



## Full wwPDB EM Validation Report ⓘ

Jun 16, 2024 – 12:09 AM JST

PDB ID : 8XUQ  
EMDB ID : EMD-38680  
Title : Cryo-EM structure of tomato NRC2 tetramer  
Authors : Sun, Y.; Ma, S.C.; Chai, J.J.  
Deposited on : 2024-01-14  
Resolution : 3.17 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

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>.

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

EMDB validation analysis : **FAILED**  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : **FAILED**  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

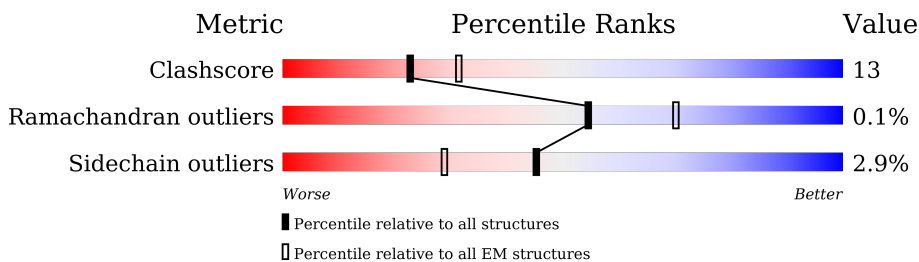
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.17 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)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$

Mol	Chain	Length	Quality of chain	
1	A	885		
1	E	885		.
1	F	885		.
1	G	885		.

## 2 Entry composition [i](#)

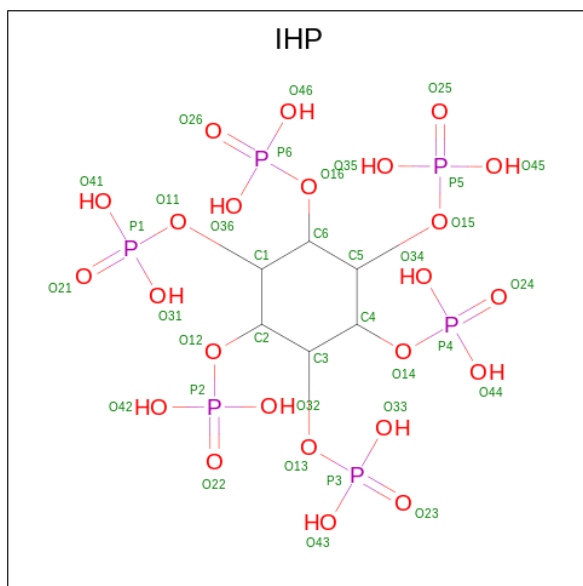
There are 3 unique types of molecules in this entry. The entry contains 28736 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 NRC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	885	Total 7121	C 4544	N 1237	O 1308	S 32	0	0
1	E	885	Total 7121	C 4544	N 1237	O 1308	S 32	0	0
1	F	885	Total 7121	C 4544	N 1237	O 1308	S 32	0	0
1	G	885	Total 7121	C 4544	N 1237	O 1308	S 32	0	0

- Molecule 2 is INOSITOL HEXAKISPHOSPHATE (three-letter code: IHP) (formula:  $C_6H_{18}O_{24}P_6$ ) (labeled as "Ligand of Interest" by depositor).



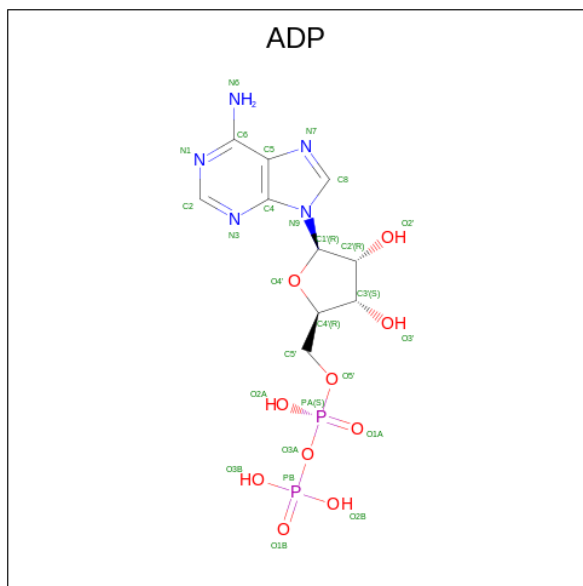
Mol	Chain	Residues	Atoms				AltConf
			Total	C	O	P	
2	A	1	Total 36	C 6	O 24	P 6	0
2	E	1	Total 36	C 6	O 24	P 6	0

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Mol	Chain	Residues	Atoms				AltConf
2	F	1	Total	C	O	P	0
			36	6	24	6	
2	G	1	Total	C	O	P	0
			36	6	24	6	

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ) (labeled as "Ligand of Interest" by depositor).

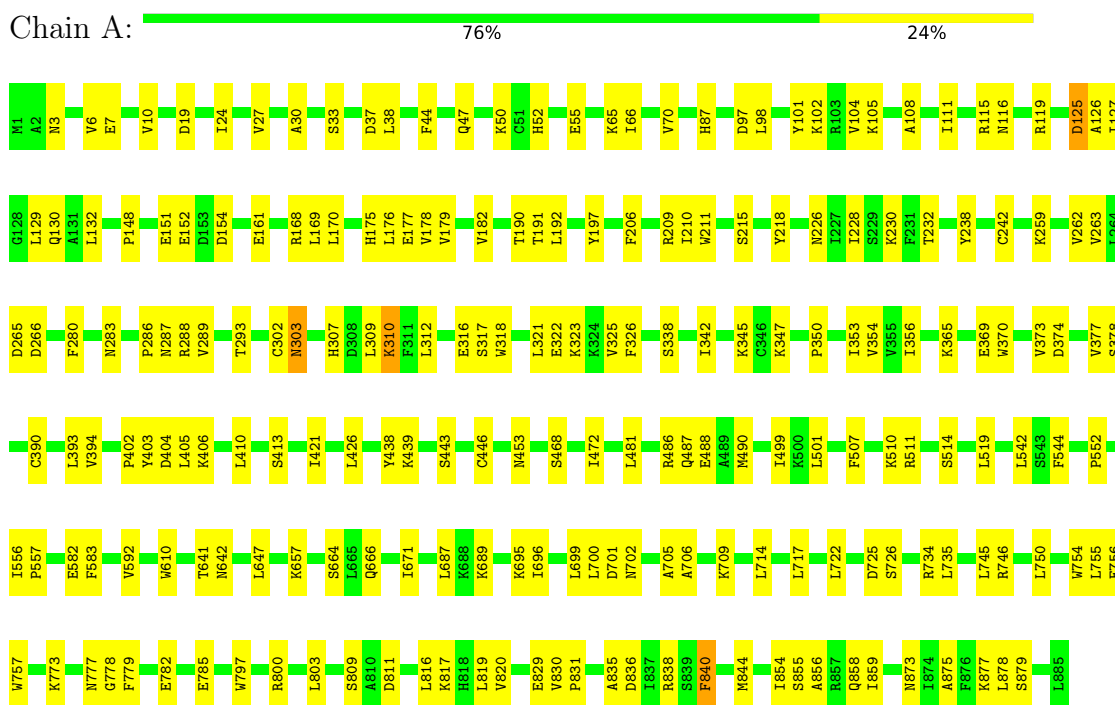


Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	F	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	G	1	Total	C	N	O	P	0
			27	10	5	10	2	

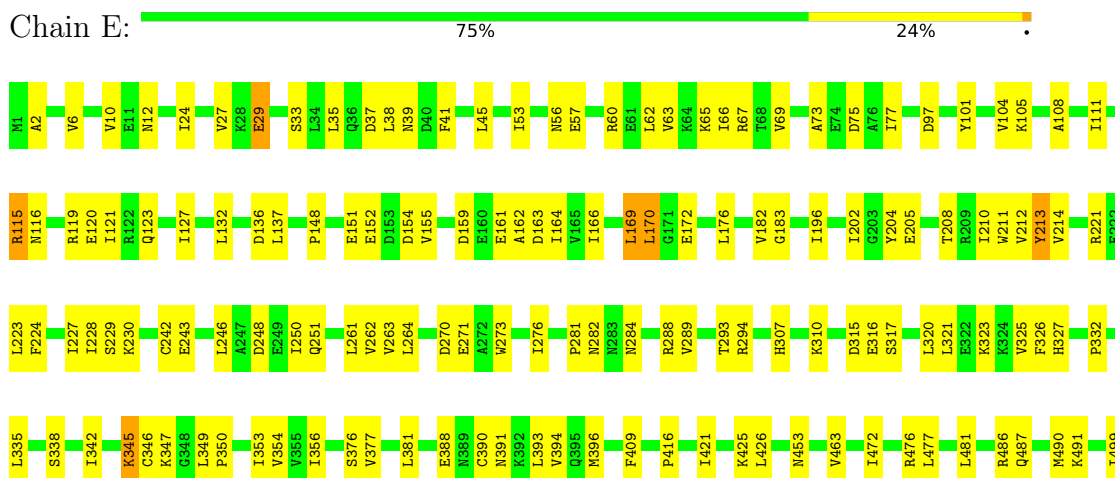
### 3 Residue-property plots [i](#)

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.

- Molecule 1: NRC2

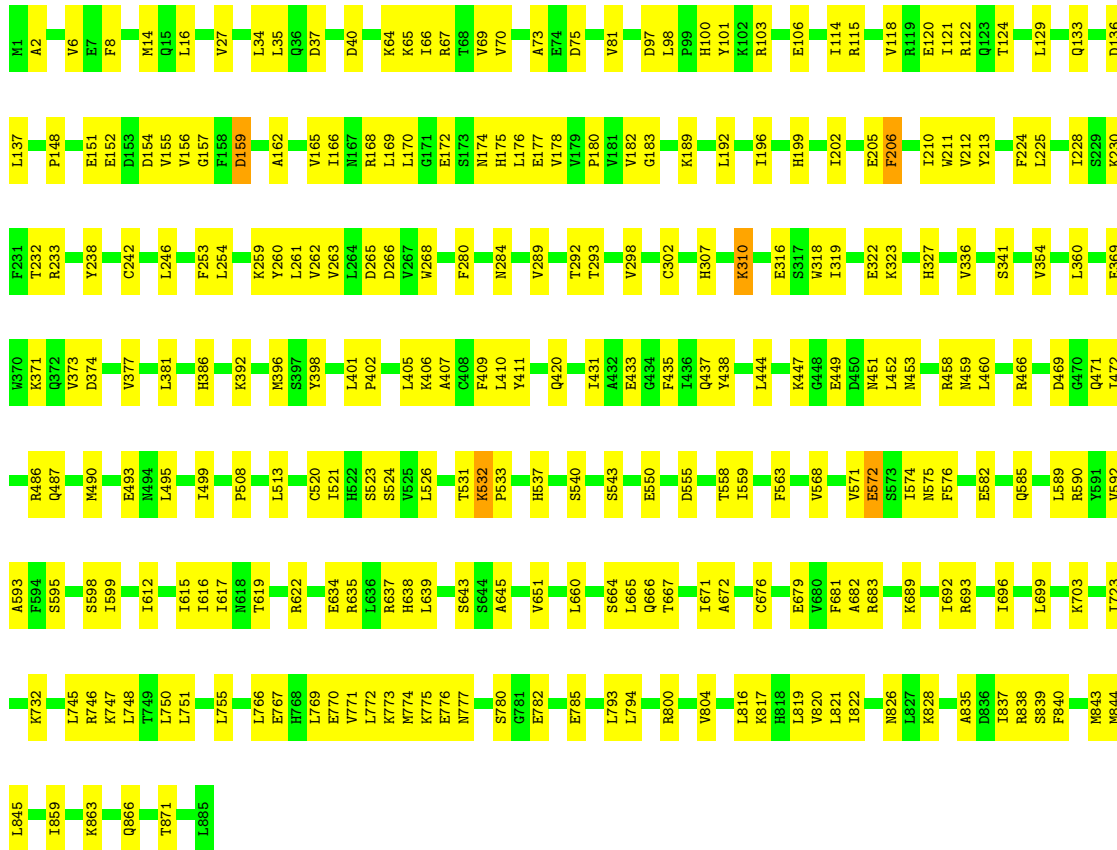


- Molecule 1: NRC2

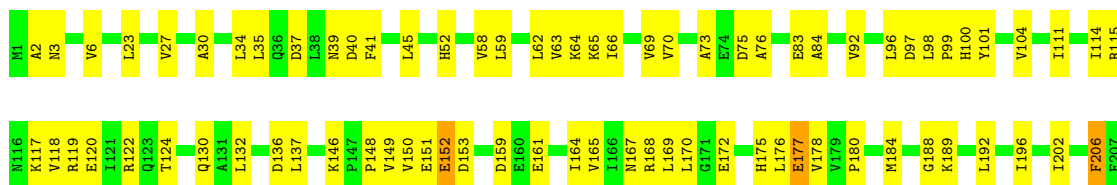




• Molecule 1: NRC2



• Molecule 1: NRC2



N826	S704	F435	H307	T208
L827	A705	E445	K310	R209
K828	V711	V571	W318	I210
E829	N719	L452	I319	W211
V830	L720	L455	L320	V212
P831	K721	I456	K323	S215
A835	L733	V463	H327	Q216
M843	L745	M464	K328	S217
M844	R746	E465	D329	Y218
L845	K747	R466	K330	F224
T851	L748	D469	V336	I228
A856	T749	C475	S341	Y238
R857	L750	M480	I342	E244
Q858	D752	L481	P350	Q251
I859	T753	H482	I353	E252
Q866	W754	F484	I356	F253
K877	L755	C485	I356	L254
L878	L769	R486	E369	Y260
S879	K773	A489	V373	L261
I880	R774	M490	D374	V262
L885	K775	Q497	H380	V263
	E776	E498	L381	L264
	N777	I499	C390	D265
	G778	A500	N391	D266
	F779	L501	K392	V267
	S780	E504	L393	W273
	G781	F507	V394	E274
	E782	R517	Q395	R275
	E785	I521	M396	I276
	W797	V525	S397	K277
	I798	T531	Y398	I278
	E799	H537	D399	A279
	R800	H537	R400	F280
	V804	F541	D404	P281
	S805	L542	L410	N282
	S809	F544	P416	M287
	D811	I549	I421	R288
	D812	E550	L426	V289
	F813	M551		L290
	L816	D555		L291
	L819			T292
	W820			T293
	L821			R294
	L822			D295
	D825			S296
				C302
				M303
				P304
				I305
				P306

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	154084	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor



## 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: IHP, ADP

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	0.29	0/7260	0.54	0/9803
1	E	0.29	0/7260	0.53	0/9803
1	F	0.28	0/7260	0.53	0/9803
1	G	0.30	0/7260	0.53	0/9803
All	All	0.29	0/29040	0.53	0/39212

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 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	7121	0	7283	157	0
1	E	7121	0	7283	159	0
1	F	7121	0	7283	196	0
1	G	7121	0	7283	216	0
2	A	36	0	6	1	0
2	E	36	0	6	0	0
2	F	36	0	6	1	0
2	G	36	0	6	0	0
3	A	27	0	12	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	27	0	12	1	0
3	F	27	0	12	1	0
3	G	27	0	12	3	0
All	All	28736	0	29204	725	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 13.

