



# Full wwPDB X-ray Structure Validation Report ⓘ

Jul 31, 2023 – 10:06 PM EDT

PDB ID : 6COX  
Title : CYCLOOXYGENASE-2 (PROSTAGLANDIN SYNTHASE-2) COM-  
PLEXED WITH A SELECTIVE INHIBITOR, SC-558 IN I222 SPACE  
GROUP  
Authors : Kurumbail, R.; Stallings, W.  
Deposited on : 1996-12-18  
Resolution : 2.80 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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)  
Xtrriage (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) : 2.34

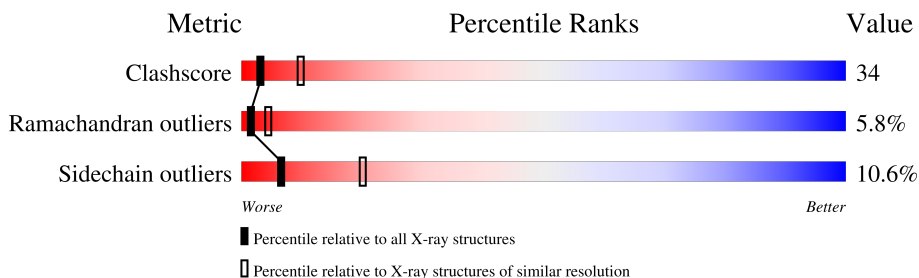
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	587	 39% 45% 9% • 6%
1	B	587	 40% 45% 9% • 6%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9168 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.

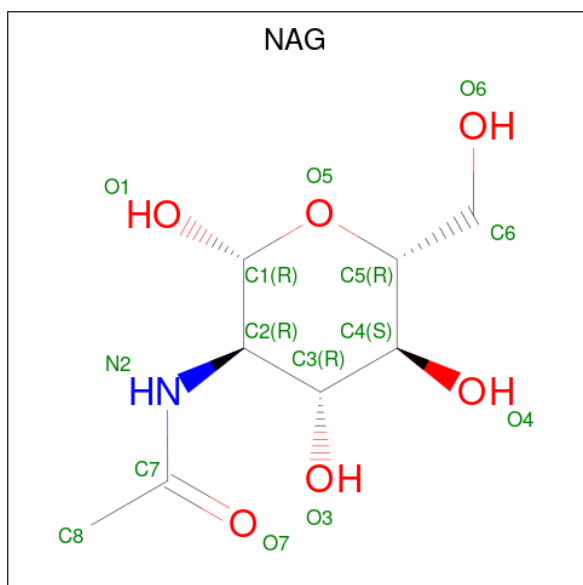
- Molecule 1 is a protein called CYCLOOXYGENASE-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	552	Total 4473	C 2886	N 748	O 814	S 25	0	0	0
1	B	552	Total 4473	C 2886	N 748	O 814	S 25	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

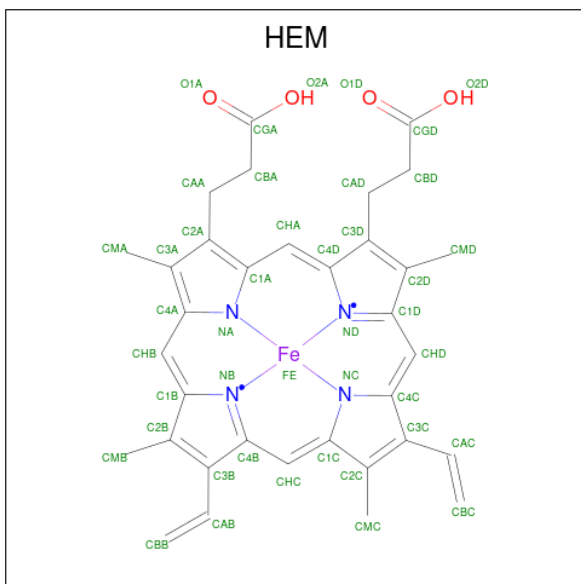
Chain	Residue	Modelled	Actual	Comment	Reference
A	310	GLN	ASN	conflict	UNP Q05769
A	333	LYS	ARG	conflict	UNP Q05769
B	310	GLN	ASN	conflict	UNP Q05769
B	333	LYS	ARG	conflict	UNP Q05769

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



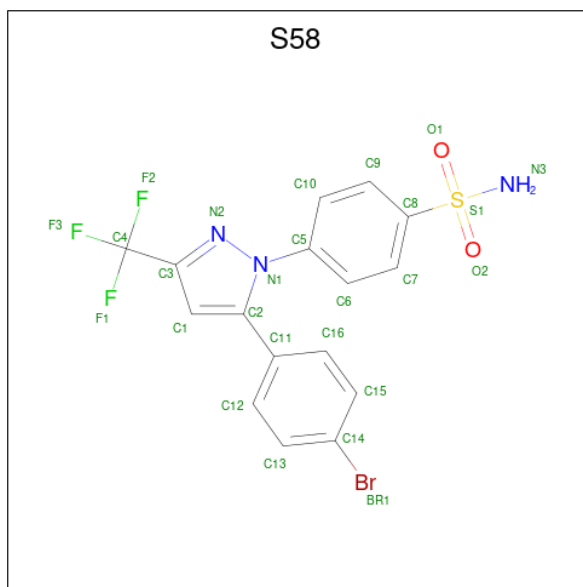
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula:  $C_{34}H_{32}FeN_4O_4$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
3	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
3	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 4 is 1-PHENYLSULFONAMIDE-3-TRIFLUOROMETHYL-5-PARABROMOPHENYLPYRAZOLE (three-letter code: S58) (formula:  $C_{16}H_{11}BrF_3N_3O_2S$ ).



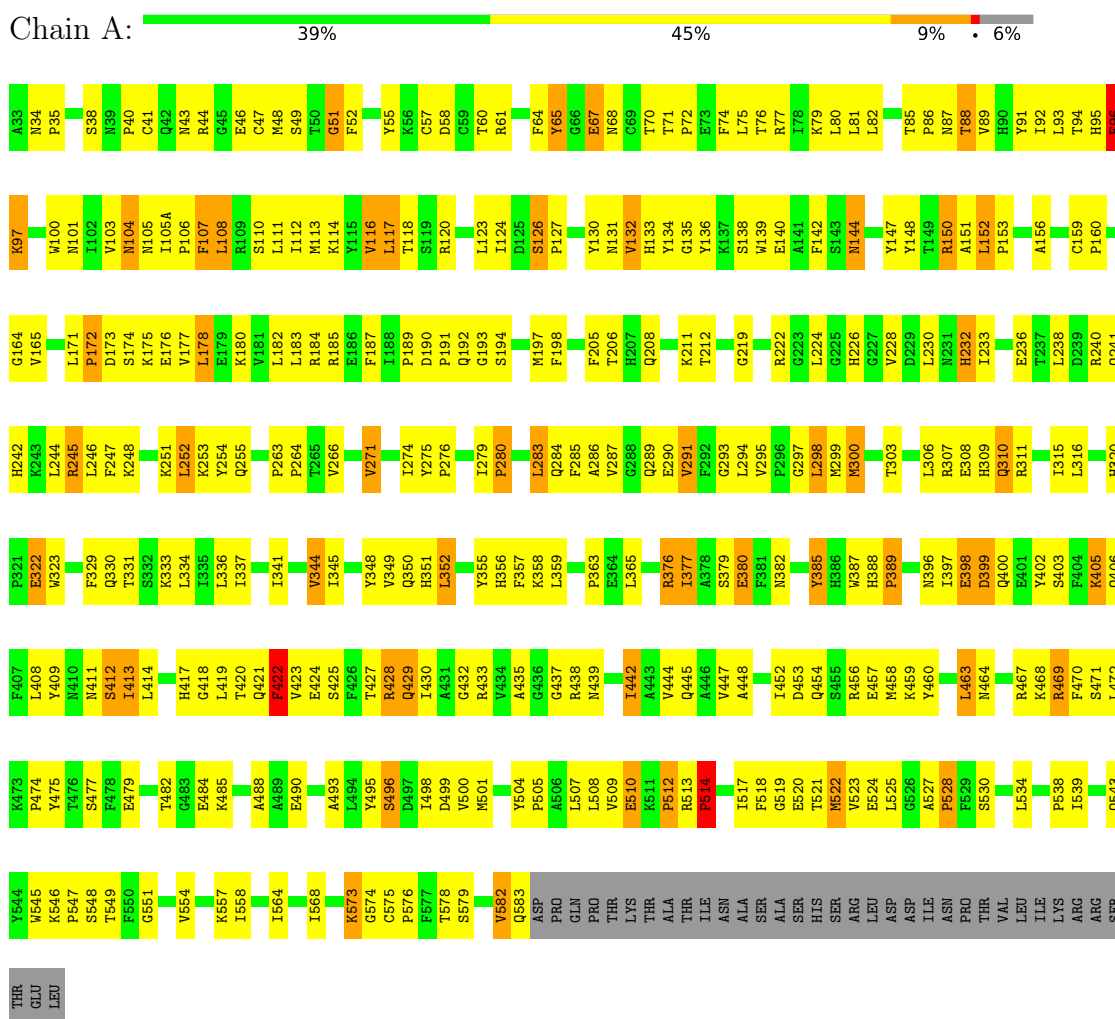
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	
			Total	Br	C	F	N	O			S
4	A	1	26	1	16	3	3	2	1	0	0
4	B	1	26	1	16	3	3	2	1	0	0

