLY:N	2.49	0.46
2:B:298:TYR:CE1	2:B:338:ALA:HB2	2.51	0.46
2:B:429:ARG:C	2:B:431:LEU:H	2.17	0.46
1:A:158:ILE:HG21	1:A:343:ILE:CG1	2.44	0.46
1:A:128:ARG:HH11	1:A:248:GLU:HB2	1.81	0.46
1:A:65:LEU:HD11	1:A:278:LEU:HD11	1.98	0.46
2:B:227:ILE:O	2:B:227:ILE:HG22	2.16	0.46
1:A:167:LEU:HD12	1:A:168:ILE:H	1.81	0.45
2:B:186:ILE:CG2	2:B:190:ALA:HB3	2.46	0.45
2:B:163:ARG:HG2	2:B:374:MET:HB2	1.99	0.45
1:A:281:PRO:CB	2:B:287:ALA:HB1	2.41	0.45
2:B:19:ASN:ND2	2:B:93:ASP:OD2	2.49	0.45
1:A:486:ALA:O	1:A:490:LEU:HB2	2.16	0.45
2:B:238:GLN:NE2	2:B:238:GLN:HA	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:247:MET:C	2:B:248:ARG:HG2	2.36	0.45
2:B:161:PRO:HD2	2:B:375:LEU:HG	1.97	0.45
2:B:66:GLN:O	2:B:67:GLN:HG2	2.15	0.45
1:A:259:ILE:HD13	1:A:314:MET:SD	2.56	0.45
2:B:148:ILE:HA	2:B:374:MET:HE1	1.97	0.45
2:B:402:GLN:O	2:B:404:ILE:N	2.49	0.45
1:A:211:THR:O	1:A:214:GLN:N	2.45	0.45
1:A:240:PRO:CG	1:A:298:LEU:HD21	2.47	0.45
2:B:222:ILE:CG2	2:B:223:ASN:N	2.74	0.45
1:A:154:ILE:O	1:A:158:ILE:O	2.35	0.45
1:A:25:LYS:C	1:A:27:VAL:H	2.20	0.45
2:B:107:LEU:HD23	2:B:232:VAL:N	2.32	0.45
2:B:413:LEU:O	2:B:418:ARG:NE	2.42	0.45
1:A:128:ARG:HH11	1:A:248:GLU:CB	2.29	0.45
2:B:223:ASN:OD1	2:B:228:ALA:HA	2.16	0.45
2:B:310:GLN:HE22	2:B:325:GLN:HE22	1.65	0.45
2:B:329:VAL:HG11	2:B:334:LEU:HD23	1.99	0.45
2:B:160:ALA:CA	2:B:372:SER:HB3	2.43	0.45
2:B:434:PRO:HD3	2:B:476:LEU:HD22	1.99	0.45
1:A:111:ALA:O	1:A:112:LEU:HD23	2.17	0.45
1:A:418:ARG:O	1:A:422:LYS:HG3	2.17	0.45
2:B:315:SER:HA	2:B:320:SER:HA	1.97	0.45
2:B:261:ARG:HD3	2:B:321:ILE:HG12	1.99	0.45
2:B:430:PHE:HD1	2:B:474:PHE:HB3	1.82	0.45
2:B:33:VAL:CG1	2:B:91:VAL:HG21	2.43	0.45
1:A:165:ARG:NH2	1:A:338:ILE:O	2.49	0.45
1:A:167:LEU:HD21	1:A:169:ILE:HD11	1.97	0.45
1:A:29:THR:HA	1:A:89:VAL:O	2.16	0.45
1:A:415:GLN:O	1:A:451:LEU:HD22	2.17	0.45
2:B:204:GLU:O	2:B:238:GLN:NE2	2.50	0.45
2:B:480:ILE:O	2:B:483:ALA:HB3	2.17	0.45
2:B:83:ASP:CG	3:B:499:TTX:C12	2.85	0.45
1:A:418:ARG:O	1:A:421:LEU:HB2	2.17	0.45
2:B:350:THR:O	2:B:352:LEU:HD13	2.17	0.45
1:A:387:LEU:HA	1:A:390:PHE:CD1	2.52	0.44
1:A:130:ILE:HD13	1:A:238:LEU:HD13	1.98	0.44
2:B:98:LEU:O	2:B:132:ILE:HG12	2.18	0.44