All (725) 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:E:169:LEU:HD12	1:E:170:LEU:HG	1.39	1.04
1:G:169:LEU:HD12	1:G:170:LEU:HG	1.38	1.03
1:E:880:ILE:HG22	1:E:882:PRO:HD2	1.59	0.85
1:G:175:HIS:HE1	1:G:177:GLU:HG2	1.42	0.83
1:G:175:HIS:CE1	1:G:177:GLU:HG2	2.15	0.80
1:F:192:LEU:HD11	1:F:196:ILE:HD11	1.65	0.78
1:G:572:GLU:OE1	1:G:572:GLU:N	2.18	0.77
1:A:756:GLU:N	1:A:756:GLU:OE1	2.17	0.77
1:E:170:LEU:HD11	1:E:205:GLU:HG2	1.66	0.77
1:A:175:HIS:CD2	1:A:177:GLU:HB2	2.20	0.76
1:E:262:VAL:CG2	1:E:289:VAL:HG22	2.16	0.76
1:E:321:LEU:O	1:E:325:VAL:HG12	1.86	0.76
1:A:714:LEU:HD12	1:A:717:LEU:HD12	1.67	0.76
1:E:767:GLU:N	1:E:767:GLU:OE1	2.19	0.75
1:E:6:VAL:O	1:E:10:VAL:HG23	1.86	0.75
1:F:169:LEU:HD12	1:F:170:LEU:HG	1.69	0.74
1:E:782:GLU:N	1:E:782:GLU:OE1	2.20	0.74
1:A:170:LEU:H	1:A:288:ARG:HE	1.35	0.74
1:A:6:VAL:O	1:A:10:VAL:HG23	1.86	0.74
1:F:767:GLU:N	1:F:767:GLU:OE1	2.20	0.74
1:G:83:GLU:HG3	1:G:104:VAL:HG22	1.69	0.73
1:E:69:VAL:HG11	1:E:121:ILE:HD12	1.70	0.73
1:E:161:GLU:OE1	1:E:307:HIS:NE2	2.21	0.73
1:G:295:ASP:OD1	1:G:296:SER:N	2.21	0.73
1:G:821:LEU:HD21	1:G:827:LEU:HD22	1.70	0.73
1:A:210:ILE:HG23	1:A:230:LYS:HD3	1.70	0.73
1:A:777:ASN:ND2	1:A:800:ARG:O	2.22	0.72
1:A:820:VAL:HG13	1:A:844:MET:HE1	1.70	0.72
1:G:820:VAL:CG1	1:G:822:ILE:HD11	2.19	0.72
1:G:329:ASP:OD1	1:G:330:LYS:N	2.22	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:732:LYS:NZ	1:F:780:SER:OG	2.22	0.72
1:G:176:LEU:HB2	1:G:282:ASN:ND2	2.04	0.72
1:A:701:ASP:O	1:A:705:ALA:N	2.22	0.72
1:F:785:GLU:N	1:F:785:GLU:OE1	2.23	0.71
1:G:582:GLU:OE1	1:G:582:GLU:N	2.24	0.70
1:F:262:VAL:CG2	1:F:289:VAL:HG22	2.21	0.70
1:F:645:ALA:O	1:F:672:ALA:N	2.24	0.70
1:G:785:GLU:N	1:G:785:GLU:OE1	2.24	0.70
1:G:407:ALA:HB1	1:G:435:PHE:CD2	2.26	0.70
1:A:725:ASP:OD1	1:A:726:SER:N	2.25	0.70
1:G:176:LEU:HD11	1:G:260:TYR:OH	1.90	0.70
1:G:211:TRP:CZ3	1:G:263:VAL:HG11	2.26	0.70
1:A:211:TRP:CZ3	1:A:263:VAL:HG11	2.27	0.70
1:E:499:ILE:O	1:E:499:ILE:HG22	1.91	0.69
1:F:407:ALA:HB1	1:F:435:PHE:CE1	2.27	0.69
1:G:151:GLU:HG3	1:G:152:GLU:HG3	1.74	0.69
1:G:151:GLU:HG2	1:G:327:HIS:HB3	1.74	0.69
1:G:120:GLU:O	1:G:124:THR:HG23	1.93	0.69
1:F:665:LEU:HD23	1:F:666:GLN:N	2.08	0.68
1:A:161:GLU:OE1	1:A:307:HIS:NE2	2.27	0.68
1:F:210:ILE:HG23	1:F:230:LYS:HE3	1.74	0.68
1:A:782:GLU:OE1	1:A:782:GLU:N	2.27	0.68
1:E:24:ILE:HD12	1:E:27:VAL:HG23	1.76	0.68
1:F:582:GLU:N	1:F:582:GLU:OE1	2.26	0.68
1:G:504:GLU:N	1:G:504:GLU:OE1	2.26	0.67
1:E:73:ALA:O	1:E:77:ILE:HG12	1.94	0.67
1:F:407:ALA:HB1	1:F:435:PHE:HE1	1.59	0.67
1:G:612:ILE:HD11	1:G:633:MET:SD	2.34	0.67
1:F:151:GLU:HG3	1:F:152:GLU:HG3	1.77	0.67
1:E:35:LEU:O	1:E:39:ASN:ND2	2.28	0.67
1:E:69:VAL:HG11	1:E:121:ILE:CD1	2.24	0.67
1:G:35:LEU:O	1:G:39:ASN:ND2	2.28	0.67
1:A:3:ASN:O	1:A:7:GLU:HG3	1.94	0.66
1:A:735:LEU:HD21	1:A:755:LEU:HD13	1.77	0.66
1:G:305:ILE:HG23	1:G:305:ILE:O	1.95	0.66
1:F:612:ILE:HD12	1:F:615:ILE:HD11	1.76	0.66
1:G:369:GLU:O	1:G:373:VAL:HG23	1.96	0.65
1:G:752:ASP:N	1:G:776:GLU:OE1	2.29	0.65
1:G:755:LEU:O	1:G:780:SER:N	2.29	0.65
1:A:175:HIS:HD2	1:A:177:GLU:HB2	1.61	0.65
1:F:40:ASP:OD2	1:F:122:ARG:NH2	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:169:LEU:CD1	1:E:170:LEU:HG	2.23	0.65
1:F:34:LEU:HD21	1:F:73:ALA:HB1	1.77	0.65
1:E:714:LEU:HD12	1:E:717:LEU:HD12	1.76	0.65
1:F:747:LYS:NZ	2:F:901:IHP:O41	2.30	0.65
1:G:380:HIS:HB2	1:G:396:MET:HE1	1.79	0.65
1:A:350:PRO:O	1:A:354:VAL:HG23	1.97	0.64
1:G:777:ASN:N	1:G:800:ARG:O	2.29	0.64
1:E:421:ILE:HG21	1:E:426:LEU:HD22	1.78	0.64
1:G:878:LEU:HD11	1:G:880:ILE:HG23	1.80	0.64
1:A:108:ALA:HA	1:A:111:ILE:HD12	1.79	0.64
1:A:689:LYS:NZ	2:A:901:IHP:O35	2.28	0.64
1:E:170:LEU:H	1:E:288:ARG:HE	1.46	0.64
1:A:170:LEU:HD21	1:A:206:PHE:CZ	2.32	0.63
1:G:490:MET:O	1:G:497:GLN:NE2	2.31	0.63
1:E:262:VAL:HG23	1:E:289:VAL:HG22	1.80	0.63
1:G:665:LEU:HD23	1:G:666:GLN:N	2.13	0.63
1:A:129:LEU:HD23	1:A:132:LEU:HD12	1.80	0.63
1:F:402:PRO:O	1:F:406:LYS:N	2.27	0.63
1:F:183:GLY:N	1:F:189:LYS:HD3	2.13	0.63
1:E:696:ILE:HG22	1:E:700:LEU:HD12	1.81	0.62
1:F:360:LEU:CD1	1:F:373:VAL:HG11	2.28	0.62
1:F:793:LEU:CD2	1:F:816:LEU:HD12	2.28	0.62
1:E:182:VAL:HG12	1:E:183:GLY:H	1.63	0.62
1:E:800:ARG:NH1	1:E:823:CYS:SG	2.72	0.62
1:G:169:LEU:CD1	1:G:170:LEU:HG	2.22	0.62
1:G:692:ILE:HD13	1:G:699:LEU:HD11	1.80	0.62
1:A:178:VAL:HG12	1:A:289:VAL:CG2	2.29	0.62
1:G:27:VAL:HG21	1:G:111:ILE:CD1	2.29	0.62
1:E:166:ILE:HA	1:E:169:LEU:HD23	1.81	0.62
1:E:315:ASP:OD1	1:E:316:GLU:N	2.33	0.62
1:G:27:VAL:HG11	1:G:111:ILE:CD1	2.30	0.61
1:A:856:ALA:HA	1:A:859:ILE:HD12	1.80	0.61
1:E:151:GLU:HG3	1:E:152:GLU:HG3	1.83	0.61
1:F:692:ILE:HG21	1:F:699:LEU:HD11	1.81	0.61
1:A:125:ASP:OD2	1:A:126:ALA:N	2.33	0.61
1:A:177:GLU:HG3	1:A:303:ASN:HD21	1.65	0.61
1:F:804:VAL:HG22	1:F:826:ASN:OD1	1.99	0.61
1:G:224:PHE:CZ	1:G:279:ALA:HB2	2.35	0.61
1:F:377:VAL:HG13	1:F:381:LEU:HD12	1.83	0.61
1:A:10:VAL:HG22	1:A:38:LEU:HB3	1.81	0.60
1:E:211:TRP:CZ3	1:E:263:VAL:HG11	2.36	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:835:ALA:HB2	1:E:859:ILE:HG23	1.83	0.60
1:F:16:LEU:HD21	1:F:81:VAL:HG22	1.83	0.60
1:F:202:ILE:HG23	1:F:261:LEU:HD23	1.82	0.60
1:F:755:LEU:O	1:F:780:SER:N	2.32	0.60
1:E:677:THR:HG22	1:E:678:GLU:H	1.66	0.60
1:G:829:GLU:N	1:G:829:GLU:OE1	2.33	0.60
1:F:820:VAL:CG1	1:F:822:ILE:HD11	2.31	0.60
1:G:151:GLU:HG3	1:G:152:GLU:OE2	2.01	0.60
1:A:309:LEU:HD12	1:A:310:LYS:H	1.67	0.60
1:E:162:ALA:HA	1:E:196:ILE:HD11	1.83	0.60
1:F:120:GLU:O	1:F:124:THR:HG23	2.02	0.60
1:E:356:ILE:HD11	1:E:393:LEU:CD2	2.32	0.60
1:F:66:ILE:O	1:F:70:VAL:HG23	2.02	0.59
1:F:634:GLU:N	1:F:634:GLU:OE1	2.35	0.59
1:G:169:LEU:O	1:G:170:LEU:HB2	2.01	0.59
1:A:161:GLU:HB2	1:A:192:LEU:HD11	1.83	0.59
1:A:439:LYS:HE3	1:A:439:LYS:HA	1.84	0.59
1:A:501:LEU:HD11	1:A:507:PHE:CZ	2.38	0.59
1:G:393:LEU:HD23	1:G:396:MET:HE3	1.85	0.59
1:A:259:LYS:NZ	1:A:286:PRO:O	2.34	0.59
1:A:265:ASP:OD1	1:A:266:ASP:N	2.35	0.59
1:A:338:SER:O	1:A:342:ILE:HG13	2.02	0.59
1:E:170:LEU:H	1:E:288:ARG:NE	2.00	0.59
1:G:210:ILE:HB	1:G:262:VAL:HG12	1.84	0.59
1:E:332:PRO:HG2	1:E:335:LEU:HD12	1.84	0.59
1:F:6:VAL:HG22	1:F:70:VAL:HG21	1.84	0.59
1:G:820:VAL:HG22	1:G:844:MET:HB3	1.85	0.59
1:E:75:ASP:OD1	1:E:539:ARG:NH2	2.35	0.58
1:E:338:SER:O	1:E:342:ILE:HG13	2.03	0.58
1:F:154:ASP:OD1	1:F:155:VAL:N	2.36	0.58
1:F:360:LEU:HD12	1:F:373:VAL:HG21	1.84	0.58
1:G:176:LEU:HD22	1:G:287:ASN:HB2	1.85	0.58
1:E:381:LEU:HD23	1:E:381:LEU:O	2.02	0.58
1:E:856:ALA:HA	1:E:859:ILE:HD12	1.84	0.58
1:F:369:GLU:O	1:F:373:VAL:HG23	2.03	0.58
1:A:232:THR:HG21	1:A:238:TYR:CE2	2.39	0.58
1:F:157:GLY:O	1:F:310:LYS:NZ	2.27	0.58
1:A:317:SER:HB3	1:A:353:ILE:HD11	1.85	0.58
1:E:837:ILE:O	1:E:863:LYS:NZ	2.31	0.58
1:G:421:ILE:HG21	1:G:426:LEU:HD21	1.86	0.58
1:F:521:ILE:O	1:F:543:SER:HA	2.04	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:816:LEU:HD23	1:E:817:LYS:N	2.18	0.57
1:E:212:VAL:HB	1:E:264:LEU:HD23	1.86	0.57
1:E:350:PRO:O	1:E:354:VAL:HG23	2.05	0.57
1:G:480:MET:N	1:G:480:MET:SD	2.77	0.57
1:F:437:GLN:OE1	1:F:437:GLN:N	2.37	0.57
1:A:797:TRP:CD2	1:A:820:VAL:HG11	2.40	0.57
1:F:206:PHE:CE1	1:F:261:LEU:HD22	2.39	0.57
1:A:130:GLN:OE1	1:A:130:GLN:N	2.34	0.57
1:G:100:HIS:O	1:G:104:VAL:HG23	2.06	0.56
1:G:192:LEU:HD11	1:G:196:ILE:HD11	1.86	0.56
1:G:633:MET:O	1:G:662:ASN:ND2	2.38	0.56
1:E:10:VAL:HG22	1:E:38:LEU:HB3	1.87	0.56
1:E:108:ALA:HA	1:E:111:ILE:HD12	1.87	0.56
1:A:402:PRO:HD2	1:A:405:LEU:HD12	1.87	0.56
1:A:421:ILE:HG21	1:A:426:LEU:HD22	1.86	0.56
1:A:582:GLU:N	1:A:582:GLU:OE1	2.39	0.56
1:F:575:ASN:OD1	1:F:576:PHE:N	2.39	0.56
1:A:854:ILE:O	1:A:858:GLN:NE2	2.31	0.56
1:E:169:LEU:O	1:E:170:LEU:HB2	2.05	0.56
1:E:880:ILE:HG22	1:E:882:PRO:CD	2.34	0.56
1:F:14:MET:HG2	1:F:35:LEU:HD21	1.87	0.56
1:F:210:ILE:HG23	1:F:230:LYS:CE	2.35	0.56
1:G:782:GLU:O	1:G:804:VAL:N	2.36	0.56
1:E:293:THR:OG1	1:E:294:ARG:N	2.38	0.56
1:G:809:SER:OG	1:G:811:ASP:OD1	2.23	0.56
1:F:175:HIS:NE2	1:F:177:GLU:HB2	2.21	0.56
1:A:830:VAL:HG23	1:A:830:VAL:O	2.06	0.55