### 3 Residue-property plots

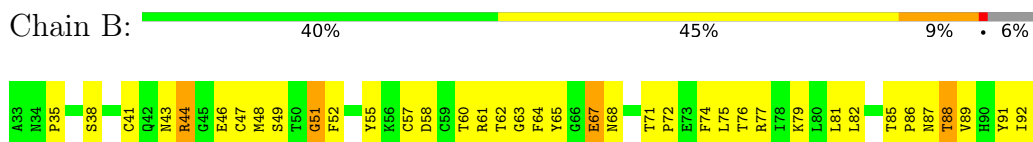
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS was not executed.

- Molecule 1: CYCLOOXYGENASE-2



- Molecule 1: CYCLOOXYGENASE-2



ARG	1539	F470	S403	E322	L246	P172	W100
SER	Q543	S471	F404	W323	F247	D173	M101
THR	K473	L472	K405	L328	K248	S174	K175
LEU	K546	P474	Q406	F329	K251	E176	L102
	P547	Y475	Y409	Q330	L252	E177	V103
	S548	T476	M410	T331	K253	L178	N104
	G551	S477	M411	S332	Y254	E179	M105
	V554	F478	S412	K333	Q255	K180	I105A
	K557	E479	L413	L334	V181	F107	P106
	I558	T482	L414	I337	L182	L108	F107
	I564	G483	H417	I341	L183	R109	L108
	I568	E484	G418	K342	R184	S110	R109
	K573	K485	L419	V344	L185	L111	L111
	G574	A488	T420	I345	P189	I112	I112
	C575	A489	Q421	V344	D190	M113	M113
	P576	E490	F422	I345	P191	K114	K114
	F577	A493	V423	V345	Q192	Y115	Y115
	T578	A493	E424	Y348	G193	V116	V116
	S579	L494	S425	V349	S194	L117	L117
ASP		Y495	F426	Q350	M195	S119	S119
PRO		Y496	T427	H351	M196	R120	R120
GLN		S496	R428	L352	M197	L123	L123
THR		D497	Q429	L352	F198	I124	I124
LYS		L498	T430	Y355	A202	D125	D125
ALA		L499	A431	H356	F205	S126	S126
ILE		V500	G432	F357	T206	P127	P127
ASN		M501	R433	K358	G207	Y130	Y130
SER		Y504	V434	K360	F209	M131	M131
ALA		A506	A435	K360	F209	Y132	Y132
SER		L507	G437	L365	F210	H133	H133
HIS		L508	M439	L366	F210	Y134	Y134
ARG		V509	M439	F367	K211	G135	G135
LEU		E510	I442	N368	T212	Y136	Y136
ASP		K511	A443	Q369	G219	K137	K137
ILE		P512	V444	Q370	L294	S138	S138
ASN		P514	Q445	F371	V295	W139	W139
SER		I517	V447	R376	G296	M144	M144
ALA		F518	S451	I377	G297	Y147	Y147
SER		G519	I452	A378	L298	Y148	Y148
HIS		E520	D453	S379	M299	T149	T149
SER		T521	Q454	E380	M300	R150	R150
ARG		M522	Q454	F381	N300	A151	A151
LEU		V523	S455	N382	T303	L152	L152
ASP		E524	R456	Y385	L306	A153	A153
ASP		L525	E457	H388	R307	P153	P153
ILE		G526	M458	P389	E308	A156	A156
ASN		A527	K459	P389	H309	C159	C159
PRO		P528	Y460	N396	Q310	P160	P160
THR		F529	L463	I397	R311	G164	G164
VAL		S530	M464	E398	I315	V165	V165
LEU		L534	R467	D399	L316	L171	L171
ILE		P538	K468	Q400	H320		
LYS			E401	E401	L244		
ARG			Y402	Y402	R245		

## 4 Data and refinement statistics

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

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	181.17Å 132.81Å 122.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.80	Depositor
% Data completeness (in resolution range)	88.5 (8.00-2.80)	Depositor
$R_{merge}$	0.09	Depositor
$R_{sym}$	0.09	Depositor
Refinement program	X-PLOR 3.1	Depositor
R, $R_{free}$	0.220 , 0.309	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	9168	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	20.0	wwPDB-VP



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: HEM, NAG, S58

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	0.65	0/4600	0.84	1/6237 (0.0%)
1	B	0.65	1/4600 (0.0%)	0.85	2/6237 (0.0%)
All	All	0.65	1/9200 (0.0%)	0.85	3/12474 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	479	GLU	CB-CG	5.55	1.62	1.52

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	287	VAL	N-CA-C	5.54	125.97	111.00
1	B	287	VAL	N-CA-C	5.29	125.28	111.00
1	B	437	GLY	N-CA-C	-5.17	100.17	113.10

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	4473	0	4375	324	0
1	B	4473	0	4375	301	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	42	0	39	1	0
2	B	42	0	39	0	0
3	A	43	0	30	2	0
3	B	43	0	30	1	0
4	A	26	0	11	3	0
4	B	26	0	11	2	0
All	All	9168	0	8910	607	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 34.