1:A:65:LEU:CD2	3:B:499:TTX:C19	2.95	0.44
1:A:151:LEU:HB3	1:A:154:ILE:HD13	1.99	0.44
1:A:26:VAL:HG12	1:A:26:VAL:O	2.17	0.44
1:A:490:LEU:O	1:A:493:ALA:HB3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:107:LEU:HD23	2:B:232:VAL:C	2.37	0.44
2:B:377:PRO:HD3	2:B:385:TYR:CD2	2.53	0.44
1:A:202:LYS:O	1:A:203:ALA:C	2.54	0.44
1:A:78:GLY:HA2	1:A:232:PRO:HG3	1.98	0.44
1:A:394:GLU:CD	1:A:418:ARG:HH21	2.21	0.44
1:A:56:PHE:CG	1:A:83:ILE:HD12	2.52	0.44
2:B:216:MET:HE3	2:B:232:VAL:HG21	1.96	0.44
2:B:66:GLN:O	2:B:67:GLN:CG	2.65	0.44
1:A:210:VAL:HG12	1:A:210:VAL:O	2.17	0.44
1:A:56:PHE:HD2	1:A:60:THR:O	2.01	0.44
2:B:204:GLU:O	2:B:239:MET:HG3	2.17	0.44
2:B:199:PHE:CZ	2:B:273:ASP:HB2	2.53	0.44
2:B:271:PHE:HE1	2:B:324:ILE:HD12	1.82	0.44
1:A:264:LEU:HD11	1:A:318:PRO:CB	2.48	0.44
1:A:38:GLY:O	1:A:76:LEU:HB2	2.17	0.44
2:B:203:GLY:HA3	2:B:277:ARG:CB	2.46	0.44
2:B:241:GLU:HB2	2:B:246:ARG:HD3	2.00	0.44
1:A:27:VAL:CG1	1:A:47:GLU:HG3	2.48	0.44
1:A:494:ILE:O	1:A:498:MET:HG3	2.17	0.44
2:B:112:ASN:ND2	2:B:116:GLU:OE1	2.50	0.44
2:B:401:LEU:O	2:B:404:ILE:HB	2.18	0.44
1:A:241:TYR:HE1	1:A:267:GLN:NE2	2.14	0.44
1:A:310:GLY:O	1:A:311:GLU:HB2	2.18	0.44
1:A:310:GLY:C	1:A:312:GLY:H	2.20	0.44
1:A:174:THR:HG23	1:A:350:PHE:CZ	2.53	0.44
1:A:56:PHE:CD1	1:A:89:VAL:HG13	2.53	0.44
2:B:167:LYS:HZ1	2:B:310:GLN:CD	2.20	0.44
1:A:99:PRO:HD2	1:A:113:ALA:HB3	2.00	0.43
1:A:486:ALA:O	1:A:490:LEU:N	2.51	0.43
2:B:132:ILE:HG22	2:B:251:LEU:O	2.17	0.43
2:B:153:ILE:HA	2:B:433:GLN:OE1	2.18	0.43
2:B:168:ILE:HB	2:B:324:ILE:HA	2.00	0.43
2:B:235:VAL:HG11	2:B:252:THR:HG21	2.00	0.43
2:B:23:ILE:HG21	2:B:26:ILE:HD11	1.99	0.43
2:B:341:THR:O	2:B:342:THR:C	2.55	0.43
1:A:39:ILE:HG21	1:A:278:LEU:HD23	2.00	0.43
1:A:176:LYS:CG	1:A:345:LEU:HD12	2.48	0.43
1:A:76:LEU:O	1:A:234:THR:CB	2.66	0.43
1:A:30:GLY:O	1:A:88:SER:HA	2.17	0.43
2:B:299:GLN:HG3	2:B:301:THR:OG1	2.18	0.43
2:B:43:ILE:HG22	2:B:44:TYR:CD1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:460:LEU:HD12	2:B:480:ILE:HG12	1.99	0.43
2:B:106:THR:HA	2:B:111:PHE:CZ	2.53	0.43
2:B:156:VAL:C	2:B:158:LEU:H	2.20	0.43
2:B:167:LYS:CE	2:B:325:GLN:HE22	2.31	0.43
2:B:73:ARG:HB2	2:B:73:ARG:HE	1.43	0.43