1:E:119:ARG:O	1:E:123:GLN:NE2	2.37	0.55
1:F:526:LEU:HD11	1:F:550:GLU:O	2.06	0.55
1:A:178:VAL:HG12	1:A:289:VAL:HG21	1.88	0.55
1:A:785:GLU:N	1:A:785:GLU:OE1	2.40	0.55
1:E:551:MET:CE	1:E:559:ILE:HD11	2.37	0.55
1:G:215:SER:OG	1:G:216:GLN:N	2.39	0.55
1:F:660:LEU:HD23	1:F:660:LEU:H	1.72	0.54
1:E:508:PRO:HG2	1:E:513:LEU:HD21	1.89	0.54
1:E:795:VAL:HG22	1:E:818:HIS:HB3	1.89	0.54
1:F:354:VAL:HG21	3:F:902:ADP:O1A	2.08	0.54
1:G:136:ASP:OD1	1:G:137:LEU:N	2.40	0.54
1:G:392:LYS:O	1:G:396:MET:HG3	2.07	0.54
1:A:176:LEU:HD13	1:A:287:ASN:CG	2.28	0.54
1:A:797:TRP:CE2	1:A:820:VAL:HG11	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:151:GLU:HG3	1:F:152:GLU:N	2.20	0.54
1:F:225:LEU:HG	1:F:246:LEU:HD21	1.90	0.54
1:G:169:LEU:HD12	1:G:170:LEU:CG	2.25	0.54
1:G:263:VAL:HG22	1:G:290:LEU:HB3	1.88	0.54
1:E:214:VAL:O	1:E:214:VAL:HG13	2.08	0.54
1:A:410:LEU:O	1:A:413:SER:OG	2.24	0.54
1:F:820:VAL:HG22	1:F:844:MET:CB	2.38	0.54
1:A:835:ALA:HB2	1:A:859:ILE:HG23	1.90	0.54
1:E:45:LEU:HD21	1:E:66:ILE:HG21	1.89	0.54
1:E:63:VAL:HA	1:E:66:ILE:HD12	1.90	0.54
1:E:105:LYS:HA	1:E:108:ALA:HB3	1.90	0.54
1:G:6:VAL:HG22	1:G:70:VAL:HG21	1.88	0.53
1:G:83:GLU:CG	1:G:104:VAL:HG22	2.38	0.53
1:A:182:VAL:HG22	1:A:293:THR:HG23	1.88	0.53
1:E:29:GLU:N	1:E:29:GLU:OE1	2.41	0.53
1:E:136:ASP:OD1	1:E:137:LEU:N	2.40	0.53
1:G:845:LEU:HD11	1:G:856:ALA:CB	2.38	0.53
1:A:191:THR:OG1	3:A:902:ADP:O1A	2.20	0.53
1:E:169:LEU:HD21	1:E:202:ILE:HD11	1.90	0.53
1:F:166:ILE:HG12	1:F:202:ILE:HD11	1.91	0.53
1:A:190:THR:HG22	3:A:902:ADP:O2B	2.09	0.53
1:A:356:ILE:HD11	1:A:393:LEU:HD22	1.90	0.53
1:G:341:SER:OG	1:G:374:ASP:OD2	2.25	0.53
1:G:445:GLU:OE1	1:G:445:GLU:N	2.38	0.53
1:G:45:LEU:CD2	1:G:63:VAL:HG13	2.38	0.53
1:G:828:LYS:O	1:G:851:THR:HG23	2.08	0.53
1:A:750:LEU:HD13	1:A:779:PHE:HE1	1.73	0.52
1:A:830:VAL:HG22	1:A:855:SER:OG	2.09	0.52
1:E:41:PHE:O	1:E:45:LEU:HD22	2.10	0.52
1:A:228:ILE:O	1:A:232:THR:HG23	2.09	0.52
1:F:162:ALA:HA	1:F:196:ILE:HG12	1.92	0.52
1:F:192:LEU:CD1	1:F:196:ILE:HD11	2.39	0.52
1:F:103:ARG:NH2	1:F:106:GLU:OE1	2.43	0.52
1:F:493:GLU:HG3	1:F:495:LEU:HG	1.91	0.52
1:A:262:VAL:HG11	1:A:280:PHE:CZ	2.45	0.52
1:E:797:TRP:CD2	1:E:820:VAL:HG11	2.45	0.52
1:F:634:GLU:OE1	1:F:635:ARG:N	2.39	0.52
1:G:660:LEU:H	1:G:660:LEU:HD23	1.73	0.52
1:A:755:LEU:HD12	1:A:779:PHE:CE1	2.45	0.52
1:F:341:SER:OG	1:F:374:ASP:OD2	2.28	0.52
1:F:782:GLU:O	1:F:804:VAL:N	2.36	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:377:VAL:HG23	1:A:393:LEU:HD21	1.91	0.52
1:E:24:ILE:CD1	1:E:27:VAL:HG23	2.39	0.52
1:E:228:ILE:CG1	1:E:250:ILE:HG13	2.39	0.52
1:F:75:ASP:OD2	1:F:537:HIS:ND1	2.43	0.52
1:G:178:VAL:CG1	1:G:303:ASN:HB2	2.40	0.52
1:G:381:LEU:HD23	1:G:393:LEU:HD21	1.91	0.52
1:F:766:LEU:HD13	1:F:769:LEU:HD12	1.92	0.52
1:F:27:VAL:HG12	1:F:27:VAL:O	2.10	0.52
1:E:273:TRP:HA	1:E:276:ILE:HG22	1.92	0.51
1:E:2:ALA:HB2	1:E:67:ARG:CZ	2.40	0.51
1:G:58:VAL:O	1:G:62:LEU:HG	2.10	0.51
1:G:76:ALA:HB1	1:G:111:ILE:HG23	1.93	0.51
1:E:24:ILE:HD12	1:E:27:VAL:CG2	2.40	0.51
1:A:169:LEU:HD12	1:A:170:LEU:HG	1.93	0.51
1:F:165:VAL:HA	1:F:168:ARG:HG2	1.92	0.51
1:G:667:THR:HG23	1:G:689:LYS:HG2	1.91	0.51
1:E:409:PHE:HE1	1:E:477:LEU:HD21	1.75	0.51
1:F:776:GLU:OE1	1:F:776:GLU:O	2.28	0.51
1:G:27:VAL:HG11	1:G:111:ILE:HD12	1.91	0.51
1:A:487:GLN:OE1	1:A:488:GLU:N	2.44	0.51
1:F:438:TYR:CZ	1:F:444:LEU:HD21	2.45	0.51
1:G:704:SER:O	1:G:705:ALA:HB3	2.10	0.51
1:E:816:LEU:HD21	1:E:818:HIS:O	2.11	0.51
1:F:148:PRO:HG3	1:F:453:ASN:OD1	2.10	0.51
1:G:202:ILE:HG22	1:G:209:ARG:HD2	1.92	0.51
1:E:785:GLU:OE1	1:E:785:GLU:N	2.44	0.51
1:F:169:LEU:HD13	1:F:205:GLU:HG2	1.93	0.51
1:F:592:VAL:HG23	1:F:592:VAL:O	2.11	0.51
1:F:612:ILE:CD1	1:F:615:ILE:HD11	2.40	0.51
1:G:393:LEU:HD23	1:G:396:MET:CE	2.41	0.51
1:G:820:VAL:HG13	1:G:822:ILE:HD11	1.91	0.51
1:A:542:LEU:HD23	1:A:544:PHE:CZ	2.46	0.50
1:E:853:ALA:HB1	1:E:880:ILE:HG21	1.93	0.50
1:F:242:CYS:O	1:F:246:LEU:N	2.41	0.50
1:G:59:LEU:HD22	1:G:132:LEU:HD21	1.94	0.50
1:A:735:LEU:CD2	1:A:755:LEU:HD13	2.41	0.50
1:E:499:ILE:O	1:E:499:ILE:CG2	2.59	0.50
1:F:136:ASP:C	1:F:137:LEU:HD12	2.31	0.50
1:A:854:ILE:O	1:A:858:GLN:HG2	2.12	0.50
1:G:555:ASP:OD1	1:G:558:THR:HG21	2.11	0.50
1:F:64:LYS:O	1:F:65:LYS:HB3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:40:ASP:OD2	1:G:122:ARG:NH2	2.45	0.50
1:G:161:GLU:O	1:G:165:VAL:HG23	2.11	0.50
1:F:667:THR:HG23	1:F:689:LYS:HG2	1.93	0.50
1:E:771:VAL:HG22	1:E:795:VAL:HB	1.94	0.50
1:G:599:ILE:O	1:G:599:ILE:HG23	2.12	0.50
1:A:342:ILE:HG23	1:A:377:VAL:HG11	1.94	0.50
1:A:816:LEU:HD22	1:A:840:PHE:CD2	2.47	0.50
1:G:161:GLU:OE1	1:G:307:HIS:NE2	2.44	0.50
1:A:151:GLU:HB3	1:A:152:GLU:CD	2.32	0.50
1:F:98:LEU:HA	1:F:101:TYR:CE1	2.47	0.50
1:G:721:LYS:NZ	1:G:749:THR:HG21	2.27	0.50
1:E:325:VAL:HG13	1:E:326:PHE:CD2	2.47	0.49
1:E:671:ILE:HD11	1:E:690:LEU:HD11	1.93	0.49
1:G:152:GLU:HG2	1:G:323:LYS:HB3	1.94	0.49
1:G:178:VAL:HG11	1:G:302:CYS:HB3	1.93	0.49
1:E:345:LYS:HG2	1:E:377:VAL:HG23	1.93	0.49
1:F:174:ASN:ND2	1:F:284:ASN:O	2.45	0.49
1:F:433:GLU:HG2	1:F:568:VAL:HG21	1.93	0.49
1:G:119:ARG:HA	1:G:122:ARG:HG3	1.93	0.49
1:G:464:MET:SD	1:G:464:MET:N	2.86	0.49
1:A:98:LEU:O	1:A:102:LYS:N	2.39	0.49
1:A:838:ARG:CZ	1:A:873:ASN:HB3	2.42	0.49
1:E:499:ILE:HD11	1:E:516:TYR:HE2	1.77	0.49
1:F:599:ILE:HG23	1:F:599:ILE:O	2.11	0.49
1:G:188:GLY:HA3	3:G:902:ADP:C8	2.47	0.49
1:A:66:ILE:O	1:A:70:VAL:HG13	2.12	0.49
1:G:745:LEU:HD23	1:G:746:ARG:N	2.27	0.49
1:E:486:ARG:O	1:E:490:MET:HG3	2.13	0.49
1:E:677:THR:HG22	1:E:678:GLU:N	2.28	0.49
1:F:114:ILE:O	1:F:118:VAL:HG23	2.12	0.49
1:G:52:HIS:O	1:G:59:LEU:HD12	2.13	0.49
1:G:821:LEU:HD21	1:G:827:LEU:CD2	2.40	0.49
1:F:486:ARG:O	1:F:490:MET:HG3	2.12	0.49
1:F:804:VAL:HG13	1:F:828:LYS:HD3	1.95	0.49
1:F:820:VAL:HG22	1:F:844:MET:HB3	1.95	0.49
1:A:700:LEU:HD21	1:A:735:LEU:HD13	1.95	0.48
1:E:843:MET:HB3	1:E:878:LEU:HD12	1.94	0.48
1:F:590:ARG:HA	1:F:612:ILE:HA	1.95	0.48
1:G:380:HIS:CB	1:G:396:MET:HE1	2.42	0.48
1:A:700:LEU:HD22	1:A:734:ARG:O	2.11	0.48
1:E:270:ASP:OD1	1:E:271:GLU:N	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:27:VAL:HG22	1:G:27:VAL:O	2.13	0.48
1:G:612:ILE:HD12	1:G:615:ILE:HD11	1.94	0.48
1:A:472:ILE:HD12	1:A:472:ILE:H	1.78	0.48
1:F:816:LEU:HD21	1:F:819:LEU:CD2	2.43	0.48
1:G:262:VAL:O	1:G:289:VAL:HA	2.13	0.48
1:G:633:MET:HE3	1:G:636:LEU:HD22	1.95	0.48
1:A:169:LEU:O	1:A:170:LEU:HB2	2.14	0.48
1:F:398:TYR:HA	1:F:401:LEU:HD23	1.96	0.48
1:F:447:LYS:O	1:F:451:ASN:ND2	2.46	0.48
1:F:452:LEU:CD2	1:F:472:ILE:HD12	2.42	0.48
1:F:572:GLU:HG2	1:F:593:ALA:HB1	1.95	0.48
1:A:52:HIS:CE1	1:A:55:GLU:HB2	2.49	0.48
1:F:129:LEU:O	1:F:133:GLN:N	2.35	0.48
1:F:401:LEU:HD12	1:F:405:LEU:HB3	1.95	0.48
1:F:499:ILE:HB	1:F:521:ILE:HD12	1.95	0.48
1:G:6:VAL:HG21	1:G:45:LEU:CD1	2.43	0.48
1:G:381:LEU:CD2	1:G:393:LEU:HD21	2.43	0.48
1:A:592:VAL:O	1:A:592:VAL:HG13	2.14	0.48
1:A:700:LEU:HD21	1:A:735:LEU:HA	1.96	0.48
1:F:266:ASP:N	1:F:292:THR:O	2.47	0.48
1:F:777:ASN:N	1:F:800:ARG:O	2.43	0.48
1:G:202:ILE:HG22	1:G:209:ARG:CD	2.43	0.48
1:A:757:TRP:CE2	1:A:803:LEU:HD13	2.49	0.48
1:E:224:PHE:HB2	1:E:246:LEU:HD21	1.94	0.48
1:F:196:ILE:O	1:F:202:ILE:HG13	2.14	0.48
1:E:317:SER:O	1:E:353:ILE:HD11	2.14	0.48
1:F:800:ARG:O	1:F:800:ARG:HG2	2.14	0.48
1:G:27:VAL:HG22	1:G:30:ALA:HB3	1.95	0.48
1:E:224:PHE:HB3	1:E:246:LEU:CG	2.44	0.48
1:E:210:ILE:HD12	1:E:262:VAL:HG12	1.96	0.47
1:G:178:VAL:CG2	1:G:291:LEU:HD23	2.44	0.47
1:G:405:LEU:HD12	1:G:455:LEU:HD21	1.94	0.47
1:A:197:TYR:O	1:A:209:ARG:NH1	2.47	0.47
1:F:409:PHE:CZ	1:F:460:LEU:HD13	2.49	0.47
1:G:30:ALA:O	1:G:34:LEU:HG	2.14	0.47
1:G:452:LEU:HD11	1:G:456:ILE:HD11	1.96	0.47
1:A:151:GLU:HB3	1:A:152:GLU:OE1	2.14	0.47
1:F:268:TRP:O	1:F:298:VAL:HG11	2.14	0.47
1:F:520:CYS:C	1:F:521:ILE:HD13	2.34	0.47
1:A:169:LEU:CD1	1:A:170:LEU:HG	2.43	0.47
1:A:178:VAL:O	1:A:303:ASN:ND2	2.45	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:321:LEU:C	1:A:321:LEU:HD23	2.34	0.47
1:E:154:ASP:OD1	1:E:154:ASP:N	2.46	0.47
1:F:639:LEU:HD23	1:F:639:LEU:O	2.14	0.47