All (607) 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:A:283:LEU:HD22	1:A:411:ASN:HB2	1.32	1.11
1:B:280:PRO:HD2	1:B:283:LEU:HD23	1.35	1.09
1:A:279:ILE:HG23	1:A:283:LEU:HG	1.32	1.08
1:B:279:ILE:HG23	1:B:283:LEU:HG	1.37	1.07
1:A:280:PRO:HD2	1:A:283:LEU:HD23	1.41	1.02
1:B:283:LEU:HD22	1:B:411:ASN:HB2	1.39	1.00
1:B:156:ALA:HB3	1:B:159:CYS:SG	2.01	0.99
1:A:156:ALA:HB3	1:A:159:CYS:SG	2.03	0.99
1:B:75:LEU:HD11	1:B:79:LYS:HE2	1.50	0.94
1:A:75:LEU:HD11	1:A:79:LYS:HE2	1.57	0.86
1:B:208:GLN:NE2	1:B:228:VAL:HA	1.90	0.86
1:A:208:GLN:NE2	1:A:228:VAL:HA	1.92	0.84
1:B:283:LEU:HB2	1:B:411:ASN:ND2	1.93	0.83
1:A:124:ILE:HD11	1:A:528:PRO:HB3	1.61	0.82
1:A:191:PRO:HD2	1:A:433:ARG:HG3	1.60	0.82
1:B:341:ILE:HG23	1:B:534:LEU:HD12	1.62	0.82
1:A:104:ASN:ND2	1:A:358:LYS:HB2	1.97	0.80
1:B:104:ASN:ND2	1:B:358:LYS:HB2	1.98	0.79
1:A:341:ILE:HG23	1:A:534:LEU:HD12	1.64	0.79
1:A:283:LEU:HB2	1:A:411:ASN:ND2	1.97	0.79
1:A:294:LEU:HA	1:A:409:TYR:HB3	1.63	0.78
1:B:190:ASP:HB2	1:B:432:GLY:O	1.84	0.77
1:B:530:SER:O	1:B:534:LEU:HD23	1.86	0.76
1:A:190:ASP:HB2	1:A:432:GLY:O	1.86	0.75
1:B:280:PRO:CD	1:B:283:LEU:HD23	2.13	0.74
1:B:124:ILE:HD11	1:B:528:PRO:HB3	1.69	0.74
1:A:322:GLU:HG2	1:B:52:PHE:H	1.51	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:41:CYS:SG	1:B:47:CYS:HB2	2.28	0.74
1:A:283:LEU:CD2	1:A:411:ASN:HB2	2.15	0.74
1:A:322:GLU:HG2	1:B:52:PHE:N	2.02	0.74
1:B:294:LEU:HA	1:B:409:TYR:HB3	1.69	0.73
1:A:105(A):ILE:HG22	1:A:108:LEU:H	1.52	0.73
1:A:52:PHE:H	1:B:322:GLU:HG2	1.54	0.72
1:B:504:TYR:HB3	1:B:505:PRO:HD3	1.70	0.72
1:B:279:ILE:HG13	1:B:283:LEU:HD21	1.71	0.72
1:A:52:PHE:N	1:B:322:GLU:HG2	2.05	0.72
1:A:518:PHE:CD1	1:A:522:MET:HG2	2.25	0.72
1:A:470:PHE:CD1	1:A:525:LEU:HD22	2.24	0.72
1:B:105(A):ILE:HG22	1:B:108:LEU:H	1.53	0.72
1:A:41:CYS:SG	1:A:47:CYS:HB2	2.29	0.72
1:B:244:LEU:HD23	1:B:271:VAL:HG11	1.70	0.72
1:B:518:PHE:CD1	1:B:522:MET:HG2	2.24	0.71
1:A:303:THR:O	1:A:307:ARG:HD3	1.91	0.71
1:A:194:SER:OG	1:A:351:HIS:HE1	1.73	0.71
1:B:295:VAL:HB	1:B:298:LEU:CD2	2.20	0.71
1:A:283:LEU:O	1:A:283:LEU:HD12	1.91	0.70
1:B:388:HIS:CE1	1:B:447:VAL:HG11	2.26	0.70
1:B:283:LEU:HB2	1:B:411:ASN:CG	2.11	0.70
1:B:276:PRO:HD2	1:B:279:ILE:HD13	1.73	0.70
1:A:504:TYR:HB3	1:A:505:PRO:HD3	1.73	0.70
1:A:206:THR:HG21	1:A:385:TYR:CE1	2.27	0.70
1:A:530:SER:O	1:A:534:LEU:HD23	1.91	0.69
1:B:303:THR:O	1:B:307:ARG:HD3	1.92	0.69
1:A:244:LEU:HD23	1:A:271:VAL:HG11	1.73	0.69
1:A:81:LEU:HD12	1:A:81:LEU:O	1.93	0.69
1:B:191:PRO:HD2	1:B:433:ARG:HG3	1.75	0.69
1:B:578:THR:HG22	1:B:579:SER:N	2.07	0.69
1:B:315:ILE:HG21	1:B:558:ILE:HD11	1.76	0.69
1:A:110:SER:HB2	1:A:365:LEU:HD21	1.75	0.68
1:B:470:PHE:CD1	1:B:525:LEU:HD22	2.29	0.68
1:A:578:THR:HG22	1:A:579:SER:N	2.08	0.68
1:B:283:LEU:CD2	1:B:411:ASN:HB2	2.21	0.68
1:A:472:LEU:HD21	1:A:524:GLU:HG3	1.77	0.67
1:A:150:ARG:NH2	1:A:458:MET:O	2.27	0.67
1:A:105(A):ILE:HD12	1:A:108:LEU:HD12	1.75	0.67
1:A:120:ARG:HG3	1:A:120:ARG:HH11	1.60	0.67
1:A:283:LEU:HB2	1:A:411:ASN:CG	2.15	0.67
1:A:244:LEU:CD2	1:A:271:VAL:HG11	2.25	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:279:ILE:HG13	1:A:283:LEU:HD21	1.76	0.67
1:B:160:PRO:HG2	1:B:165:VAL:HA	1.77	0.67
1:A:482:THR:HG22	1:A:509:VAL:CG1	2.25	0.66
1:B:385:TYR:CE2	4:B:701:S58:BR1	3.04	0.66
1:A:185:ARG:HE	1:A:438:ARG:HD3	1.61	0.66
1:A:427:THR:HB	1:A:428:ARG:NH1	2.10	0.66
1:B:192:GLN:OE1	1:B:517:ILE:HG22	1.96	0.66
1:B:205:PHE:CE1	1:B:344:VAL:HG21	2.31	0.66
1:A:123:LEU:O	1:A:469:ARG:NH2	2.29	0.66
1:A:485:LYS:HA	1:A:488:ALA:HB3	1.77	0.66
1:B:105(A):ILE:HD12	1:B:108:LEU:HD12	1.76	0.66
1:A:152:LEU:HD23	1:A:153:PRO:HD2	1.78	0.66
1:A:192:GLN:OE1	1:A:517:ILE:HG22	1.95	0.66
1:B:574:GLY:O	1:B:576:PRO:HD3	1.94	0.66
1:A:124:ILE:HD11	1:A:528:PRO:CB	2.26	0.66
1:B:274:ILE:HD12	1:B:291:VAL:HG23	1.78	0.66
1:B:185:ARG:HE	1:B:438:ARG:HD3	1.60	0.65
1:B:400:GLN:OE1	1:B:400:GLN:HA	1.96	0.65
1:A:173:ASP:HB3	1:A:176:GLU:HB2	1.78	0.65
1:A:322:GLU:HB3	1:B:52:PHE:CD1	2.31	0.65
1:A:388:HIS:CE1	1:A:447:VAL:HG11	2.31	0.65
1:A:568:ILE:CG2	1:A:576:PRO:HD2	2.26	0.65
1:B:175:LYS:HE3	1:B:175:LYS:HA	1.78	0.65
1:A:85:THR:O	1:A:89:VAL:HG23	1.96	0.65
1:B:81:LEU:HD12	1:B:81:LEU:O	1.96	0.65
1:A:279:ILE:HG23	1:A:283:LEU:CG	2.19	0.65
1:B:472:LEU:HD21	1:B:524:GLU:HG3	1.78	0.64
1:B:182:LEU:O	1:B:438:ARG:HA	1.97	0.64
1:B:568:ILE:CG2	1:B:576:PRO:HD2	2.27	0.64
1:A:264:PRO:HG2	1:A:286:ALA:HB3	1.80	0.64
1:B:283:LEU:HD12	1:B:283:LEU:O	1.97	0.64
1:B:295:VAL:HB	1:B:298:LEU:HD23	1.79	0.64
1:A:454:GLN:HA	1:A:457:GLU:HG3	1.80	0.64
1:A:191:PRO:CD	1:A:433:ARG:HG3	2.27	0.64
1:A:160:PRO:HG2	1:A:165:VAL:HA	1.78	0.64
1:B:48:MET:HE3	1:B:49:SER:H	1.62	0.64
1:A:280:PRO:CD	1:A:283:LEU:HD23	2.23	0.64
1:A:463:LEU:O	1:A:467:ARG:HG3	1.98	0.64
1:A:574:GLY:O	1:A:576:PRO:HD3	1.97	0.64
1:B:244:LEU:CD2	1:B:271:VAL:HG11	2.27	0.64
1:A:105(A):ILE:HB	1:A:108:LEU:HB2	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:548:SER:OG	1:B:58:ASP:HB2	1.99	0.63
1:B:173:ASP:HB3	1:B:176:GLU:HB2	1.80	0.63
1:B:477:SER:HB2	1:B:479:GLU:OE1	1.98	0.63
1:B:500:VAL:HG12	1:B:500:VAL:O	1.99	0.63
1:A:107:PHE:CD1	1:A:107:PHE:N	2.67	0.63
1:B:482:THR:HG22	1:B:509:VAL:CG1	2.29	0.63
1:A:458:MET:CE	1:A:460:TYR:HE1	2.12	0.62
1:A:198:PHE:CZ	1:A:352:LEU:HD13	2.34	0.62
1:B:479:GLU:HG3	1:B:488:ALA:HB1	1.80	0.62
1:A:52:PHE:CD1	1:B:322:GLU:HB3	2.35	0.62
1:A:306:LEU:HD23	1:A:306:LEU:O	2.00	0.62