1:A:112:LEU:N	1:A:112:LEU:HD23	2.32	0.43
2:B:135:SER:O	2:B:136:ALA:O	2.36	0.43
2:B:203:GLY:CA	2:B:246:ARG:HG2	2.49	0.43
2:B:410:LEU:HA	2:B:413:LEU:HD12	2.00	0.43
1:A:136:GLY:O	1:A:140:ARG:HG3	2.18	0.43
1:A:264:LEU:CD1	1:A:318:PRO:HB2	2.49	0.43
1:A:134:ALA:HB1	1:A:301:ARG:HA	2.00	0.43
1:A:107:ARG:NH2	1:A:115:PRO:HB3	2.34	0.43
1:A:97:GLN:O	1:A:98:ILE:HD12	2.19	0.43
1:A:98:ILE:HA	1:A:99:PRO:HD3	1.86	0.43
2:B:167:LYS:HD2	2:B:313:ILE:O	2.19	0.43
2:B:414:SER:O	2:B:418:ARG:HG3	2.19	0.43
1:A:404:ASP:O	1:A:408:GLN:HG3	2.19	0.43
1:A:76:LEU:O	1:A:234:THR:HB	2.19	0.43
2:B:128:THR:HG22	2:B:129:THR:N	2.33	0.43
2:B:186:ILE:HA	2:B:190:ALA:CB	2.48	0.43
2:B:206:THR:O	2:B:209:GLY:N	2.47	0.43
1:A:438:ILE:HG22	1:A:442:THR:OG1	2.19	0.43
2:B:374:MET:C	2:B:376:GLN:H	2.22	0.43
2:B:367:PRO:HB3	2:B:431:LEU:HD13	2.00	0.43
2:B:43:ILE:O	2:B:44:TYR:HB2	2.18	0.43
2:B:42:ASN:ND2	2:B:45:ASN:HD21	2.17	0.43
2:B:430:PHE:CD2	2:B:461:ILE:HD11	2.53	0.43
1:A:91:ALA:O	1:A:92:THR:C	2.57	0.43
2:B:121:LEU:O	2:B:122:ARG:CB	2.65	0.43
2:B:271:PHE:CE1	2:B:324:ILE:HD12	2.53	0.43
2:B:276:PHE:C	2:B:278:PHE:N	2.72	0.43
2:B:30:VAL:CG2	2:B:288:LEU:HD22	2.39	0.43
1:A:174:THR:O	1:A:174:THR:HG22	2.18	0.43
1:A:175:GLY:O	1:A:178:ALA:HB3	2.19	0.43
2:B:269:LEU:HD22	2:B:322:THR:CB	2.46	0.43
2:B:35:PHE:CE1	2:B:41:PRO:HG3	2.54	0.43
2:B:387:ILE:HG23	2:B:462:LEU:HD11	2.01	0.43
1:A:162:ARG:CZ	1:A:192:VAL:HG22	2.49	0.42
1:A:109:ILE:CG2	1:A:225:VAL:HA	2.49	0.42
1:A:128:ARG:NH1	1:A:248:GLU:HB3	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:300:GLU:O	1:A:302:ALA:N	2.51	0.42
1:A:369:SER:HB2	1:A:372:GLN:OE1	2.19	0.42
1:A:382:LYS:O	1:A:386:GLU:HG3	2.19	0.42
1:A:481:THR:HG22	1:A:482:PHE:N	2.34	0.42
2:B:186:ILE:HG23	2:B:190:ALA:CB	2.49	0.42
2:B:86:THR:CG2	2:B:87:ARG:N	2.82	0.42
1:A:440:THR:HA	1:A:494:ILE:HD13	2.00	0.42
2:B:23:ILE:HD11	2:B:49:VAL:HG11	2.02	0.42
1:A:268:ALA:O	1:A:271:TYR:HB3	2.19	0.42
1:A:403:LEU:HD13	1:A:407:THR:HG21	2.01	0.42
1:A:419:GLU:HA	1:A:422:LYS:CD	2.48	0.42
2:B:156:VAL:HG12	2:B:157:ASN:N	2.33	0.42
2:B:423:ARG:NH2	2:B:464:GLY:HA3	2.34	0.42
2:B:22:ARG:HB3	2:B:88:GLY:HA2	2.01	0.42
2:B:138:ALA:N	2:B:141:GLN:OE1	2.40	0.42