1:A:714:LEU:HD12	1:A:717:LEU:CD1	2.42	0.47
1:A:809:SER:OG	1:A:811:ASP:OD1	2.27	0.47
1:E:349:LEU:O	1:E:353:ILE:HG22	2.15	0.47
1:F:508:PRO:HG2	1:F:513:LEU:HD21	1.97	0.47
1:E:116:ASN:C	1:E:116:ASN:OD1	2.53	0.47
1:G:169:LEU:HD13	1:G:206:PHE:CZ	2.50	0.47
1:A:325:VAL:HG13	1:A:326:PHE:CD2	2.50	0.47
1:A:641:THR:HG22	1:A:642:ASN:N	2.30	0.47
1:E:127:ILE:HD13	1:E:127:ILE:N	2.30	0.47
1:E:155:VAL:HG12	3:E:902:ADP:N6	2.30	0.47
1:F:100:HIS:O	1:F:100:HIS:ND1	2.44	0.47
1:F:371:LYS:O	1:F:371:LYS:HD3	2.15	0.47
1:F:800:ARG:O	1:F:800:ARG:CG	2.63	0.47
1:G:350:PRO:HG2	3:G:902:ADP:C8	2.49	0.47
1:G:751:LEU:HD23	1:G:776:GLU:OE1	2.15	0.47
1:G:797:TRP:CZ3	1:G:820:VAL:HG21	2.49	0.47
1:A:52:HIS:ND1	1:A:55:GLU:HB2	2.30	0.47
1:A:345:LYS:NZ	1:A:374:ASP:OD1	2.33	0.47
1:E:176:LEU:HD22	1:E:282:ASN:HA	1.96	0.47
1:E:224:PHE:HA	1:E:227:ILE:HG22	1.95	0.47
1:F:165:VAL:CB	1:F:196:ILE:HD13	2.45	0.47
1:G:825:ASP:OD2	1:G:825:ASP:N	2.40	0.47
1:F:318:TRP:CH2	1:F:336:VAL:HG13	2.49	0.47
1:F:392:LYS:O	1:F:396:MET:HG3	2.15	0.47
1:F:555:ASP:O	1:F:555:ASP:OD2	2.33	0.47
1:F:866:GLN:O	1:F:871:THR:OG1	2.28	0.47
1:G:410:LEU:HD23	1:G:489:ALA:HB2	1.97	0.47
1:E:115:ARG:O	1:E:115:ARG:NH1	2.46	0.47
1:E:120:GLU:O	1:E:121:ILE:HB	2.15	0.47
1:E:755:LEU:O	1:E:780:SER:N	2.42	0.47
1:F:211:TRP:CZ3	1:F:263:VAL:HG11	2.50	0.47
1:F:486:ARG:HG2	1:F:486:ARG:HH11	1.80	0.47
1:F:262:VAL:HG22	1:F:289:VAL:HG22	1.96	0.46
1:F:572:GLU:OE1	1:F:595:SER:OG	2.32	0.46
1:G:184:MET:SD	1:G:184:MET:N	2.88	0.46
1:G:595:SER:O	1:G:596:SER:OG	2.28	0.46
1:A:347:LYS:O	1:A:347:LYS:CG	2.63	0.46
1:F:180:PRO:O	1:F:307:HIS:N	2.40	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:176:LEU:CD2	1:G:282:ASN:HA	2.45	0.46
1:G:267:VAL:O	1:G:293:THR:OG1	2.25	0.46
1:A:116:ASN:OD1	1:A:116:ASN:C	2.53	0.46
1:A:647:LEU:HD11	1:A:671:ILE:HD12	1.97	0.46
1:G:168:ARG:HA	1:G:168:ARG:NE	2.31	0.46
1:A:321:LEU:O	1:A:325:VAL:HG12	2.15	0.46
1:F:165:VAL:HB	1:F:196:ILE:HD13	1.98	0.46
1:F:183:GLY:CA	1:F:189:LYS:HD3	2.45	0.46
1:F:750:LEU:N	1:F:773:LYS:O	2.41	0.46
1:F:837:ILE:O	1:F:863:LYS:NZ	2.41	0.46
1:A:97:ASP:O	1:A:101:TYR:HB3	2.15	0.46
1:E:224:PHE:HB3	1:E:246:LEU:HG	1.98	0.46
1:G:797:TRP:NE1	1:G:799:GLU:OE2	2.49	0.46
1:G:677:THR:HG22	1:G:678:GLU:N	2.30	0.46
1:E:390:CYS:O	1:E:394:VAL:HG12	2.16	0.46
1:F:169:LEU:O	1:F:170:LEU:CB	2.63	0.46
1:G:590:ARG:HA	1:G:612:ILE:HA	1.97	0.46
1:F:523:SER:OG	1:F:524:SER:N	2.48	0.46
1:E:101:TYR:HA	1:E:104:VAL:HG12	1.97	0.45
1:F:751:LEU:HD12	1:F:775:LYS:HB2	1.97	0.45
1:G:151:GLU:HG3	1:G:152:GLU:CG	2.44	0.45
1:E:148:PRO:HD3	1:E:453:ASN:HB3	1.97	0.45
1:A:283:ASN:CG	1:A:283:ASN:O	2.55	0.45
1:F:182:VAL:HA	1:F:293:THR:O	2.16	0.45
1:F:532:LYS:HD2	1:F:558:THR:HG22	1.99	0.45
1:F:826:ASN:O	1:F:828:LYS:HD2	2.17	0.45
1:G:96:LEU:HD22	1:G:101:TYR:CE2	2.51	0.45
1:G:749:THR:HG23	1:G:773:LYS:HB3	1.97	0.45
1:G:421:ILE:N	1:G:475:CYS:O	2.41	0.45
1:G:679:GLU:O	1:G:683:ARG:HG2	2.16	0.45
1:G:813:PHE:HB3	1:G:816:LEU:HB2	1.98	0.45
1:A:127:ILE:HD13	1:A:127:ILE:N	2.32	0.45
1:A:152:GLU:CG	1:A:323:LYS:HB3	2.46	0.45
1:A:486:ARG:O	1:A:490:MET:HG3	2.17	0.45
1:E:542:LEU:HD23	1:E:544:PHE:CZ	2.51	0.45
1:F:696:ILE:O	1:F:699:LEU:N	2.49	0.45
1:A:318:TRP:NE1	1:A:322:GLU:OE1	2.50	0.45
1:A:499:ILE:HD12	1:A:519:LEU:HD22	1.98	0.45
1:E:846:GLN:HA	1:E:881:PHE:CB	2.47	0.45
1:A:511:ARG:O	1:A:514:SER:OG	2.28	0.45
1:F:745:LEU:HD23	1:F:746:ARG:N	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:27:VAL:HG22	1:A:30:ALA:HB3	1.98	0.45
1:G:98:LEU:HB2	1:G:99:PRO:HD3	1.99	0.45
1:G:843:MET:SD	1:G:878:LEU:HD13	2.56	0.45
1:A:178:VAL:HG21	1:A:302:CYS:HB3	1.99	0.45
1:E:729:GLN:HG3	1:E:754:TRP:CE3	2.51	0.45
1:F:169:LEU:C	1:F:170:LEU:HG	2.38	0.45
1:F:280:PHE:CD2	1:F:289:VAL:HG21	2.52	0.45
1:G:152:GLU:HB3	1:G:323:LYS:HB3	1.99	0.45
1:G:176:LEU:HD11	1:G:260:TYR:HH	1.82	0.45
1:A:33:SER:OG	1:A:115:ARG:NH2	2.48	0.45
1:E:33:SER:O	1:E:37:ASP:OD1	2.34	0.45
1:E:416:PRO:HG3	1:E:522:HIS:CG	2.52	0.45
1:E:714:LEU:CD1	1:E:717:LEU:HD12	2.46	0.45
1:F:169:LEU:HD12	1:F:170:LEU:CG	2.44	0.45
1:F:169:LEU:O	1:F:170:LEU:HB2	2.16	0.45
1:G:66:ILE:O	1:G:70:VAL:HG23	2.17	0.45
1:G:150:VAL:HG22	1:G:153:ASP:HB3	1.98	0.45
1:G:318:TRP:CZ2	1:G:336:VAL:HG13	2.52	0.45
1:G:394:VAL:HG21	1:G:481:LEU:HD23	1.99	0.45
1:E:649:VAL:O	1:E:649:VAL:HG13	2.18	0.44
1:G:149:VAL:HG22	1:G:150:VAL:N	2.32	0.44
1:G:228:ILE:HG21	1:G:238:TYR:CD1	2.52	0.44
1:G:407:ALA:O	1:G:408:CYS:HB2	2.17	0.44
1:G:521:ILE:O	1:G:543:SER:HA	2.17	0.44
1:G:746:ARG:HA	1:G:769:LEU:HA	1.99	0.44
1:E:356:ILE:HG12	1:E:393:LEU:HD22	1.99	0.44
1:E:542:LEU:HD23	1:E:544:PHE:CE2	2.52	0.44
1:F:172:GLU:HG3	1:F:172:GLU:O	2.17	0.44
1:G:176:LEU:HG	1:G:282:ASN:HA	1.99	0.44
1:G:405:LEU:HD12	1:G:455:LEU:CD2	2.48	0.44
1:G:827:LEU:HD21	1:G:830:VAL:HG12	1.99	0.44
1:A:838:ARG:NH2	1:A:873:ASN:HB3	2.32	0.44
1:E:151:GLU:OE1	1:E:151:GLU:HA	2.17	0.44
1:F:637:ARG:O	1:F:638:HIS:ND1	2.50	0.44
1:F:770:GLU:CD	1:F:794:LEU:HD13	2.37	0.44
1:G:251:GLN:HG2	1:G:281:PRO:HB3	1.99	0.44
1:E:797:TRP:CE2	1:E:820:VAL:HG11	2.52	0.44
1:E:800:ARG:CZ	1:E:823:CYS:SG	3.05	0.44
1:F:232:THR:HG22	1:F:233:ARG:N	2.33	0.44
1:F:575:ASN:OD1	1:F:575:ASN:C	2.55	0.44
1:F:589:LEU:HD21	1:F:592:VAL:HG12	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:37:ASP:O	1:G:40:ASP:OD1	2.35	0.44
1:E:597:ASP:OD1	1:E:598:SER:N	2.50	0.44
1:F:205:GLU:O	1:F:259:LYS:HD2	2.18	0.44
1:F:774:MET:O	1:F:774:MET:HG3	2.18	0.44
1:A:702:ASN:HA	1:A:705:ALA:HB2	1.99	0.44
1:E:388:GLU:HA	1:E:391:ASN:OD1	2.18	0.44
1:E:853:ALA:CB	1:E:880:ILE:HG21	2.47	0.44
1:F:318:TRP:O	1:F:322:GLU:HG2	2.17	0.44
1:F:401:LEU:HD22	1:F:458:ARG:HH11	1.83	0.44
1:F:410:LEU:O	1:F:411:TYR:HB3	2.17	0.44
1:F:676:CYS:HG	1:F:681:PHE:HE2	1.66	0.44
1:G:97:ASP:O	1:G:101:TYR:HB3	2.18	0.44
1:A:154:ASP:OD1	1:A:154:ASP:N	2.51	0.44
1:A:687:LEU:HD21	1:A:689:LYS:O	2.18	0.44
1:A:773:LYS:HA	1:A:797:TRP:HB3	1.98	0.44
1:G:486:ARG:HH11	1:G:486:ARG:HG2	1.83	0.44
1:A:312:LEU:HG	1:A:316:GLU:HB3	1.99	0.44
1:A:641:THR:HG22	1:A:642:ASN:H	1.83	0.44
1:E:347:LYS:HD3	1:E:381:LEU:HD22	2.00	0.44
1:E:640:HIS:HA	1:E:669:SER:HB2	1.99	0.44
1:F:228:ILE:HG21	1:F:238:TYR:CD2	2.53	0.44
1:F:354:VAL:HG13	1:F:459:ASN:OD1	2.17	0.44
1:G:218:TYR:OH	1:G:275:ARG:NH2	2.51	0.44
1:G:273:TRP:CZ2	1:G:277:LYS:HD2	2.53	0.44
1:G:350:PRO:HA	1:G:353:ILE:HD12	1.99	0.44
1:G:625:ASP:OD2	1:G:627:GLN:NE2	2.50	0.44
1:A:105:LYS:O	1:A:108:ALA:HB3	2.17	0.44
1:A:403:TYR:HA	1:A:406:LYS:HD2	2.00	0.44
1:E:53:ILE:HG22	1:E:60:ARG:CG	2.48	0.44
1:E:773:LYS:HA	1:E:797:TRP:HB3	1.99	0.44
1:E:853:ALA:HB1	1:E:885:LEU:HD12	2.00	0.44
1:F:34:LEU:HD21	1:F:73:ALA:CB	2.47	0.44
1:F:835:ALA:HB2	1:F:859:ILE:HG23	2.00	0.44
1:A:816:LEU:HD23	1:A:817:LYS:N	2.33	0.43
1:E:172:GLU:OE2	1:E:172:GLU:HA	2.18	0.43
1:E:472:ILE:HD12	1:E:472:ILE:H	1.83	0.43
1:F:165:VAL:HG11	1:F:196:ILE:HD13	1.99	0.43
1:G:549:ILE:O	1:G:575:ASN:N	2.45	0.43
1:A:33:SER:CB	1:A:115:ARG:HE	2.31	0.43
1:A:374:ASP:O	1:A:377:VAL:HG12	2.19	0.43
1:A:664:SER:O	1:A:666:GLN:HG3	2.17	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:748:LEU:HD23	1:F:772:LEU:HD13	1.99	0.43
1:G:169:LEU:HD13	1:G:206:PHE:HZ	1.82	0.43
1:F:97:ASP:O	1:F:101:TYR:CD1	2.72	0.43
1:F:683:ARG:N	1:F:683:ARG:HE	2.16	0.43
1:F:816:LEU:HD21	1:F:819:LEU:HD23	2.00	0.43
1:G:41:PHE:HZ	1:G:122:ARG:HG2	1.82	0.43
1:G:260:TYR:CE2	1:G:287:ASN:OD1	2.72	0.43
1:G:342:ILE:HG21	1:G:356:ILE:HG21	2.00	0.43
1:A:501:LEU:HD11	1:A:507:PHE:CE1	2.53	0.43
1:A:556:ILE:N	1:A:557:PRO:CD	2.81	0.43
1:A:875:ALA:HB1	1:A:877:LYS:NZ	2.33	0.43
1:E:700:LEU:HD13	1:E:733:LEU:HB3	2.00	0.43
1:E:858:GLN:C	1:E:858:GLN:OE1	2.57	0.43
1:F:593:ALA:HB2	1:F:616:ILE:HD12	2.01	0.43
1:F:828:LYS:HD2	1:F:828:LYS:N	2.32	0.43
1:G:172:GLU:OE2	1:G:177:GLU:HG3	2.18	0.43
1:G:172:GLU:O	1:G:172:GLU:HG3	2.18	0.43
1:G:774:MET:SD	1:G:778:GLY:N	2.90	0.43
1:F:212:VAL:N	1:F:263:VAL:O	2.49	0.43
1:F:679:GLU:O	1:F:683:ARG:HG2	2.19	0.43
1:A:152:GLU:HG2	1:A:323:LYS:HB3	1.99	0.43
1:A:745:LEU:HD23	1:A:746:ARG:N	2.34	0.43