1:A:359:LEU:HD11	4:A:701:S58:F1	1.90	0.62
1:A:205:PHE:CE1	1:A:344:VAL:HG21	2.34	0.62
1:A:295:VAL:HB	1:A:298:LEU:CD2	2.30	0.61
1:A:573:LYS:HG3	1:A:574:GLY:N	2.14	0.61
1:B:107:PHE:CD1	1:B:107:PHE:N	2.66	0.61
1:B:420:THR:OG1	1:B:573:LYS:HB3	1.99	0.61
1:A:96:PHE:N	1:A:96:PHE:CD1	2.67	0.61
1:A:315:ILE:HG21	1:A:558:ILE:HD11	1.80	0.61
1:B:124:ILE:HD11	1:B:528:PRO:CB	2.31	0.61
1:A:105:ASN:O	1:A:106:PRO:HD3	1.99	0.61
1:A:320:HIS:HB3	1:A:323:TRP:CD1	2.36	0.61
1:B:110:SER:HB2	1:B:365:LEU:HD21	1.82	0.61
1:B:105(A):ILE:CG2	1:B:108:LEU:HB2	2.30	0.61
1:B:397:ILE:HA	1:B:425:SER:HB3	1.83	0.61
1:A:279:ILE:CG2	1:A:284:GLN:HG2	2.31	0.61
1:B:51:GLY:O	1:B:52:PHE:HB2	2.01	0.61
1:A:58:ASP:HB2	1:B:548:SER:OG	2.00	0.61
1:B:485:LYS:HA	1:B:488:ALA:HB3	1.83	0.61
1:A:208:GLN:HE21	1:A:228:VAL:HA	1.66	0.61
1:B:96:PHE:CD1	1:B:96:PHE:N	2.69	0.61
1:B:150:ARG:NH2	1:B:458:MET:O	2.33	0.61
1:A:60:THR:HG22	1:A:61:ARG:HG3	1.83	0.60
1:B:171:LEU:HD23	1:B:456:ARG:HE	1.65	0.60
1:A:420:THR:OG1	1:A:573:LYS:HB3	2.02	0.60
1:A:48:MET:HE3	1:A:49:SER:H	1.66	0.60
1:A:64:PHE:CE2	1:A:72:PRO:HB3	2.36	0.60
1:B:573:LYS:HG3	1:B:574:GLY:N	2.17	0.60
1:B:458:MET:CE	1:B:460:TYR:HE1	2.15	0.60
1:A:527:ALA:HB3	1:A:528:PRO:HD3	1.83	0.60
1:B:194:SER:OG	1:B:351:HIS:HE1	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:527:ALA:HB3	1:B:528:PRO:HD3	1.83	0.60
1:B:120:ARG:HG3	1:B:120:ARG:HH11	1.67	0.59
1:A:388:HIS:HB3	1:A:444:VAL:HG11	1.84	0.59
1:A:477:SER:HB2	1:A:479:GLU:OE1	2.01	0.59
1:B:458:MET:HE3	1:B:460:TYR:HE1	1.67	0.59
1:A:414:LEU:HA	1:A:422:PHE:CE2	2.38	0.59
1:A:333:LYS:O	1:A:337:ILE:HG13	2.03	0.59
1:B:333:LYS:O	1:B:337:ILE:HG13	2.03	0.59
1:B:482:THR:HG22	1:B:509:VAL:HG13	1.85	0.59
1:A:104:ASN:HD21	1:A:358:LYS:HB2	1.67	0.58
1:A:182:LEU:O	1:A:438:ARG:HA	2.02	0.58
1:A:197:MET:CE	1:A:423:VAL:HG13	2.32	0.58
1:B:388:HIS:HB3	1:B:444:VAL:HG11	1.85	0.58
1:A:419:LEU:O	1:A:423:VAL:HG23	2.02	0.58
1:B:427:THR:HB	1:B:428:ARG:NH1	2.18	0.58
1:A:51:GLY:O	1:A:52:PHE:HB2	2.01	0.58
1:B:60:THR:HG22	1:B:61:ARG:HG3	1.86	0.58
1:B:64:PHE:CE2	1:B:72:PRO:HB3	2.38	0.58
1:B:91:TYR:O	1:B:95:HIS:HD2	1.87	0.58
1:A:175:LYS:HE3	1:A:175:LYS:HA	1.86	0.58
1:B:206:THR:HG21	1:B:385:TYR:CE1	2.38	0.58
1:A:418:GLY:O	1:A:422:PHE:HB2	2.03	0.58
1:A:352:LEU:HD11	1:A:518:PHE:CE2	2.39	0.57
1:B:85:THR:O	1:B:89:VAL:HG23	2.04	0.57
1:B:123:LEU:O	1:B:469:ARG:NH2	2.36	0.57
1:B:280:PRO:HD2	1:B:283:LEU:CD2	2.24	0.57
1:A:458:MET:HE3	1:A:460:TYR:HE1	1.68	0.57
1:A:424:GLU:O	1:A:428:ARG:HD2	2.05	0.57
1:A:500:VAL:HG12	1:A:500:VAL:O	2.04	0.57
1:A:398:GLU:O	1:A:399:ASP:HB3	2.04	0.57
1:A:525:LEU:O	1:A:528:PRO:HD2	2.04	0.57
1:B:198:PHE:CZ	1:B:352:LEU:HD13	2.39	0.57
1:B:264:PRO:HG2	1:B:286:ALA:HB3	1.86	0.57
1:A:320:HIS:HB3	1:A:323:TRP:CG	2.40	0.57
1:A:509:VAL:HG12	1:A:510:GLU:N	2.20	0.57
1:B:112:ILE:HB	1:B:357:PHE:CZ	2.39	0.57
1:B:389:PRO:HG2	1:B:508:LEU:HD22	1.87	0.57
1:B:463:LEU:O	1:B:467:ARG:HG3	2.05	0.57
1:B:513:ARG:HH21	1:B:520:GLU:HG3	1.69	0.57
1:B:525:LEU:O	1:B:528:PRO:HD2	2.04	0.57
1:A:105(A):ILE:CG2	1:A:108:LEU:HB2	2.35	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:397:ILE:HA	1:A:425:SER:HB3	1.86	0.57
1:A:403:SER:HB2	1:A:405:LYS:HZ2	1.69	0.57
1:A:87:ASN:C	1:A:89:VAL:H	2.08	0.56
1:A:171:LEU:HD23	1:A:456:ARG:HE	1.70	0.56
1:A:197:MET:HG3	1:A:578:THR:CG2	2.35	0.56
1:B:124:ILE:HD12	1:B:124:ILE:N	2.20	0.56
1:B:43:ASN:O	1:B:44:ARG:HB2	2.04	0.56
1:B:105(A):ILE:HB	1:B:108:LEU:HB2	1.87	0.56
1:B:226:HIS:ND1	1:B:376:ARG:HD2	2.21	0.56
1:B:403:SER:HB2	1:B:405:LYS:HD2	1.87	0.56
1:B:279:ILE:CG2	1:B:284:GLN:HG2	2.34	0.56
1:A:97:LYS:HG3	1:A:356:HIS:CD2	2.40	0.56
1:A:127:PRO:HD2	1:B:543:GLN:HE22	1.71	0.56
1:A:194:SER:OG	1:A:351:HIS:CE1	2.58	0.56
1:A:295:VAL:HB	1:A:298:LEU:HD23	1.88	0.56
1:B:104:ASN:HD21	1:B:358:LYS:HB2	1.71	0.56
1:A:198:PHE:HZ	1:A:352:LEU:HD13	1.71	0.56
1:A:295:VAL:HG12	1:A:297:GLY:H	1.71	0.56
1:B:208:GLN:HE21	1:B:228:VAL:HA	1.67	0.56
1:B:578:THR:CG2	1:B:579:SER:N	2.69	0.56
1:B:293:GLY:HA2	1:B:299:MET:HE3	1.88	0.55
1:B:185:ARG:HH21	1:B:438:ARG:HD3	1.70	0.55
1:B:306:LEU:O	1:B:306:LEU:HD23	2.07	0.55
1:A:46:GLU:OE2	1:B:546:LYS:HD2	2.06	0.55
1:A:568:ILE:HG22	1:A:576:PRO:HD2	1.88	0.55
1:B:74:PHE:O	1:B:77:ARG:HB2	2.06	0.55
1:B:103:VAL:HG11	1:B:112:ILE:HG13	1.89	0.55
1:B:352:LEU:HD11	1:B:518:PHE:CE2	2.42	0.55
1:A:124:ILE:N	1:A:124:ILE:HD12	2.21	0.55
1:A:112:ILE:HB	1:A:357:PHE:CZ	2.42	0.55
1:B:105:ASN:O	1:B:106:PRO:HD3	2.06	0.55
1:A:482:THR:HG22	1:A:509:VAL:HG13	1.87	0.54
1:A:578:THR:CG2	1:A:579:SER:N	2.69	0.54
1:B:458:MET:HE3	1:B:460:TYR:CE1	2.42	0.54
1:A:148:TYR:HD1	1:A:377:ILE:HG13	1.72	0.54
1:A:344:VAL:O	1:A:349:VAL:HG23	2.07	0.54
1:A:58:ASP:OD2	1:B:546:LYS:HD3	2.08	0.54
1:A:94:THR:O	1:A:356:HIS:ND1	2.40	0.54
1:B:509:VAL:HG12	1:B:510:GLU:N	2.23	0.54
1:A:120:ARG:HG3	1:A:120:ARG:NH1	2.23	0.54
1:B:87:ASN:C	1:B:89:VAL:H	2.11	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:178:LEU:HD22	1:B:183:LEU:HG	1.88	0.54
1:B:295:VAL:HB	1:B:298:LEU:HD22	1.87	0.54
1:B:419:LEU:O	1:B:423:VAL:HG23	2.07	0.54
1:A:178:LEU:HD22	1:A:183:LEU:HG	1.90	0.54
1:B:252:LEU:O	1:B:310:GLN:NE2	2.41	0.54
1:A:578:THR:HG22	1:A:579:SER:H	1.72	0.54
1:B:176:GLU:OE1	1:B:180:LYS:HE3	2.08	0.54
1:A:134:TYR:HB3	1:A:136:TYR:O	2.08	0.54
1:A:279:ILE:CG2	1:A:283:LEU:HG	2.23	0.54
1:A:385:TYR:CE2	4:A:701:S58:BR1	3.16	0.54
1:B:197:MET:HG3	1:B:578:THR:CG2	2.38	0.54