1:A:176:LYS:O	1:A:177:THR:C	2.58	0.42
1:A:272:ARG:HA	1:A:288:PRO:HD3	2.00	0.42
1:A:339:THR:CG2	1:A:340:ASP:N	2.82	0.42
1:A:104:TYR:CE2	1:A:109:ILE:HD12	2.54	0.42
1:A:130:ILE:CG2	1:A:241:TYR:HB3	2.49	0.42
2:B:430:PHE:CD1	2:B:474:PHE:HB3	2.54	0.42
1:A:122:ILE:HD13	1:A:122:ILE:N	2.35	0.42
1:A:157:MET:SD	1:A:387:LEU:HD12	2.60	0.42
1:A:173:GLN:HA	1:A:173:GLN:OE1	2.19	0.42
2:B:180:VAL:HG11	2:B:438:ALA:HB2	2.01	0.42
2:B:333:ASP:CG	2:B:335:THR:OG1	2.58	0.42
2:B:69:LEU:HD21	2:B:75:ARG:NE	2.16	0.42
1:A:227:GLU:OE1	1:A:235:LEU:O	2.38	0.42
1:A:386:GLU:C	1:A:388:ALA:N	2.73	0.42
1:A:419:GLU:HA	1:A:422:LYS:CG	2.49	0.42
2:B:109:ARG:CD	2:B:119:ASP:OD2	2.67	0.42
2:B:156:VAL:C	2:B:158:LEU:N	2.73	0.42
2:B:458:PHE:HA	2:B:461:ILE:CD1	2.47	0.42
1:A:100:VAL:HA	1:A:104:TYR:HE1	1.85	0.42
1:A:172:ARG:HG2	1:A:172:ARG:H	1.72	0.42
1:A:260:ILE:CD1	1:A:317:LEU:HB2	2.49	0.42
1:A:330:TYR:O	1:A:333:THR:HB	2.20	0.42
1:A:373:ILE:HG22	1:A:374:LYS:N	2.23	0.42
2:B:70:GLY:O	2:B:71:ASN:CB	2.67	0.42
1:A:65:LEU:CD1	1:A:278:LEU:HD13	2.50	0.41
1:A:293:TYR:HD1	1:A:293:TYR:N	2.08	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:433:GLU:HA	1:A:436:MET:HE2	2.02	0.41
1:A:53:LEU:HB2	1:A:92:THR:OG1	2.19	0.41
2:B:131:PRO:C	2:B:133:HIS:H	2.22	0.41
2:B:254:LEU:HD22	2:B:313:ILE:HG12	2.01	0.41
2:B:36:PRO:CD	2:B:39:LYS:HD2	2.50	0.41
1:A:373:ILE:O	1:A:377:LYS:HG3	2.20	0.41
2:B:102:VAL:HG12	2:B:256:MET:HG3	2.01	0.41
2:B:367:PRO:HB2	2:B:395:LEU:HD13	2.02	0.41
1:A:167:LEU:HD12	1:A:318:PRO:O	2.20	0.41
1:A:45:LEU:HD23	1:A:45:LEU:HA	1.84	0.41
2:B:431:LEU:HA	2:B:431:LEU:HD23	1.91	0.41
2:B:48:ILE:HG22	2:B:92:ILE:HG22	2.00	0.41
2:B:170:LEU:HD13	2:B:181:LEU:CD2	2.50	0.41
2:B:261:ARG:HG2	2:B:262:ASP:OD1	2.20	0.41
2:B:169:GLY:HA3	2:B:346:LEU:HD13	2.02	0.41
1:A:295:HIS:HB2	1:A:338:ILE:CD1	2.50	0.41
1:A:457:TYR:HA	1:A:501:PHE:CE2	2.55	0.41
1:A:490:LEU:HD22	1:A:494:ILE:HD11	2.02	0.41
2:B:65:VAL:HG13	2:B:74:VAL:HB	2.03	0.41
1:A:154:ILE:HD12	1:A:154:ILE:N	2.36	0.41
2:B:212:LEU:O	2:B:212:LEU:HG	2.21	0.41
2:B:52:ARG:HG2	2:B:53:ASP:N	2.35	0.41
2:B:72:ASN:O	2:B:73:ARG:HB2	2.20	0.41
1:A:187:GLN:CD	1:A:194:CYS:SG	2.99	0.41