1:E:132:LEU:O	1:E:132:LEU:HD23	2.18	0.43
1:E:163:ASP:OD1	1:E:164:ILE:N	2.52	0.43
1:E:261:LEU:HD12	1:E:288:ARG:O	2.19	0.43
1:E:323:LYS:NZ	1:E:327:HIS:O	2.38	0.43
1:E:391:ASN:HA	1:E:394:VAL:HG12	1.99	0.43
1:E:861:ALA:O	1:E:865:ASN:OD1	2.37	0.43
1:F:486:ARG:HG2	1:F:486:ARG:NH1	2.33	0.43
1:A:501:LEU:HD11	1:A:507:PHE:HZ	1.79	0.43
1:E:665:LEU:N	1:E:666:GLN:OE1	2.51	0.43
1:F:793:LEU:HD22	1:F:816:LEU:HD12	1.98	0.43
1:G:75:ASP:OD2	1:G:517:ARG:NH2	2.51	0.43
1:A:468:SER:CB	1:A:773:LYS:HZ1	2.32	0.43
1:A:714:LEU:CD1	1:A:717:LEU:HD12	2.44	0.43
1:F:166:ILE:HA	1:F:169:LEU:CD2	2.49	0.43
1:F:431:ILE:CD1	1:F:444:LEU:HB3	2.49	0.43
1:F:840:PHE:HZ	1:F:843:MET:HB2	1.84	0.43
1:G:164:ILE:O	1:G:167:ASN:HB3	2.19	0.43
1:G:261:LEU:HD12	1:G:288:ARG:O	2.19	0.43
1:G:264:LEU:HD11	1:G:280:PHE:CZ	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:394:VAL:HG11	1:A:481:LEU:HD13	2.00	0.43
1:E:224:PHE:HB3	1:E:246:LEU:HD11	2.00	0.43
1:F:14:MET:CG	1:F:35:LEU:HD21	2.48	0.43
1:F:254:LEU:HB3	1:F:260:TYR:CD2	2.54	0.43
1:A:37:ASP:OD2	1:A:119:ARG:NH1	2.52	0.43
1:E:853:ALA:CB	1:E:885:LEU:HD12	2.48	0.43
1:F:617:ILE:HG22	1:F:619:THR:CG2	2.49	0.43
1:A:44:PHE:CE1	1:A:132:LEU:HD11	2.53	0.42
1:A:754:TRP:N	1:A:778:GLY:O	2.52	0.42
1:E:703:LYS:HD2	1:E:703:LYS:C	2.39	0.42
1:G:264:LEU:O	1:G:291:LEU:HA	2.19	0.42
1:G:2:ALA:O	1:G:6:VAL:HG23	2.18	0.42
1:G:835:ALA:HB2	1:G:859:ILE:HG23	2.01	0.42
1:A:443:SER:OG	1:A:446:CYS:SG	2.63	0.42
1:E:346:CYS:O	1:E:347:LYS:HB2	2.19	0.42
1:E:754:TRP:NE1	1:E:777:ASN:HB3	2.33	0.42
1:E:860:GLN:OE1	1:E:861:ALA:N	2.51	0.42
1:F:156:VAL:HG11	1:F:319:ILE:CG2	2.49	0.42
1:A:101:TYR:HA	1:A:104:VAL:HB	2.00	0.42
1:A:215:SER:O	1:A:218:TYR:HB3	2.20	0.42
1:A:345:LYS:HZ2	1:A:374:ASP:CG	2.20	0.42
1:A:750:LEU:HD13	1:A:779:PHE:CE1	2.52	0.42
1:A:830:VAL:O	1:A:831:PRO:C	2.58	0.42
1:F:212:VAL:HB	1:F:263:VAL:O	2.20	0.42
1:G:64:LYS:O	1:G:65:LYS:HB3	2.18	0.42
1:E:65:LYS:O	1:E:69:VAL:HG13	2.19	0.42
1:F:2:ALA:HB2	1:F:67:ARG:HE	1.84	0.42
1:G:75:ASP:OD2	1:G:537:HIS:ND1	2.52	0.42
1:G:575:ASN:C	1:G:575:ASN:OD1	2.58	0.42
1:G:697:SER:OG	1:G:733:LEU:HD11	2.20	0.42
1:G:831:PRO:O	1:G:859:ILE:HD11	2.19	0.42
1:A:696:ILE:HG22	1:A:696:ILE:O	2.19	0.42
1:A:878:LEU:HD12	1:A:879:SER:H	1.83	0.42
1:E:881:PHE:N	1:E:882:PRO:CD	2.82	0.42
1:F:213:TYR:HA	1:F:265:ASP:HB3	2.02	0.42
1:G:169:LEU:CD2	1:G:202:ILE:CD1	2.97	0.42
1:G:745:LEU:HD21	1:G:747:LYS:O	2.19	0.42
1:E:57:GLU:HA	1:E:60:ARG:CZ	2.50	0.42
1:E:212:VAL:CG1	1:E:223:LEU:HD11	2.49	0.42
1:E:221:ARG:HB2	1:E:243:GLU:OE2	2.20	0.42
1:E:846:GLN:HA	1:E:881:PHE:HB3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:206:PHE:CE1	1:F:261:LEU:CD2	3.03	0.42
1:F:323:LYS:O	1:F:327:HIS:N	2.53	0.42
1:G:266:ASP:N	1:G:292:THR:O	2.53	0.42
1:G:404:ASP:O	1:G:407:ALA:HB3	2.19	0.42
1:F:175:HIS:CG	1:F:176:LEU:N	2.87	0.42
1:F:224:PHE:HB2	1:F:246:LEU:HD23	2.02	0.42
1:F:571:VAL:HB	1:F:574:ILE:HD12	2.00	0.42
1:G:208:THR:O	1:G:260:TYR:HA	2.20	0.42
1:G:501:LEU:HD13	1:G:507:PHE:CE1	2.55	0.42
1:G:821:LEU:C	1:G:822:ILE:HD13	2.40	0.42
1:G:845:LEU:HB2	1:G:880:ILE:HG22	2.00	0.42
1:A:657:LYS:HD2	1:E:679:GLU:HG2	2.01	0.42
1:G:570:ASP:C	1:G:570:ASP:OD1	2.57	0.42
1:G:804:VAL:HA	1:G:826:ASN:OD1	2.20	0.42
1:A:369:GLU:O	1:A:373:VAL:HG22	2.19	0.42
1:A:472:ILE:HD12	1:A:472:ILE:N	2.35	0.42
1:A:510:LYS:N	1:G:244:GLU:OE1	2.51	0.42
1:E:754:TRP:CD1	1:E:780:SER:HB3	2.55	0.42
1:F:360:LEU:HD13	1:F:373:VAL:HG11	1.98	0.42
1:F:532:LYS:N	1:F:533:PRO:CD	2.83	0.42
1:F:671:ILE:HD12	1:F:671:ILE:O	2.20	0.42
1:G:399:ASP:OD1	1:G:400:ARG:N	2.53	0.42
1:G:483:GLU:HB2	1:G:486:ARG:NH2	2.35	0.42
1:A:170:LEU:HD21	1:A:206:PHE:HZ	1.83	0.41
1:F:232:THR:HG22	1:F:233:ARG:H	1.85	0.41
1:G:23:LEU:HD13	1:G:84:ALA:HB3	2.02	0.41
1:G:210:ILE:HD11	1:G:254:LEU:HD21	2.01	0.41
1:G:390:CYS:O	1:G:394:VAL:HG23	2.19	0.41
1:G:753:THR:OG1	1:G:778:GLY:O	2.37	0.41
1:A:838:ARG:CZ	1:A:838:ARG:HA	2.50	0.41
1:E:208:THR:HG22	1:E:230:LYS:HZ1	1.84	0.41
1:F:178:VAL:HG11	1:F:302:CYS:HB3	2.02	0.41
1:G:499:ILE:HB	1:G:521:ILE:CD1	2.51	0.41
1:G:819:LEU:HD12	1:G:820:VAL:N	2.34	0.41
1:E:224:PHE:CB	1:E:246:LEU:HD21	2.50	0.41
1:F:156:VAL:HG12	1:F:316:GLU:OE1	2.19	0.41
1:F:804:VAL:O	1:F:828:LYS:HG2	2.20	0.41
1:G:6:VAL:HG21	1:G:45:LEU:HD11	2.02	0.41
1:G:525:VAL:HG21	1:G:541:PHE:HZ	1.85	0.41
1:A:148:PRO:HD3	1:A:453:ASN:HB3	2.01	0.41
1:F:159:ASP:OD1	1:F:159:ASP:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:693:ARG:NH1	1:F:723:ILE:HG21	2.35	0.41
1:G:178:VAL:HG22	1:G:291:LEU:HD23	2.01	0.41
1:G:180:PRO:HA	1:G:291:LEU:HG	2.02	0.41
1:G:821:LEU:HB3	1:G:845:LEU:HD23	2.02	0.41
1:A:47:GLN:HA	1:A:50:LYS:HG2	2.01	0.41
1:A:844:MET:HA	1:A:879:SER:O	2.21	0.41
1:E:213:TYR:OH	1:E:476:ARG:NH2	2.50	0.41
1:E:844:MET:SD	1:E:845:LEU:N	2.93	0.41
1:F:69:VAL:HG11	1:F:121:ILE:HD11	2.02	0.41
1:F:205:GLU:CG	1:F:206:PHE:CE1	3.04	0.41
1:F:679:GLU:O	1:F:682:ALA:N	2.53	0.41
1:F:770:GLU:HG3	1:F:794:LEU:HB2	2.02	0.41
1:A:24:ILE:O	1:A:24:ILE:HG23	2.20	0.41
1:E:97:ASP:O	1:E:101:TYR:CB	2.68	0.41
1:E:323:LYS:O	1:E:327:HIS:N	2.52	0.41
1:G:499:ILE:HG22	1:G:501:LEU:HD11	2.02	0.41
1:E:696:ILE:HG22	1:E:700:LEU:CD1	2.48	0.41
1:G:177:GLU:H	1:G:288:ARG:HH21	1.68	0.41
1:G:660:LEU:H	1:G:660:LEU:CD2	2.34	0.41
1:A:438:TYR:O	1:A:439:LYS:HD2	2.20	0.41
1:A:706:ALA:HA	1:A:709:LYS:HB2	2.03	0.41
1:E:477:LEU:HD22	1:E:481:LEU:HB3	2.02	0.41
1:F:402:PRO:O	1:F:405:LEU:N	2.54	0.41
1:G:416:PRO:HD2	1:G:544:PHE:CD2	2.55	0.41
1:G:463:VAL:HG11	1:G:466:ARG:CZ	2.51	0.41
1:G:645:ALA:O	1:G:672:ALA:N	2.53	0.41
1:G:845:LEU:HD12	1:G:878:LEU:HD11	2.02	0.41
1:A:44:PHE:HE1	1:A:132:LEU:HD11	1.86	0.41
1:E:56:ASN:OD1	1:E:57:GLU:N	2.54	0.41
1:E:251:GLN:HG3	1:E:281:PRO:HB3	2.02	0.41
1:E:463:VAL:HG23	1:E:472:ILE:HG23	2.03	0.41
1:F:420:GLN:OE1	1:F:420:GLN:N	2.52	0.41
1:F:531:THR:HG22	1:F:531:THR:O	2.20	0.41
1:F:555:ASP:OD2	1:F:558:THR:HG21	2.21	0.41
1:F:723:ILE:HG23	1:F:751:LEU:HD23	2.03	0.41
1:F:821:LEU:HB2	1:F:845:LEU:HD23	2.03	0.41
1:G:73:ALA:HB2	1:G:114:ILE:HG21	2.03	0.41
1:G:410:LEU:HD12	1:G:485:CYS:SG	2.61	0.41
1:A:552:PRO:HB3	1:G:550:GLU:HG3	2.03	0.41
1:E:41:PHE:O	1:E:45:LEU:CD2	2.69	0.41
1:F:37:ASP:HA	1:F:40:ASP:OD2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:180:PRO:HB2	1:G:306:PRO:HA	2.04	0.41
1:G:260:TYR:CD1	1:G:260:TYR:C	2.94	0.41
1:G:811:ASP:OD1	1:G:812:ASP:N	2.54	0.41
1:G:819:LEU:O	1:G:843:MET:HA	2.21	0.41
1:E:714:LEU:HD12	1:E:717:LEU:CD1	2.47	0.40
1:F:747:LYS:CD	1:F:771:VAL:HG11	2.51	0.40
1:F:817:LYS:HE3	1:F:839:SER:HB2	2.03	0.40
1:G:92:VAL:HG11	1:G:97:ASP:HB2	2.03	0.40
1:G:165:VAL:HG11	1:G:196:ILE:HD13	2.03	0.40
1:G:212:VAL:HB	1:G:264:LEU:HD23	2.04	0.40
1:A:699:LEU:O	1:A:705:ALA:HA	2.21	0.40
1:E:320:LEU:HD12	1:E:320:LEU:O	2.21	0.40
1:F:156:VAL:HG11	1:F:319:ILE:HG23	2.03	0.40
1:G:480:MET:O	1:G:483:GLU:HG3	2.21	0.40
1:G:531:THR:HG22	1:G:531:THR:O	2.20	0.40
1:A:168:ARG:NH1	1:A:179:VAL:HG13	2.36	0.40
1:A:365:LYS:HA	1:A:370:TRP:HE1	1.86	0.40
1:A:390:CYS:O	1:A:394:VAL:HG23	2.21	0.40
1:A:819:LEU:HB3	1:A:840:PHE:CZ	2.56	0.40
1:F:65:LYS:HE2	1:F:69:VAL:CG1	2.52	0.40
1:F:449:GLU:O	1:F:453:ASN:ND2	2.55	0.40
1:G:27:VAL:HG11	1:G:111:ILE:HD11	2.03	0.40
1:G:115:ARG:HA	1:G:118:VAL:HG22	2.03	0.40
1:G:180:PRO:HG2	1:G:306:PRO:HA	2.03	0.40
1:G:320:LEU:HD21	3:G:902:ADP:N1	2.36	0.40
1:G:681:PHE:CZ	1:G:711:VAL:HG22	2.57	0.40
1:A:838:ARG:CZ	1:A:838:ARG:O	2.70	0.40
1:E:376:SER:HB3	1:E:396:MET:SD	2.61	0.40
1:E:556:ILE:N	1:E:557:PRO:CD	2.85	0.40
1:E:586:LEU:O	1:E:609:LEU:HD22	2.21	0.40
1:F:559:ILE:HG23	1:F:563:PHE:HD2	1.87	0.40
1:G:262:VAL:HG23	1:G:289:VAL:HG22	2.04	0.40
1:A:192:LEU:C	1:A:192:LEU:HD23	2.42	0.40
1:E:660:LEU:O	1:E:683:ARG:NE	2.55	0.40
1:F:199:HIS:HB3	1:F:202:ILE:HG12	2.03	0.40
1:F:651:VAL:O	1:F:651:VAL:HG13	2.21	0.40
1:G:40:ASP:OD1	1:G:41:PHE:N	2.54	0.40
1:G:65:LYS:O	1:G:65:LYS:HD3	2.22	0.40
1:G:69:VAL:HG22	1:G:117:LYS:HE3	2.02	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 PDB entries followed by that with respect to all EM entries.