1:A:108:LEU:O	1:A:112:ILE:HG12	2.08	0.53
1:B:197:MET:CE	1:B:423:VAL:HG13	2.38	0.53
1:B:320:HIS:HB3	1:B:323:TRP:CG	2.43	0.53
1:A:400:GLN:HA	1:A:400:GLN:OE1	2.08	0.53
1:B:230:LEU:HG	1:B:337:ILE:HG12	1.91	0.53
1:B:417:HIS:HB3	1:B:421:GLN:O	2.09	0.53
1:A:582:VAL:O	1:A:582:VAL:HG13	2.09	0.53
1:A:424:GLU:HA	1:A:428:ARG:NH1	2.24	0.53
1:A:463:LEU:HD21	1:A:475:TYR:HD2	1.73	0.53
1:B:418:GLY:O	1:B:422:PHE:HB2	2.08	0.53
1:B:424:GLU:HA	1:B:428:ARG:NH1	2.23	0.53
1:B:95:HIS:HB2	1:B:96:PHE:CE1	2.44	0.53
1:A:103:VAL:HG11	1:A:112:ILE:HG13	1.90	0.53
1:B:133:HIS:ND1	1:B:147:TYR:HE2	2.07	0.53
1:B:148:TYR:HD1	1:B:377:ILE:HG13	1.74	0.53
1:B:295:VAL:HG12	1:B:297:GLY:H	1.73	0.53
1:B:320:HIS:HB3	1:B:323:TRP:CD1	2.43	0.52
1:B:279:ILE:HG23	1:B:283:LEU:CG	2.25	0.52
1:A:46:GLU:O	1:A:57:CYS:HA	2.10	0.52
1:B:173:ASP:OD1	1:B:175:LYS:HB3	2.10	0.52
1:B:276:PRO:O	1:B:279:ILE:HB	2.09	0.52
1:A:513:ARG:HH21	1:A:520:GLU:HG3	1.73	0.52
1:A:197:MET:HE2	1:A:423:VAL:HG13	1.91	0.52
1:A:274:ILE:HD12	1:A:291:VAL:HG23	1.92	0.52
1:A:574:GLY:O	1:A:576:PRO:CD	2.58	0.52
1:B:114:LYS:O	1:B:118:THR:HG23	2.09	0.52
1:B:194:SER:OG	1:B:351:HIS:CE1	2.63	0.52
1:B:479:GLU:HG2	1:B:485:LYS:HD3	1.92	0.52
1:A:185:ARG:HH21	1:A:438:ARG:HD3	1.74	0.52
1:A:113:MET:O	1:A:117:LEU:HB2	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:294:LEU:HD22	1:A:409:TYR:CD2	2.45	0.52
1:B:105(A):ILE:CD1	1:B:108:LEU:HD12	2.40	0.52
1:A:142:PHE:O	1:A:376:ARG:NH2	2.37	0.51
1:A:276:PRO:O	1:A:279:ILE:HB	2.10	0.51
1:A:403:SER:HB2	1:A:405:LYS:HD2	1.92	0.51
1:B:85:THR:HB	1:B:86:PRO:HD2	1.90	0.51
1:A:151:ALA:HB3	1:A:380:GLU:HG3	1.92	0.51
1:A:150:ARG:HD2	1:A:380:GLU:OE1	2.10	0.51
1:A:230:LEU:HD13	1:A:233:ILE:HD12	1.92	0.51
1:A:246:LEU:O	1:A:247:PHE:HB2	2.11	0.51
1:A:266:VAL:HG12	1:A:266:VAL:O	2.09	0.51
1:A:283:LEU:HD13	1:A:411:ASN:CA	2.41	0.51
1:A:403:SER:HB2	1:A:405:LYS:NZ	2.25	0.51
1:A:458:MET:CE	1:A:460:TYR:CE1	2.93	0.51
1:A:458:MET:HE3	1:A:460:TYR:CE1	2.45	0.51
1:B:276:PRO:HD2	1:B:279:ILE:CD1	2.40	0.51
1:B:458:MET:CE	1:B:460:TYR:CE1	2.93	0.51
1:B:152:LEU:HD23	1:B:153:PRO:HD2	1.92	0.51
1:B:279:ILE:HG22	1:B:284:GLN:HG2	1.92	0.51
4:B:701:S58:C11	4:B:701:S58:H10	2.41	0.51
1:A:43:ASN:O	1:A:44:ARG:HB2	2.09	0.51
1:B:252:LEU:HD22	1:B:309:HIS:CG	2.46	0.51
1:B:280:PRO:O	1:B:283:LEU:HB3	2.11	0.51
1:A:148:TYR:CD1	1:A:377:ILE:HG13	2.45	0.51
1:B:479:GLU:HB3	1:B:485:LYS:HE2	1.92	0.51
1:A:435:ALA:O	1:A:512:PRO:HG3	2.10	0.50
1:B:46:GLU:O	1:B:57:CYS:HA	2.11	0.50
1:A:173:ASP:O	1:A:177:VAL:HG23	2.11	0.50
1:A:105(A):ILE:CD1	1:A:108:LEU:HD12	2.41	0.50
1:B:424:GLU:O	1:B:428:ARG:HD2	2.11	0.50
1:B:176:GLU:O	1:B:180:LYS:HG3	2.11	0.50
1:B:178:LEU:HD23	1:B:182:LEU:HB2	1.94	0.50
1:A:92:ILE:HA	1:A:96:PHE:HE1	1.76	0.50
1:A:232:HIS:ND1	1:A:233:ILE:HG13	2.27	0.50
1:A:546:LYS:HD3	1:B:58:ASP:OD2	2.11	0.50
1:B:379:SER:HB3	1:B:460:TYR:OH	2.12	0.50
1:B:582:VAL:O	1:B:582:VAL:HG13	2.11	0.50
1:B:463:LEU:HD21	1:B:475:TYR:HD2	1.77	0.50
1:A:578:THR:CG2	1:A:579:SER:H	2.24	0.50
1:B:92:ILE:HA	1:B:96:PHE:HE1	1.76	0.50
1:B:134:TYR:HB3	1:B:136:TYR:O	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:574:GLY:O	1:B:576:PRO:CD	2.58	0.50
1:A:184:ARG:HB2	1:A:439:ASN:C	2.32	0.50
1:A:211:LYS:NZ	1:A:236:GLU:HG3	2.27	0.50
1:A:252:LEU:O	1:A:310:GLN:NE2	2.44	0.50
1:B:242:HIS:ND1	1:B:247:PHE:HZ	2.10	0.50
1:B:379:SER:O	1:B:382:ASN:N	2.45	0.50
1:A:97:LYS:HG3	1:A:356:HIS:NE2	2.26	0.50
1:A:279:ILE:HG22	1:A:284:GLN:HG2	1.94	0.50
1:A:320:HIS:HE1	1:A:551:GLY:O	1.95	0.49
1:A:379:SER:HB3	1:A:460:TYR:OH	2.12	0.49
1:A:91:TYR:O	1:A:95:HIS:HD2	1.95	0.49
1:A:190:ASP:OD1	1:A:517:ILE:HB	2.12	0.49
1:A:230:LEU:HD23	1:A:230:LEU:N	2.26	0.49
1:B:72:PRO:HB2	1:B:76:THR:HB	1.94	0.49
1:B:226:HIS:CE1	1:B:376:ARG:HD2	2.47	0.49
1:A:252:LEU:HD22	1:A:309:HIS:CG	2.47	0.49
1:B:103:VAL:HG22	1:B:108:LEU:HD13	1.95	0.49
1:B:193:GLY:O	1:B:582:VAL:N	2.41	0.49
1:B:246:LEU:O	1:B:247:PHE:HB2	2.12	0.49
1:B:345:ILE:HD11	1:B:534:LEU:HG	1.94	0.49
1:B:134:TYR:HD1	1:B:136:TYR:CE1	2.30	0.49
1:B:148:TYR:CD1	1:B:377:ILE:HG13	2.47	0.49
1:B:414:LEU:HA	1:B:422:PHE:CE2	2.48	0.49
1:A:134:TYR:HD1	1:A:136:TYR:CE1	2.31	0.49
1:A:543:GLN:HE22	1:B:127:PRO:HD2	1.78	0.49
1:B:344:VAL:O	1:B:349:VAL:HG23	2.13	0.49
1:B:413:ILE:O	1:B:422:PHE:HE2	1.96	0.49
1:A:389:PRO:HG2	1:A:508:LEU:HD22	1.94	0.49
1:A:280:PRO:O	1:A:283:LEU:HB3	2.13	0.49
1:B:113:MET:O	1:B:117:LEU:HB2	2.12	0.49
1:A:176:GLU:O	1:A:180:LYS:HG3	2.12	0.49
1:B:294:LEU:HD22	1:B:409:TYR:CD2	2.47	0.49
1:B:479:GLU:HG2	1:B:485:LYS:CE	2.42	0.49
1:B:94:THR:O	1:B:356:HIS:ND1	2.46	0.49
1:B:132:VAL:HG21	1:B:219:GLY:HA3	1.95	0.49
1:B:183:LEU:O	1:B:438:ARG:HB3	2.13	0.49
1:B:197:MET:HE2	1:B:423:VAL:HG13	1.94	0.49
1:A:417:HIS:HB3	1:A:421:GLN:O	2.13	0.48
1:A:421:GLN:OE1	1:A:424:GLU:HB2	2.13	0.48
1:B:308:GLU:OE1	1:B:311:ARG:HD3	2.13	0.48
1:A:131:ASN:ND2	1:A:147:TYR:CD2	2.81	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:LEU:HB3	1:A:456:ARG:HH21	1.78	0.48
1:B:92:ILE:HA	1:B:96:PHE:CE1	2.48	0.48
1:B:120:ARG:HG3	1:B:120:ARG:NH1	2.28	0.48
1:A:92:ILE:HA	1:A:96:PHE:CE1	2.48	0.48
1:B:454:GLN:O	1:B:457:GLU:N	2.46	0.48
1:B:108:LEU:O	1:B:112:ILE:HG12	2.12	0.48
1:B:490:GLU:O	1:B:493:ALA:HB3	2.14	0.48
1:A:85:THR:HB	1:A:86:PRO:HD2	1.95	0.48
1:A:142:PHE:CD1	1:A:142:PHE:C	2.87	0.48
1:B:230:LEU:N	1:B:230:LEU:HD23	2.27	0.48
1:B:398:GLU:O	1:B:399:ASP:HB3	2.13	0.48