1:A:46:ASP:N	1:A:46:ASP:OD1	2.53	0.41
1:A:470:PRO:O	1:A:474:GLU:HG3	2.20	0.41
2:B:105:PRO:HG2	2:B:126:THR:HG22	2.03	0.41
2:B:165:GLY:HA2	2:B:315:SER:HB3	2.02	0.41
2:B:42:ASN:O	2:B:45:ASN:HB2	2.21	0.41
2:B:471:GLU:C	2:B:473:ALA:N	2.68	0.41
1:A:216:ARG:NH2	1:A:426:SER:HB2	2.36	0.41
1:A:271:TYR:OH	1:A:290:ASP:HB2	2.21	0.41
1:A:310:GLY:C	1:A:312:GLY:N	2.74	0.41
1:A:454:VAL:HA	1:A:457:TYR:CD1	2.56	0.41
2:B:251:LEU:CG	2:B:309:LEU:HD13	2.50	0.41
2:B:163:ARG:NE	2:B:374:MET:CB	2.81	0.41
2:B:387:ILE:CD1	2:B:459:GLN:HB2	2.51	0.41
1:A:134:ALA:CB	1:A:301:ARG:HA	2.51	0.41
1:A:67:LEU:HB3	2:B:87:ARG:HE	1.86	0.41
2:B:259:TYR:HE2	2:B:264:ASN:HD21	1.69	0.41
2:B:40:MET:O	2:B:41:PRO:C	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:423:ARG:O	2:B:426:LYS:HB2	2.21	0.41
1:A:148:GLN:HE21	1:A:431:VAL:CG2	2.34	0.41
1:A:409:ASN:O	1:A:413:ARG:HG3	2.21	0.41
1:A:417:LEU:HA	1:A:420:LEU:HG	2.03	0.41
2:B:402:GLN:C	2:B:404:ILE:N	2.75	0.41
2:B:405:ILE:HG13	2:B:406:ALA:N	2.35	0.41
2:B:419:LEU:HD11	2:B:423:ARG:HE	1.85	0.41
2:B:68:LEU:O	2:B:70:GLY:N	2.53	0.41
1:A:214:GLN:C	1:A:216:ARG:N	2.74	0.40
2:B:276:PHE:CZ	2:B:280:GLN:HB2	2.56	0.40
2:B:143:ASP:OD2	2:B:316:THR:C	2.59	0.40
2:B:298:TYR:CZ	2:B:338:ALA:HB2	2.55	0.40
1:A:135:PRO:O	1:A:140:ARG:NH2	2.54	0.40
2:B:353:SER:HB3	2:B:356:LEU:HD12	2.02	0.40
2:B:387:ILE:HA	2:B:390:ARG:HD2	2.02	0.40
2:B:131:PRO:C	2:B:133:HIS:N	2.73	0.40
2:B:50:LYS:HG2	2:B:59:MET:CE	2.51	0.40
1:A:108:VAL:HG12	1:A:116:ILE:HD11	2.03	0.40
1:A:302:ALA:O	1:A:303:ALA:HB2	2.22	0.40
1:A:414:GLY:C	1:A:416:ARG:H	2.25	0.40
1:A:56:PHE:CE2	1:A:76:LEU:HD22	2.56	0.40
2:B:167:LYS:HE3	2:B:310:GLN:O	2.21	0.40
2:B:196:VAL:HG12	2:B:197:SER:N	2.36	0.40
2:B:161:PRO:HD2	2:B:372:SER:HB3	2.04	0.40
2:B:399:LYS:HA	2:B:402:GLN:NE2	2.35	0.40
1:A:181:THR:O	1:A:185:LEU:HD12	2.21	0.40
1:A:422:LYS:O	1:A:423:GLN:HG3	2.21	0.40
1:A:461:LEU:O	1:A:464:TYR:HB2	2.22	0.40
2:B:269:LEU:HD12	2:B:271:PHE:HZ	1.85	0.40
2:B:357:ALA:HB2	2:B:364:ALA:CB	2.52	0.40
2:B:404:ILE:O	2:B:408:LEU:HB2	2.22	0.40
2:B:417:ASP:HA	2:B:420:THR:HG23	2.04	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:499:GLU:OE1	1:A:499:GLU:OE1[4_555]	1.69	0.51