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	883/885 (100%)	847 (96%)	36 (4%)	0	100	100
1	E	883/885 (100%)	850 (96%)	32 (4%)	1 (0%)	51	83
1	F	883/885 (100%)	851 (96%)	32 (4%)	0	100	100
1	G	883/885 (100%)	840 (95%)	42 (5%)	1 (0%)	51	83
All	All	3532/3540 (100%)	3388 (96%)	142 (4%)	2 (0%)	54	83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	170	LEU
1	G	148	PRO

### 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 PDB entries followed by that with respect to all EM entries.

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	797/797 (100%)	780 (98%)	17 (2%)	53	79
1	E	797/797 (100%)	766 (96%)	31 (4%)	32	65
1	F	797/797 (100%)	776 (97%)	21 (3%)	46	75
1	G	797/797 (100%)	774 (97%)	23 (3%)	42	72
All	All	3188/3188 (100%)	3096 (97%)	92 (3%)	45	72

All (92) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	ASP
1	A	65	LYS
1	A	87	HIS
1	A	125	ASP
1	A	226	ASN
1	A	242	CYS
1	A	303	ASN
1	A	310	LYS
1	A	378	SER
1	A	404	ASP
1	A	583	PHE
1	A	610	TRP
1	A	695	LYS
1	A	722	LEU
1	A	829	GLU
1	A	836	ASP
1	A	840	PHE
1	E	12	ASN
1	E	29	GLU
1	E	62	LEU
1	E	115	ARG
1	E	159	ASP
1	E	169	LEU
1	E	204	TYR
1	E	213	TYR
1	E	229	SER
1	E	242	CYS
1	E	248	ASP
1	E	284	ASN
1	E	310	LYS
1	E	345	LYS
1	E	425	LYS
1	E	487	GLN
1	E	491	LYS
1	E	500	LYS
1	E	581	ARG
1	E	591	TYR
1	E	643	SER
1	E	703	LYS
1	E	712	LYS
1	E	754	TRP
1	E	836	ASP
1	E	840	PHE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	E	848	SER
1	E	865	ASN
1	E	877	LYS
1	E	881	PHE
1	E	885	LEU
1	F	8	PHE
1	F	115	ARG
1	F	159	ASP
1	F	206	PHE
1	F	253	PHE
1	F	310	LYS
1	F	386	HIS
1	F	466	ARG
1	F	469	ASP
1	F	471	GLN
1	F	487	GLN
1	F	532	LYS
1	F	540	SER
1	F	572	GLU
1	F	585	GLN
1	F	598	SER
1	F	622	ARG
1	F	643	SER
1	F	664	SER
1	F	703	LYS
1	F	838	ARG
1	G	3	ASN
1	G	130	GLN
1	G	146	LYS
1	G	152	GLU
1	G	159	ASP
1	G	177	GLU
1	G	189	LYS
1	G	206	PHE
1	G	208	THR
1	G	253	PHE
1	G	310	LYS
1	G	398	TYR
1	G	469	ASP
1	G	483	GLU
1	G	501	LEU
1	G	551	MET

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Mol	Chain	Res	Type
1	G	622	ARG
1	G	664	SER
1	G	719	ASN
1	G	805	SER
1	G	857	ARG
1	G	866	GLN
1	G	877	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	175	HIS
1	A	303	ASN
1	A	478	HIS
1	A	777	ASN
1	A	818	HIS
1	E	478	HIS
1	E	818	HIS
1	F	15	GLN
1	F	174	ASN
1	G	175	HIS
1	G	451	ASN

### 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](#)

8 ligands are 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	ADP	G	902	-	24,29,29	0.95	1 (4%)	29,45,45	1.40	4 (13%)
2	IHP	G	901	-	36,36,36	1.48	6 (16%)	54,60,60	0.57	0
3	ADP	F	902	-	24,29,29	0.96	1 (4%)	29,45,45	1.38	3 (10%)
2	IHP	F	901	-	36,36,36	1.52	6 (16%)	54,60,60	0.91	2 (3%)
3	ADP	E	902	-	24,29,29	0.95	1 (4%)	29,45,45	1.37	3 (10%)
3	ADP	A	902	-	24,29,29	0.94	1 (4%)	29,45,45	1.40	5 (17%)
2	IHP	E	901	-	36,36,36	1.52	6 (16%)	54,60,60	0.93	3 (5%)
2	IHP	A	901	-	36,36,36	1.52	6 (16%)	54,60,60	0.95	5 (9%)

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	ADP	G	902	-	-	6/12/32/32	0/3/3/3
2	IHP	G	901	-	-	7/30/54/54	0/1/1/1
3	ADP	F	902	-	-	2/12/32/32	0/3/3/3
2	IHP	F	901	-	-	10/30/54/54	0/1/1/1
3	ADP	E	902	-	-	5/12/32/32	0/3/3/3
3	ADP	A	902	-	-	4/12/32/32	0/3/3/3
2	IHP	E	901	-	-	11/30/54/54	0/1/1/1
2	IHP	A	901	-	-	9/30/54/54	0/1/1/1

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	901	IHP	P3-O13	3.50	1.65	1.59
2	F	901	IHP	P5-O15	3.41	1.65	1.59
2	F	901	IHP	P3-O13	3.36	1.65	1.59
2	E	901	IHP	P5-O15	3.35	1.65	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	901	IHP	P5-O15	3.29	1.65	1.59
2	E	901	IHP	P1-O11	3.24	1.65	1.59
2	A	901	IHP	P6-O16	3.22	1.65	1.59
2	E	901	IHP	P2-O12	3.22	1.65	1.59
2	G	901	IHP	P4-O14	3.22	1.65	1.59
2	A	901	IHP	P1-O11	3.21	1.65	1.59
2	F	901	IHP	P4-O14	3.21	1.65	1.59
2	G	901	IHP	P6-O16	3.20	1.65	1.59
2	A	901	IHP	P4-O14	3.19	1.65	1.59
2	A	901	IHP	P2-O12	3.18	1.65	1.59
2	G	901	IHP	P2-O12	3.17	1.65	1.59
2	G	901	IHP	P1-O11	3.17	1.65	1.59
2	A	901	IHP	P3-O13	3.16	1.65	1.59
2	E	901	IHP	P4-O14	3.16	1.65	1.59
2	G	901	IHP	P3-O13	3.13	1.65	1.59
2	F	901	IHP	P6-O16	3.13	1.65	1.59
2	F	901	IHP	P1-O11	3.12	1.65	1.59
2	G	901	IHP	P5-O15	3.09	1.65	1.59
2	E	901	IHP	P6-O16	3.06	1.65	1.59
2	F	901	IHP	P2-O12	3.04	1.65	1.59
3	F	902	ADP	C5-C4	2.42	1.47	1.40
3	A	902	ADP	C5-C4	2.41	1.47	1.40
3	G	902	ADP	C5-C4	2.40	1.47	1.40
3	E	902	ADP	C5-C4	2.25	1.46	1.40

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	902	ADP	PA-O3A-PB	-3.86	119.57	132.83
2	F	901	IHP	C5-C6-C1	3.78	118.68	110.41
3	G	902	ADP	N3-C2-N1	-3.60	123.05	128.68
3	E	902	ADP	N3-C2-N1	-3.59	123.06	128.68
3	A	902	ADP	N3-C2-N1	-3.57	123.09	128.68
3	F	902	ADP	PA-O3A-PB	-3.47	120.91	132.83
3	F	902	ADP	N3-C2-N1	-3.43	123.31	128.68
2	E	901	IHP	C5-C4-C3	3.25	117.52	110.41
3	G	902	ADP	PA-O3A-PB	-3.11	122.17	132.83
3	A	902	ADP	PA-O3A-PB	-2.90	122.86	132.83
3	F	902	ADP	C4-C5-N7	-2.81	106.47	109.40
2	A	901	IHP	C4-C3-C2	2.80	116.53	110.41
2	E	901	IHP	C4-C3-C2	2.74	116.41	110.41
2	A	901	IHP	C6-C5-C4	2.63	116.17	110.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	901	IHP	C6-C5-C4	2.60	116.11	110.41
3	A	902	ADP	C3'-C2'-C1'	2.59	104.88	100.98
2	A	901	IHP	C5-C4-C3	2.59	116.08	110.41
2	A	901	IHP	C3-C2-C1	2.55	116.00	110.41
2	E	901	IHP	C6-C5-C4	2.52	115.94	110.41
3	G	902	ADP	C3'-C2'-C1'	2.46	104.67	100.98
3	A	902	ADP	C4-C5-N7	-2.45	106.85	109.40
3	E	902	ADP	C4-C5-N7	-2.37	106.93	109.40
3	A	902	ADP	C2-N1-C6	2.18	122.48	118.75
2	A	901	IHP	C6-C1-C2	2.11	115.03	110.41
3	G	902	ADP	C4-C5-N7	-2.04	107.28	109.40

There are no chirality outliers.