1:A:251:LYS:HD3	1:A:310:GLN:HG3	1.96	0.48
1:A:447:VAL:HG13	3:A:682:HEM:HBA2	1.94	0.48
1:A:197:MET:HG3	1:A:578:THR:HG23	1.94	0.48
1:A:226:HIS:ND1	1:A:376:ARG:HD2	2.29	0.48
1:B:173:ASP:O	1:B:177:VAL:HG23	2.13	0.48
1:A:95:HIS:HB2	1:A:96:PHE:CE1	2.49	0.48
1:B:184:ARG:HB2	1:B:439:ASN:C	2.34	0.48
1:B:331:THR:O	1:B:334:LEU:HB2	2.13	0.48
1:A:133:HIS:ND1	1:A:147:TYR:HE2	2.12	0.48
1:B:113:MET:HG2	1:B:360:LYS:HB3	1.95	0.48
1:A:103:VAL:HG22	1:A:108:LEU:HD13	1.96	0.47
1:A:546:LYS:HD2	1:B:46:GLU:OE2	2.14	0.47
1:B:255:GLN:HG2	1:B:263:PRO:O	2.14	0.47
1:B:546:LYS:HB2	1:B:547:PRO:HD2	1.95	0.47
1:A:85:THR:OG1	1:A:88:THR:HG23	2.15	0.47
1:A:479:GLU:HG3	1:A:488:ALA:HB1	1.95	0.47
1:A:582:VAL:O	1:A:583:GLN:HB2	2.14	0.47
4:A:701:S58:H10	4:A:701:S58:C11	2.44	0.47
1:A:254:TYR:HD2	1:A:310:GLN:HE21	1.61	0.47
1:A:495:TYR:O	1:A:496:SER:HB2	2.14	0.47
1:A:519:GLY:O	1:A:523:VAL:HG23	2.14	0.47
1:B:190:ASP:OD1	1:B:517:ILE:HB	2.14	0.47
1:B:264:PRO:HB2	1:B:269:THR:HG23	1.96	0.47
1:A:254:TYR:CD1	1:A:254:TYR:C	2.88	0.47
1:A:35:PRO:HB2	1:A:55:TYR:HB3	1.97	0.47
1:A:72:PRO:HB2	1:A:76:THR:HB	1.95	0.47
1:A:105(A):ILE:CB	1:A:108:LEU:HB2	2.44	0.47
1:A:178:LEU:HD23	1:A:182:LEU:HB2	1.96	0.47
1:A:264:PRO:HG2	1:A:286:ALA:CB	2.45	0.47
1:B:91:TYR:O	1:B:95:HIS:CD2	2.67	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:222:ARG:NH2	1:B:236:GLU:HG2	2.29	0.47
1:A:114:LYS:O	1:A:118:THR:HG23	2.15	0.47
1:A:232:HIS:CE1	1:A:233:ILE:HG13	2.49	0.47
1:A:413:ILE:O	1:A:422:PHE:HE2	1.97	0.47
1:A:454:GLN:O	1:A:457:GLU:N	2.48	0.47
1:B:130:TYR:CE1	1:B:135:GLY:O	2.68	0.47
1:B:403:SER:HB2	1:B:405:LYS:NZ	2.29	0.47
1:A:132:VAL:HG21	1:A:219:GLY:HA3	1.97	0.47
1:A:495:TYR:CE2	1:A:501:MET:SD	3.07	0.47
1:B:133:HIS:ND1	1:B:147:TYR:CE2	2.82	0.47
1:B:197:MET:HG3	1:B:578:THR:HG23	1.97	0.47
1:A:222:ARG:NH2	1:A:236:GLU:HG2	2.29	0.46
1:B:100:TRP:O	1:B:104:ASN:HB2	2.15	0.46
1:B:454:GLN:HA	1:B:457:GLU:HG3	1.96	0.46
1:A:113:MET:HA	1:A:116:VAL:HG13	1.97	0.46
1:A:442:ILE:O	1:A:445:GLN:HG2	2.16	0.46
1:B:254:TYR:CD1	1:B:254:TYR:C	2.88	0.46
1:B:495:TYR:O	1:B:496:SER:HB2	2.16	0.46
1:A:130:TYR:CE1	1:A:135:GLY:O	2.68	0.46
1:A:140:GLU:OE2	1:A:144:ASN:HB2	2.16	0.46
1:B:291:VAL:HG22	1:B:294:LEU:HD12	1.98	0.46
1:B:297:GLY:O	1:B:300:MET:HB3	2.14	0.46
1:A:185:ARG:NE	1:A:438:ARG:HD3	2.27	0.46
1:A:490:GLU:O	1:A:493:ALA:HB3	2.15	0.46
1:B:232:HIS:ND1	1:B:233:ILE:HG13	2.30	0.46
1:A:230:LEU:HG	1:A:337:ILE:HG12	1.97	0.46
1:B:230:LEU:HD13	1:B:233:ILE:HD12	1.98	0.46
1:B:402:TYR:OH	1:B:417:HIS:HE1	1.98	0.46
1:A:113:MET:HE3	1:A:117:LEU:HD13	1.96	0.46
1:A:139:TRP:CZ3	1:B:538:PRO:HG2	2.51	0.46
1:A:159:CYS:HB3	1:A:164:GLY:O	2.16	0.46
1:A:548:SER:OG	1:B:58:ASP:CB	2.64	0.46
1:B:513:ARG:O	1:B:514:PRO:O	2.32	0.46
1:A:226:HIS:CE1	1:A:376:ARG:HD2	2.51	0.46
1:B:151:ALA:HB3	1:B:380:GLU:HG3	1.96	0.46
1:B:232:HIS:CE1	1:B:233:ILE:HG13	2.51	0.46
1:B:521:THR:O	1:B:523:VAL:N	2.49	0.46
1:A:388:HIS:N	1:A:389:PRO:CD	2.79	0.46
1:A:546:LYS:HB2	1:A:547:PRO:HD2	1.98	0.46
1:B:35:PRO:HB2	1:B:55:TYR:HB3	1.98	0.46
1:B:568:ILE:HG22	1:B:576:PRO:HD2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:578:THR:HG22	1:B:579:SER:H	1.78	0.46
1:A:184:ARG:HB2	1:A:439:ASN:HA	1.98	0.46
1:A:242:HIS:ND1	1:A:247:PHE:HZ	2.14	0.46
1:B:251:LYS:HD3	1:B:310:GLN:HG3	1.98	0.46
1:B:433:ARG:H	1:B:439:ASN:ND2	2.14	0.46
1:B:91:TYR:CD1	1:B:95:HIS:CD2	3.03	0.45
1:B:479:GLU:HG3	1:B:488:ALA:CB	2.45	0.45
1:A:189:PRO:HB2	1:A:430:ILE:HD13	1.98	0.45
1:A:193:GLY:O	1:A:582:VAL:N	2.46	0.45
1:A:337:ILE:O	1:A:341:ILE:HG13	2.16	0.45
1:B:184:ARG:HA	1:B:438:ARG:O	2.17	0.45
1:A:295:VAL:HB	1:A:298:LEU:HD22	1.97	0.45
1:A:240:ARG:CZ	1:A:271:VAL:HG23	2.46	0.45
1:A:379:SER:O	1:A:382:ASN:N	2.49	0.45
1:B:578:THR:CG2	1:B:579:SER:H	2.29	0.45
1:A:295:VAL:HG22	1:A:408:LEU:HD22	1.99	0.45
1:B:240:ARG:CZ	1:B:271:VAL:HG23	2.46	0.45
1:B:507:LEU:HD21	1:B:521:THR:HG22	1.99	0.45
1:A:285:PHE:HD2	1:A:299:MET:SD	2.40	0.45
1:A:498:ILE:C	1:A:500:VAL:H	2.20	0.45
1:B:149:THR:O	1:B:378:ALA:HA	2.17	0.45
1:B:266:VAL:HG12	1:B:266:VAL:O	2.16	0.45
1:B:498:ILE:C	1:B:500:VAL:H	2.19	0.45
1:B:198:PHE:HZ	1:B:352:LEU:HD13	1.79	0.45
1:B:211:LYS:NZ	1:B:236:GLU:HG3	2.32	0.45
1:B:468:LYS:HG2	1:B:474:PRO:HG3	1.99	0.45
1:B:470:PHE:O	1:B:471:SER:HB2	2.17	0.45
1:B:283:LEU:HD13	1:B:411:ASN:CA	2.46	0.44
1:B:306:LEU:HD23	1:B:306:LEU:C	2.37	0.44
1:A:403:SER:O	1:A:406:GLN:HG2	2.17	0.44
1:B:417:HIS:HB2	1:B:422:PHE:CD2	2.53	0.44
1:A:283:LEU:HD13	1:A:411:ASN:HA	1.99	0.44
1:A:454:GLN:O	1:A:457:GLU:HB2	2.18	0.44
1:A:513:ARG:O	1:A:514:PRO:O	2.35	0.44
1:B:479:GLU:HG2	1:B:485:LYS:CD	2.47	0.44
1:A:105(A):ILE:O	1:A:108:LEU:N	2.50	0.44
1:A:345:ILE:HD11	1:A:534:LEU:HG	1.99	0.44
1:A:414:LEU:HD11	1:A:419:LEU:HD22	2.00	0.44
1:B:434:VAL:HG23	1:B:517:ILE:HD11	2.00	0.44
1:A:275:TYR:CE2	1:A:284:GLN:HA	2.53	0.44
1:A:58:ASP:CB	1:B:548:SER:OG	2.66	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:171:LEU:HB3	1:B:456:ARG:HH21	1.83	0.44
1:B:182:LEU:CD1	1:B:452:ILE:HD11	2.48	0.44
1:A:230:LEU:HD23	1:A:230:LEU:H	1.83	0.44
1:A:472:LEU:HD11	1:A:524:GLU:HB2	2.00	0.44
1:B:105(A):ILE:CB	1:B:108:LEU:HB2	2.47	0.44
1:B:254:TYR:HD2	1:B:310:GLN:HE21	1.65	0.44
1:A:211:LYS:HZ3	1:A:236:GLU:HG3	1.81	0.44
1:A:297:GLY:O	1:A:300:MET:HB3	2.18	0.44
1:B:328:LEU:HD23	1:B:328:LEU:HA	1.86	0.44
1:A:322:GLU:HB3	1:B:52:PHE:CE1	2.53	0.43
1:B:184:ARG:HB2	1:B:439:ASN:HA	1.99	0.43