5.3 Torsion angles

5.3.1 Protein backbone

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	475/507 (94%)	362 (76%)	86 (18%)	27 (6%)	1	12
2	B	465/498 (93%)	365 (78%)	76 (16%)	24 (5%)	2	13
All	All	940/1005 (94%)	727 (77%)	162 (17%)	51 (5%)	2	13

All (51) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	101	SER
1	A	212	ASN
1	A	447	ASP
2	B	265	GLU
2	B	343	PHE
1	A	48	VAL
1	A	85	GLU
1	A	92	THR
1	A	110	ASN
1	A	171	ASP
1	A	330	TYR
1	A	352	ALA
1	A	354	ILE
1	A	360	VAL
1	A	387	LEU
1	A	448	SER
2	B	55	ALA
2	B	157	ASN
2	B	208	GLU
2	B	286	SER
2	B	472	GLN
1	A	37	ASP
1	A	105	LEU
1	A	186	ASN
1	A	234	THR

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Mol	Chain	Res	Type
1	A	262	ASP
1	A	296	SER
1	A	351	ASN
1	A	452	ASP
2	B	54	THR
2	B	69	LEU
2	B	239	MET
2	B	402	GLN
2	B	403	ASP
2	B	451	LEU
1	A	26	VAL
1	A	288	PRO
2	B	122	ARG
2	B	154	LYS
2	B	156	VAL
2	B	240	ASN
1	A	328	SER
1	A	402	ASP
2	B	52	ARG
2	B	345	HIS
1	A	373	ILE
2	B	136	ALA
2	B	296	VAL
2	B	175	GLY
2	B	61	VAL
2	B	455	ILE

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	388/414 (94%)	367 (95%)	21 (5%)	22	52
2	B	381/410 (93%)	356 (93%)	25 (7%)	16	46
All	All	769/824 (93%)	723 (94%)	46 (6%)	19	49