All (54) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	901	IHP	C2-C1-O11-P1
2	A	901	IHP	C6-C1-O11-P1
2	A	901	IHP	C4-C3-O13-P3
2	A	901	IHP	C1-O11-P1-O21
2	A	901	IHP	C6-O16-P6-O26
2	E	901	IHP	C2-C3-O13-P3
2	E	901	IHP	C1-C6-O16-P6
2	E	901	IHP	C2-O12-P2-O22
2	E	901	IHP	C3-O13-P3-O23
2	F	901	IHP	C4-C5-O15-P5
2	F	901	IHP	C6-O16-P6-O26
2	G	901	IHP	C1-C2-O12-P2
2	G	901	IHP	C3-C2-O12-P2
2	G	901	IHP	C1-O11-P1-O31
2	G	901	IHP	C4-O14-P4-O24
3	A	902	ADP	C5'-O5'-PA-O2A
3	E	902	ADP	C5'-O5'-PA-O1A
3	F	902	ADP	O4'-C4'-C5'-O5'
3	F	902	ADP	C3'-C4'-C5'-O5'
3	G	902	ADP	C5'-O5'-PA-O2A
2	A	901	IHP	C2-C3-O13-P3
2	F	901	IHP	C1-C2-O12-P2
3	E	902	ADP	C3'-C4'-C5'-O5'
2	F	901	IHP	C3-C2-O12-P2
3	E	902	ADP	O4'-C4'-C5'-O5'
2	E	901	IHP	C4-O14-P4-O24

*Continued on next page...*

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Mol	Chain	Res	Type	Atoms
2	E	901	IHP	C5-O15-P5-O25
3	E	902	ADP	PA-O3A-PB-O2B
3	G	902	ADP	PA-O3A-PB-O3B
2	E	901	IHP	C4-C3-O13-P3
2	E	901	IHP	C3-C4-O14-P4
2	F	901	IHP	C6-O16-P6-O36
2	G	901	IHP	C3-O13-P3-O33
2	G	901	IHP	C5-O15-P5-O45
3	A	902	ADP	C5'-O5'-PA-O3A
3	E	902	ADP	C5'-O5'-PA-O3A
3	G	902	ADP	C5'-O5'-PA-O3A
3	A	902	ADP	C5'-O5'-PA-O1A
3	G	902	ADP	C5'-O5'-PA-O1A
2	G	901	IHP	C6-C1-O11-P1
2	A	901	IHP	C3-O13-P3-O23
2	F	901	IHP	C2-O12-P2-O22
3	A	902	ADP	PA-O3A-PB-O1B
3	G	902	ADP	PA-O3A-PB-O2B
2	A	901	IHP	C1-O11-P1-O41
2	A	901	IHP	C6-O16-P6-O36
2	E	901	IHP	C2-C1-O11-P1
2	E	901	IHP	C3-O13-P3-O33
2	E	901	IHP	C4-O14-P4-O34
2	F	901	IHP	C2-O12-P2-O42
2	F	901	IHP	C3-O13-P3-O43
2	F	901	IHP	C4-O14-P4-O34
2	F	901	IHP	C4-O14-P4-O44
3	G	902	ADP	PB-O3A-PA-O2A

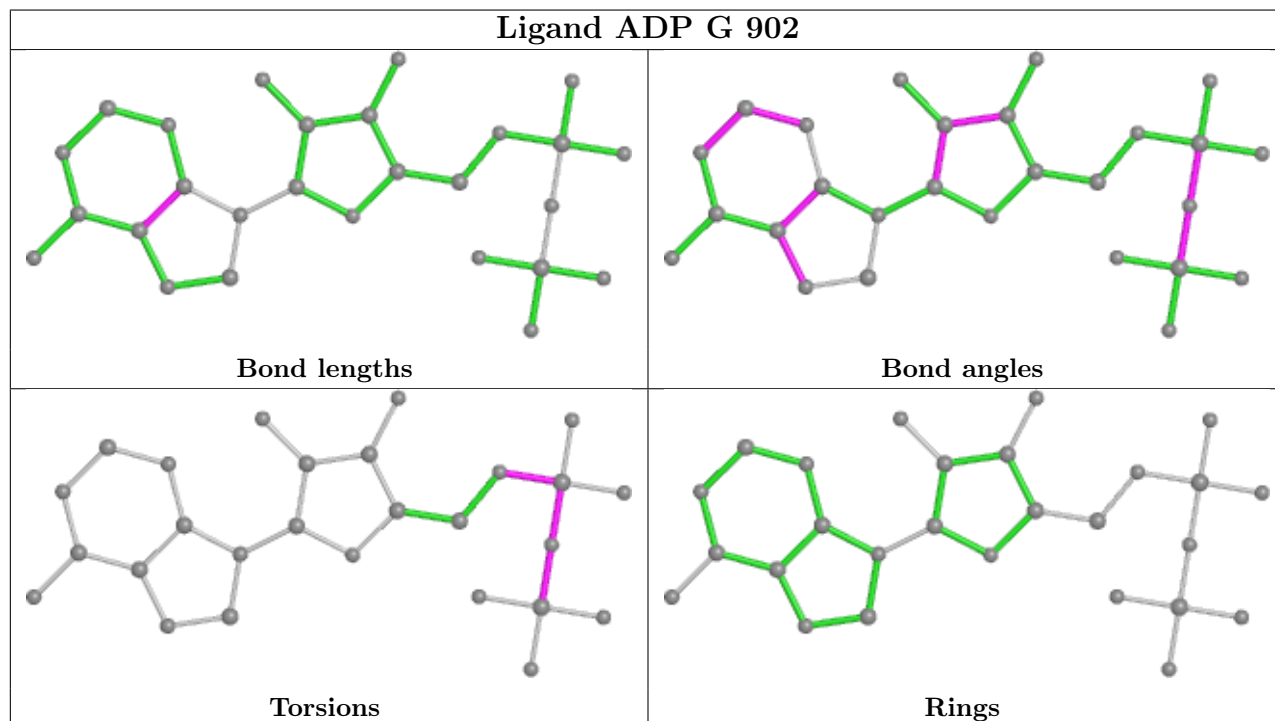
There are no ring outliers.

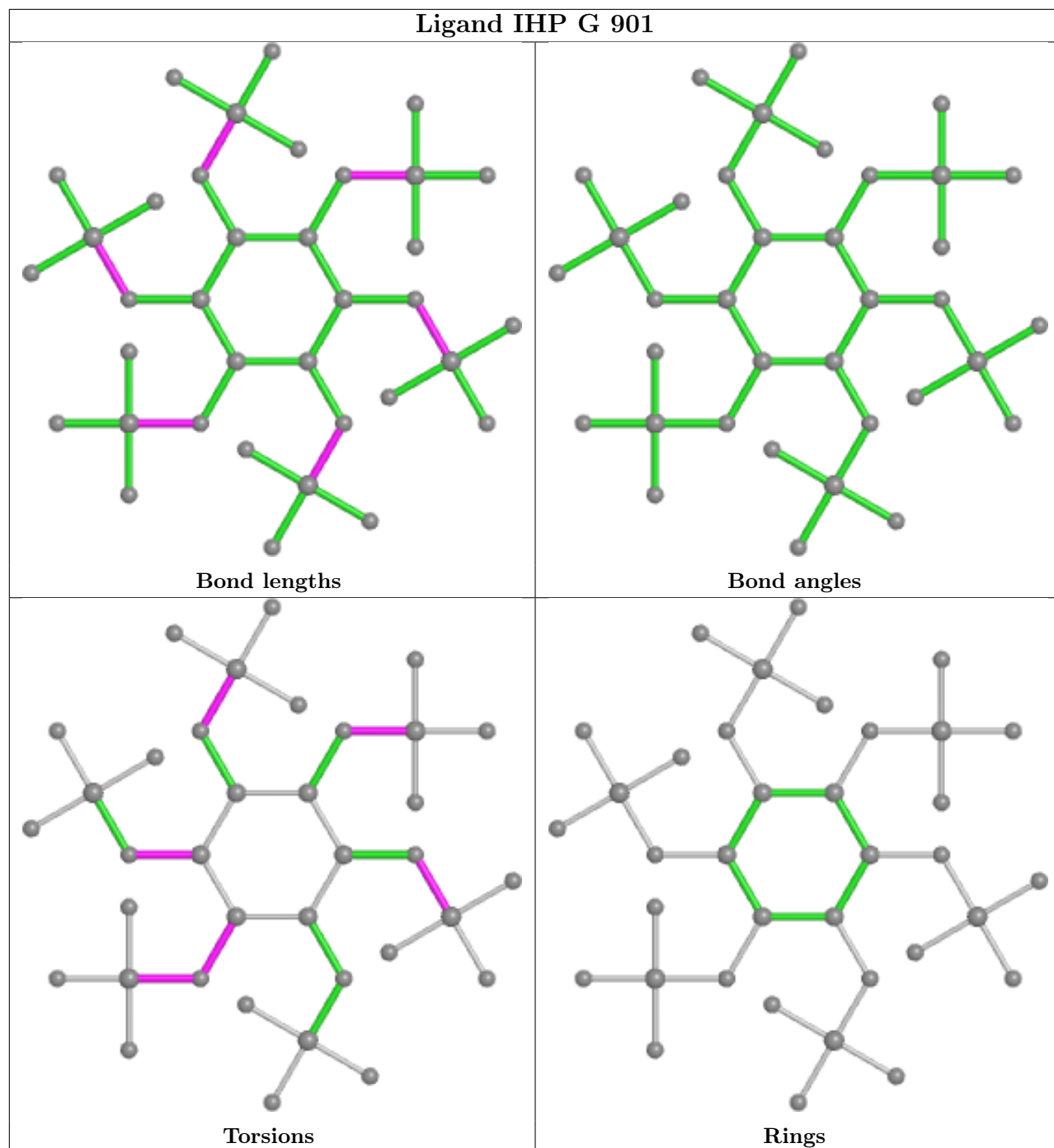
6 monomers are involved in 9 short contacts:

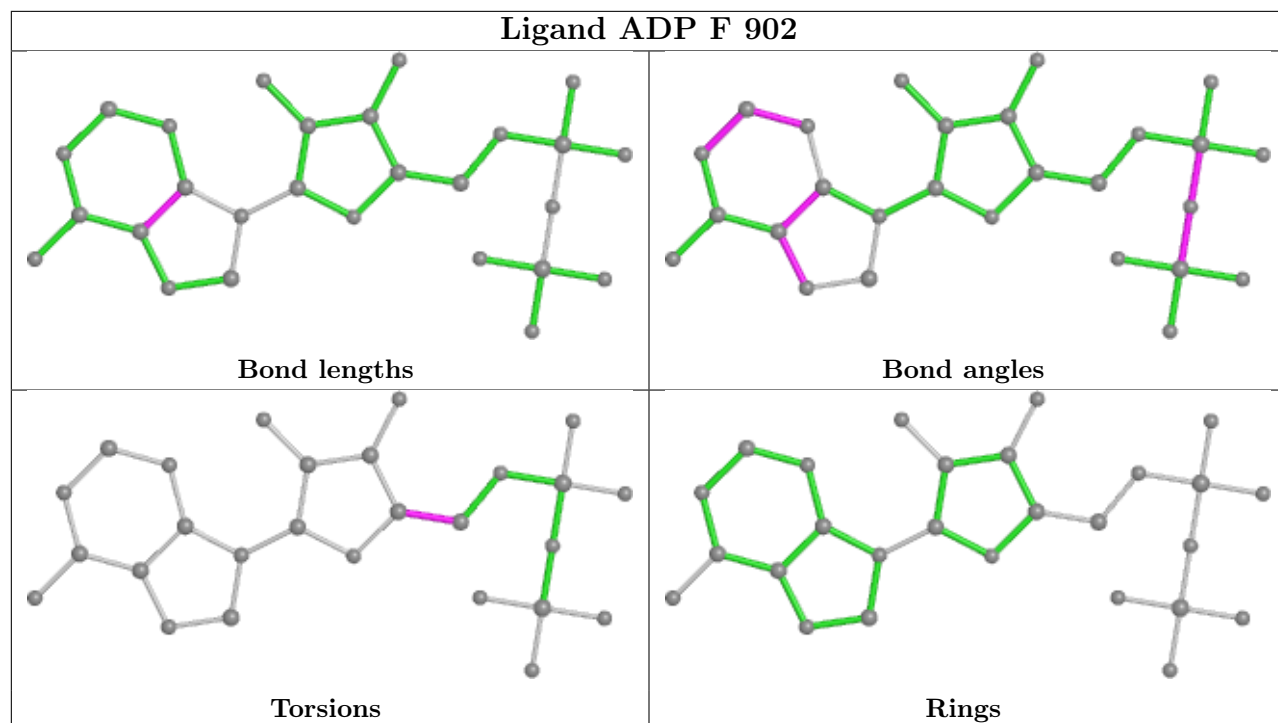
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	902	ADP	3	0
3	F	902	ADP	1	0
2	F	901	IHP	1	0
3	E	902	ADP	1	0
3	A	902	ADP	2	0
2	A	901	IHP	1	0

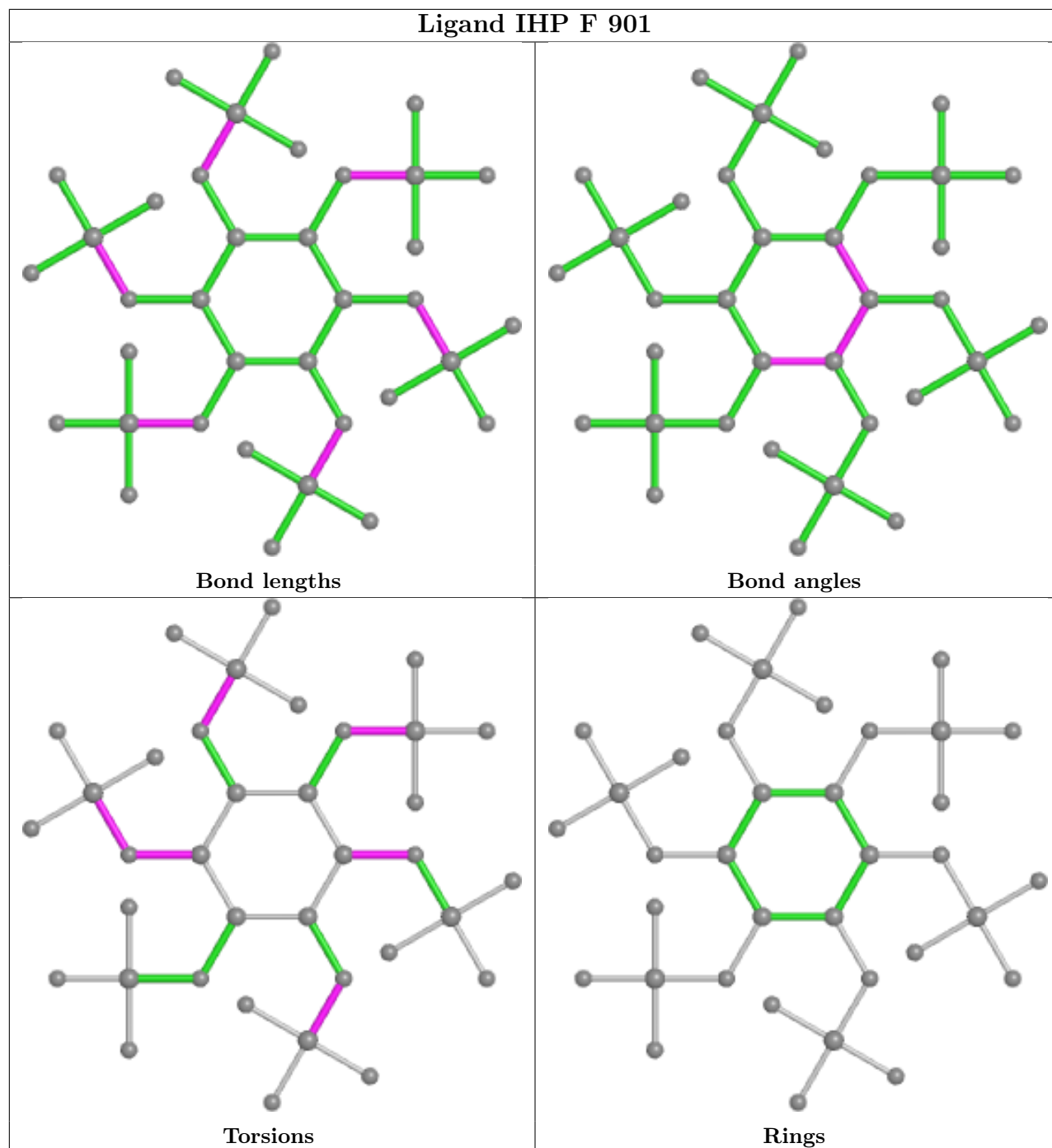
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