1:A:564:ILE:O	1:A:568:ILE:HD13	2.19	0.43
1:B:185:ARG:NE	1:B:438:ARG:HD3	2.28	0.43
1:B:222:ARG:HH22	1:B:236:GLU:HG2	1.83	0.43
1:A:184:ARG:NE	1:A:439:ASN:OD1	2.49	0.43
1:B:105(A):ILE:O	1:B:108:LEU:N	2.51	0.43
1:B:131:ASN:ND2	1:B:147:TYR:CD2	2.86	0.43
1:A:131:ASN:ND2	1:A:147:TYR:CG	2.86	0.43
1:A:184:ARG:HA	1:A:438:ARG:O	2.18	0.43
1:B:403:SER:O	1:B:406:GLN:HG2	2.17	0.43
1:A:222:ARG:HH22	1:A:236:GLU:HG2	1.84	0.43
1:A:448:ALA:O	1:A:452:ILE:HG13	2.18	0.43
1:B:435:ALA:O	1:B:512:PRO:HG3	2.18	0.43
1:A:197:MET:HE1	1:A:423:VAL:HG13	2.01	0.43
1:A:306:LEU:HD23	1:A:306:LEU:C	2.39	0.43
1:A:40:PRO:HB3	2:A:661:NAG:H62	1.99	0.43
1:A:100:TRP:O	1:A:104:ASN:HB2	2.17	0.43
1:A:242:HIS:HE1	1:A:245:ARG:NH2	2.17	0.43
1:B:85:THR:OG1	1:B:88:THR:HG23	2.19	0.43
1:B:367:PHE:C	1:B:369:GLN:H	2.22	0.43
1:B:521:THR:O	1:B:522:MET:C	2.56	0.43
1:A:350:GLN:HE22	1:A:358:LYS:HA	1.84	0.43
1:A:87:ASN:O	1:A:89:VAL:N	2.52	0.43
1:A:308:GLU:O	1:A:309:HIS:C	2.54	0.42
1:A:388:HIS:N	1:A:389:PRO:HD2	2.34	0.42
1:B:185:ARG:NH2	1:B:438:ARG:HD3	2.34	0.42
1:B:447:VAL:HG13	3:B:682:HEM:HBA2	2.00	0.42
1:B:513:ARG:O	1:B:514:PRO:C	2.58	0.42
1:A:463:LEU:HD21	1:A:475:TYR:CD2	2.54	0.42
1:A:538:PRO:HG2	1:B:139:TRP:CZ3	2.54	0.42
1:B:322:GLU:H	1:B:322:GLU:HG3	1.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:564:ILE:O	1:B:568:ILE:HD13	2.19	0.42
1:A:402:TYR:OH	1:A:417:HIS:HE1	2.02	0.42
1:A:479:GLU:HG3	1:A:485:LYS:HG3	2.00	0.42
1:B:159:CYS:HB3	1:B:164:GLY:O	2.19	0.42
1:B:230:LEU:HD23	1:B:230:LEU:H	1.83	0.42
1:A:93:LEU:HB3	1:A:355:TYR:CD1	2.55	0.42
1:A:255:GLN:HG2	1:A:263:PRO:O	2.18	0.42
1:A:433:ARG:H	1:A:439:ASN:ND2	2.16	0.42
1:A:453:ASP:O	1:A:457:GLU:HG3	2.19	0.42
1:B:211:LYS:HZ3	1:B:236:GLU:HG3	1.84	0.42
1:A:458:MET:HE2	1:A:460:TYR:HE1	1.82	0.42
1:B:451:SER:HB2	1:B:504:TYR:CE2	2.54	0.42
1:A:74:PHE:O	1:A:77:ARG:HB2	2.20	0.42
1:B:472:LEU:HD11	1:B:524:GLU:HB2	2.02	0.42
1:B:495:TYR:CE2	1:B:501:MET:SD	3.12	0.42
1:A:242:HIS:CE1	1:A:245:ARG:NH2	2.88	0.42
1:A:308:GLU:OE1	1:A:311:ARG:HD3	2.19	0.42
1:A:331:THR:O	1:A:334:LEU:HB2	2.19	0.42
1:A:458:MET:HE2	1:A:460:TYR:CE1	2.55	0.42
1:B:62:THR:OG1	1:B:63:GLY:N	2.51	0.42
1:A:126:SER:HA	1:A:127:PRO:HA	1.85	0.42
1:A:470:PHE:O	1:A:471:SER:HB2	2.20	0.42
1:A:521:THR:O	1:A:523:VAL:N	2.52	0.42
1:B:278:HIS:CD2	1:B:278:HIS:O	2.73	0.42
1:B:343:ILE:O	1:B:345:ILE:N	2.53	0.42
1:A:105(A):ILE:HG23	1:A:107:PHE:CD2	2.54	0.42
1:B:67:GLU:HG2	1:B:68:ASN:OD1	2.20	0.42
1:B:202:ALA:HB2	1:B:348:TYR:HE1	1.84	0.42
1:A:293:GLY:HA2	1:A:299:MET:HE3	2.01	0.42
1:A:472:LEU:HD22	1:A:520:GLU:CD	2.40	0.42
1:B:275:TYR:CE2	1:B:284:GLN:HA	2.55	0.42
1:B:582:VAL:O	1:B:583:GLN:HB2	2.20	0.42
1:A:65:TYR:N	1:A:65:TYR:CD1	2.88	0.41
1:A:224:LEU:HA	1:A:224:LEU:HD23	1.79	0.41
1:B:453:ASP:O	1:B:457:GLU:HG3	2.19	0.41
1:B:500:VAL:O	1:B:500:VAL:CG1	2.67	0.41
1:B:581:ASN:C	1:B:583:GLN:H	2.23	0.41
1:A:521:THR:O	1:A:522:MET:C	2.58	0.41
1:A:330:GLN:HB3	1:B:138:SER:HB2	2.02	0.41
1:B:150:ARG:HD2	1:B:380:GLU:OE1	2.19	0.41
1:B:189:PRO:HB2	1:B:430:ILE:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:244:LEU:HD21	1:A:271:VAL:HG11	2.01	0.41
1:B:316:LEU:HD12	1:B:316:LEU:HA	1.92	0.41
1:B:388:HIS:N	1:B:389:PRO:CD	2.84	0.41
1:B:557:LYS:HE3	1:B:557:LYS:HA	2.01	0.41
1:A:120:ARG:HB3	1:A:528:PRO:HG3	2.02	0.41
1:B:113:MET:HA	1:B:116:VAL:HG13	2.02	0.41
1:B:370:GLN:O	1:B:371:PHE:HB2	2.20	0.41
1:A:34:ASN:HA	1:A:35:PRO:HD2	1.70	0.41
1:A:97:LYS:HB2	1:A:356:HIS:CE1	2.56	0.41
1:A:283:LEU:HD13	1:A:411:ASN:CB	2.51	0.41
1:A:468:LYS:HG2	1:A:474:PRO:HG3	2.03	0.41
1:B:93:LEU:HB3	1:B:355:TYR:CD1	2.55	0.41
1:A:276:PRO:HD2	1:A:279:ILE:HD13	2.03	0.41
1:A:428:ARG:O	1:A:429:GLN:HB2	2.20	0.41
1:A:437:GLY:O	1:A:438:ARG:C	2.58	0.41
1:A:513:ARG:O	1:A:514:PRO:C	2.59	0.41
1:B:421:GLN:OE1	1:B:424:GLU:HB2	2.20	0.41
1:A:64:PHE:HD2	1:A:70:THR:O	2.04	0.41
1:A:173:ASP:OD1	1:A:175:LYS:HB3	2.21	0.41
1:A:184:ARG:CZ	1:A:187:PHE:HD1	2.34	0.41
1:A:291:VAL:HG22	1:A:294:LEU:HD12	2.02	0.41
1:A:479:GLU:HG2	1:A:485:LYS:CE	2.51	0.41
1:A:500:VAL:O	1:A:500:VAL:CG1	2.68	0.41
1:A:507:LEU:HD21	1:A:521:THR:HG22	2.02	0.41
1:B:195:ASN:HB2	1:B:196:MET:H	1.78	0.41
1:B:230:LEU:HB3	1:B:233:ILE:HD12	2.02	0.41
1:A:130:TYR:HB3	1:A:134:TYR:O	2.21	0.41
1:A:320:HIS:CE1	1:A:551:GLY:O	2.74	0.41
1:A:518:PHE:CG	1:A:522:MET:HG2	2.56	0.41
1:B:97:LYS:HB2	1:B:356:HIS:CE1	2.56	0.41
1:A:110:SER:HB2	1:A:365:LEU:CD2	2.48	0.40
1:A:174:SER:HB3	1:A:456:ARG:NH1	2.36	0.40
1:A:334:LEU:HD13	1:A:549:THR:HG22	2.03	0.40
1:A:182:LEU:CD1	1:A:452:ILE:HD11	2.51	0.40
1:B:112:ILE:HB	1:B:357:PHE:CE1	2.55	0.40
1:B:210:PHE:HB3	1:B:382:ASN:ND2	2.35	0.40
1:B:437:GLY:O	1:B:438:ARG:C	2.58	0.40
1:A:80:LEU:HD23	1:A:80:LEU:HA	1.94	0.40
1:A:230:LEU:CD1	1:A:336:LEU:HB3	2.51	0.40
1:A:91:TYR:O	1:A:95:HIS:CD2	2.73	0.40
1:B:320:HIS:HE1	1:B:551:GLY:O	2.05	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:GLU:HG2	1:A:68:ASN:OD1	2.21	0.40
1:A:299:MET:HE3	1:A:299:MET:HB2	1.89	0.40
1:A:363:PRO:HG2	1:A:545:TRP:CD2	2.57	0.40
1:A:387:TRP:HB2	3:A:682:HEM:HAC	2.03	0.40
1:B:334:LEU:HD23	1:B:334:LEU:HA	1.80	0.40
1:B:442:ILE:O	1:B:445:GLN:HB3	2.21	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	550/587 (94%)	435 (79%)	84 (15%)	31 (6%)	<b>2</b> <b>5</b>
1	B	550/587 (94%)	431 (78%)	86 (16%)	33 (6%)	<b>1</b> <b>4</b>
All	All	1100/1174 (94%)	866 (79%)	170 (16%)	64 (6%)	<b>1</b> <b>4</b>