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	GLN
1	A	35	VAL
1	A	41	ARG
1	A	46	ASP
1	A	49	MET
1	A	65	LEU
1	A	89	VAL
1	A	122	ILE
1	A	128	ARG
1	A	131	GLU
1	A	135	PRO
1	A	147	LEU
1	A	177	THR
1	A	191	ASN
1	A	228	THR
1	A	230	ASP
1	A	249	TYR
1	A	257	THR
1	A	342	GLN
1	A	426	SER
1	A	490	LEU
2	B	42	ASN
2	B	57	GLN
2	B	58	PRO
2	B	98	LEU
2	B	129	THR
2	B	140	THR
2	B	149	PHE
2	B	187	ASN
2	B	238	GLN
2	B	240	ASN
2	B	246	ARG
2	B	248	ARG
2	B	249	VAL
2	B	269	LEU
2	B	274	ASN
2	B	288	LEU
2	B	299	GLN
2	B	308	SER
2	B	310	GLN
2	B	316	THR
2	B	325	GLN
2	B	352	LEU

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Mol	Chain	Res	Type
2	B	395	LEU
2	B	417	ASP
2	B	481	ASP

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	66	ASN
1	A	70	ASN
1	A	148	GLN
1	A	186	ASN
1	A	295	HIS
1	A	359	ASN
1	A	409	ASN
1	A	423	GLN
1	A	497	GLN
2	B	19	ASN
2	B	25	GLN
2	B	42	ASN
2	B	60	ASN
2	B	187	ASN
2	B	238	GLN
2	B	240	ASN
2	B	264	ASN
2	B	299	GLN
2	B	310	GLN
2	B	325	GLN
2	B	396	GLN
2	B	402	GLN
2	B	459	GLN
2	B	472	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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](#)

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	TTX	B	499	2	31,31,31	3.37	9 (29%)	40,43,43	4.35	13 (32%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	TTX	B	499	2	-	15/45/45/45	0/1/2/2

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	499	TTX	O1-C6	11.81	1.43	1.22
3	B	499	TTX	C15-C14	-7.80	1.33	1.49
3	B	499	TTX	C6-N1	6.10	1.45	1.35
3	B	499	TTX	C5-C6	5.71	1.64	1.53
3	B	499	TTX	C7-N1	-4.42	1.38	1.47
3	B	499	TTX	C12-N3	-3.83	1.29	1.35
3	B	499	TTX	C15-N1	-3.32	1.34	1.42
3	B	499	TTX	C9-N3	-3.04	1.42	1.47
3	B	499	TTX	C5-N2	2.05	1.50	1.45

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	499	TTX	C5-C6-N1	-16.65	91.91	118.78
3	B	499	TTX	C7-N1-C6	-16.32	95.53	118.81
3	B	499	TTX	C4-C5-C6	6.59	121.72	109.35
3	B	499	TTX	C6-N1-C15	6.44	141.30	123.52
3	B	499	TTX	C13-N4-C14	5.66	130.12	121.25
3	B	499	TTX	C9-C8-N2	3.34	122.07	115.62
3	B	499	TTX	C11-N3-C12	-3.19	114.64	122.01
3	B	499	TTX	C6-C5-N2	-3.05	101.68	108.81
3	B	499	TTX	C18-C17-C16	2.81	130.78	121.22
3	B	499	TTX	C15-C14-N4	2.50	121.72	117.39
3	B	499	TTX	C21-C22-C17	2.14	123.24	120.65
3	B	499	TTX	C18-C17-C22	-2.05	114.60	117.64
3	B	499	TTX	C2-C4-C5	2.04	121.05	115.43

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	499	TTX	C14-C15-N1-C6
3	B	499	TTX	O1-C6-N1-C7
3	B	499	TTX	C5-C6-N1-C7
3	B	499	TTX	C5-C6-N1-C15
3	B	499	TTX	O2-C8-N2-C5
3	B	499	TTX	C9-C8-N2-C5
3	B	499	TTX	C4-C5-C6-O1
3	B	499	TTX	O3-C12-C13-N4
3	B	499	TTX	N3-C12-C13-N4
3	B	499	TTX	N2-C5-C6-O1
3	B	499	TTX	C1-C2-C4-C5
3	B	499	TTX	C13-C12-N3-C9
3	B	499	TTX	C13-C12-N3-C11
3	B	499	TTX	N2-C8-C9-N3
3	B	499	TTX	O2-C8-C9-N3