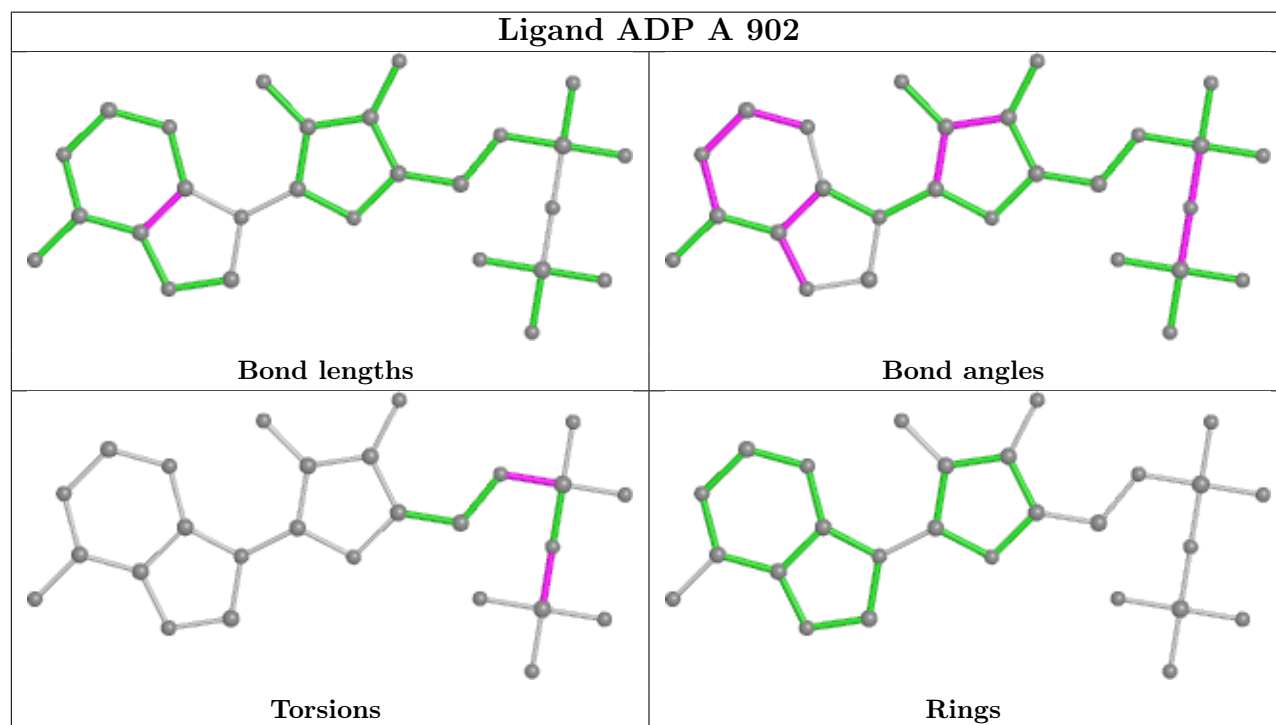
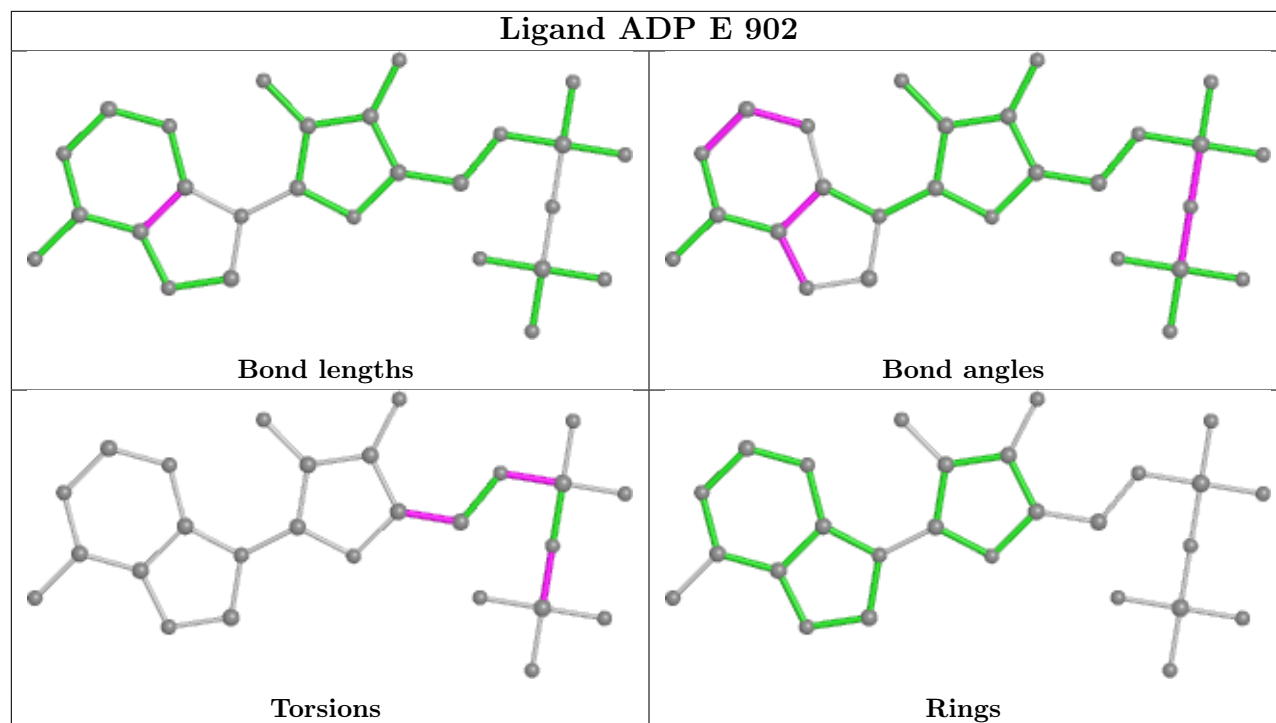
addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. 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.



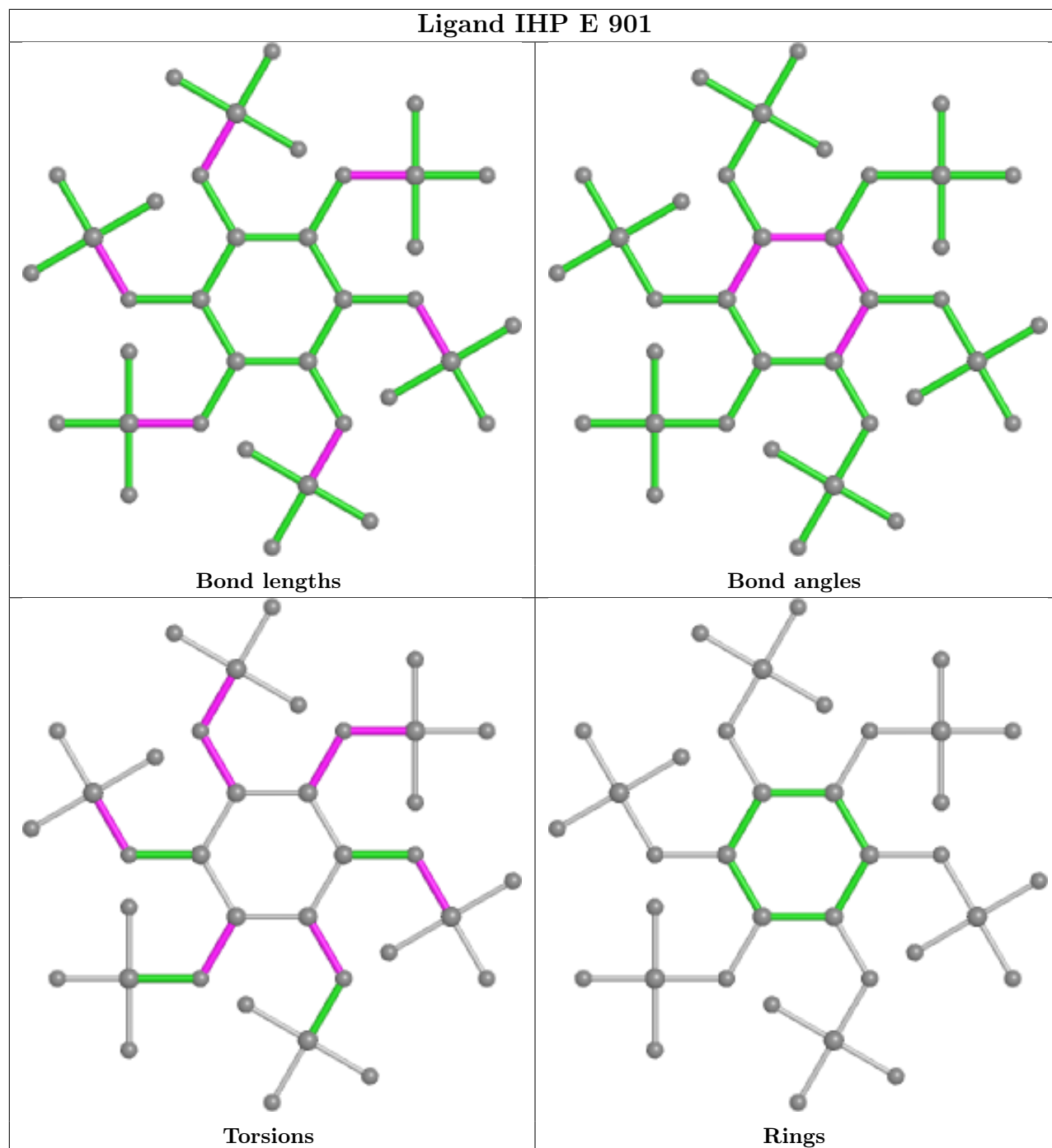


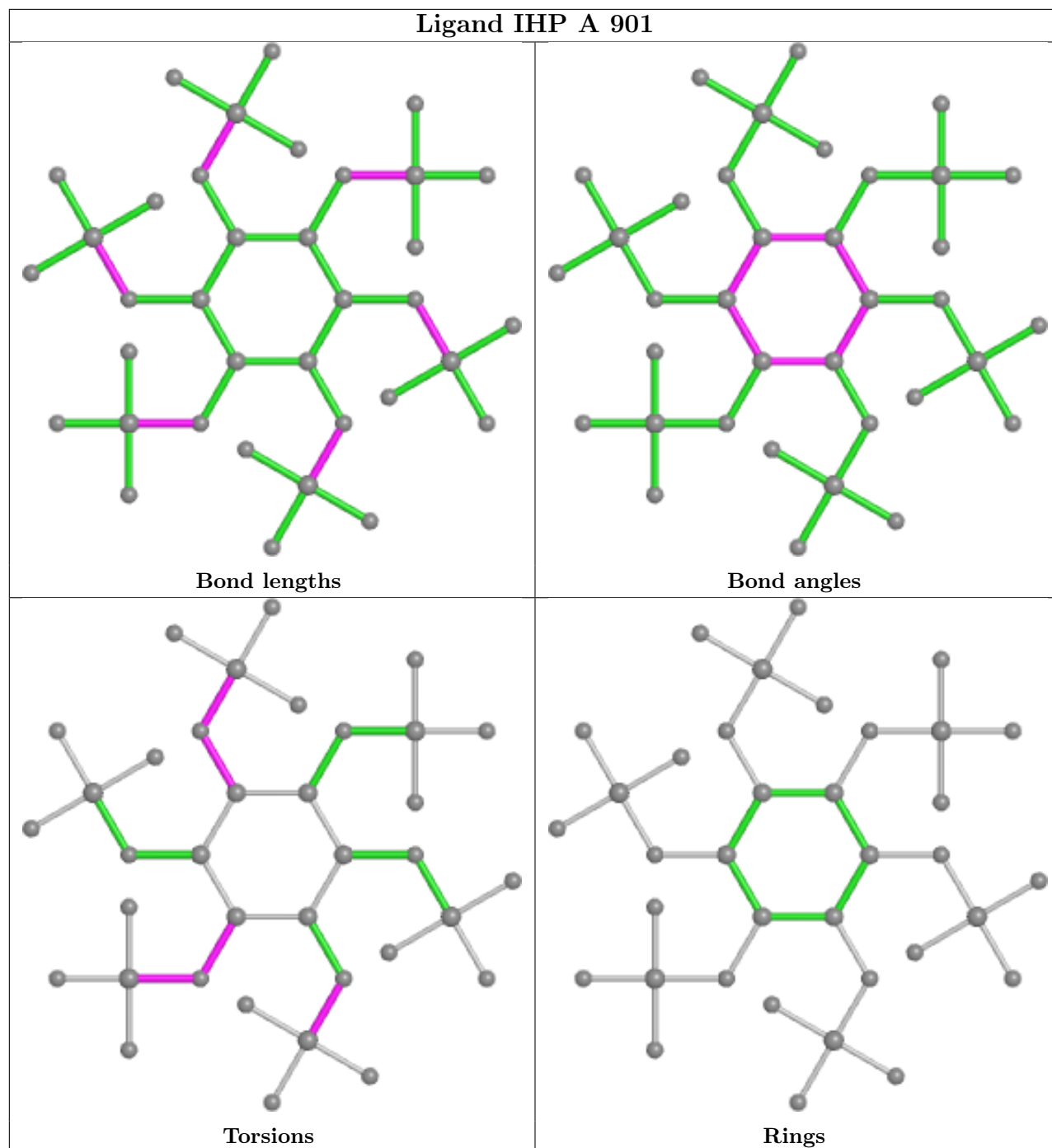












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.