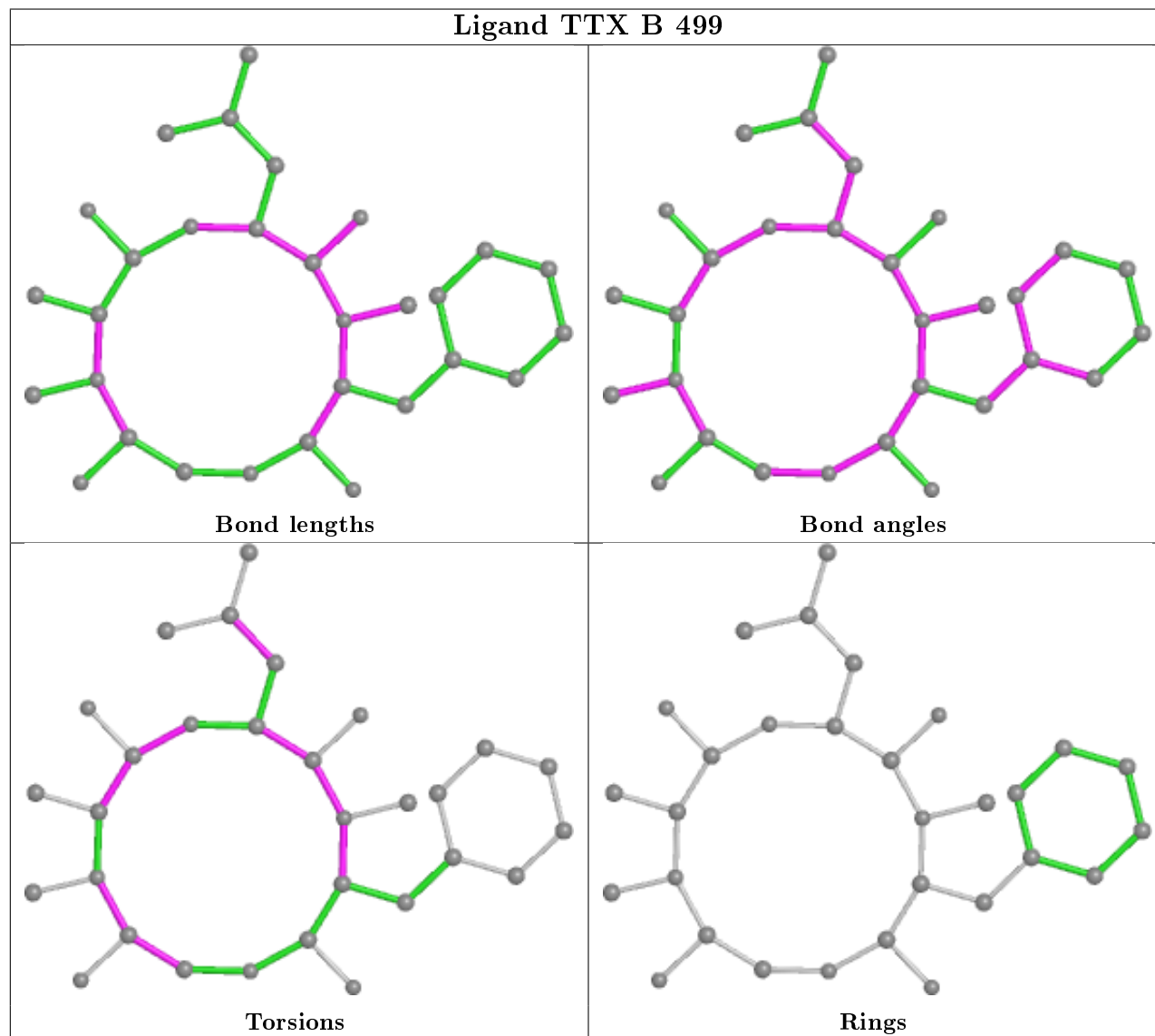
There are no ring outliers.

1 monomer is involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	499	TTX	20	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers ⓘ

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 ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.