All (64) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	138	SER
1	A	348	TYR
1	A	398	GLU
1	A	510	GLU
1	A	514	PRO
1	A	573	LYS
1	B	138	SER
1	B	348	TYR
1	B	398	GLU
1	B	459	LYS
1	B	510	GLU
1	B	514	PRO

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	573	LYS
1	A	51	GLY
1	A	82	LEU
1	A	96	PHE
1	A	212	THR
1	A	422	PHE
1	A	429	GLN
1	A	459	LYS
1	A	582	VAL
1	B	51	GLY
1	B	82	LEU
1	B	96	PHE
1	B	212	THR
1	B	429	GLN
1	B	554	VAL
1	B	582	VAL
1	A	67	GLU
1	A	329	PHE
1	A	399	ASP
1	A	554	VAL
1	B	67	GLU
1	B	144	ASN
1	B	399	ASP
1	B	422	PHE
1	B	522	MET
1	A	88	THR
1	A	132	VAL
1	A	352	LEU
1	A	496	SER
1	A	499	ASP
1	B	132	VAL
1	B	309	HIS
1	B	329	PHE
1	B	352	LEU
1	B	412	SER
1	A	144	ASN
1	A	522	MET
1	B	44	ARG
1	B	172	PRO
1	B	344	VAL
1	B	380	GLU
1	B	496	SER

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Mol	Chain	Res	Type
1	B	575	CYS
1	A	104	ASN
1	A	172	PRO
1	A	412	SER
1	B	88	THR
1	A	575	CYS
1	B	413	ILE
1	B	287	VAL
1	A	413	ILE
1	A	344	VAL

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	493/525 (94%)	439 (89%)	54 (11%)	6 19
1	B	493/525 (94%)	442 (90%)	51 (10%)	7 21
All	All	986/1050 (94%)	881 (89%)	105 (11%)	6 20

All (105) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	38	SER
1	A	65	TYR
1	A	71	THR
1	A	96	PHE
1	A	97	LYS
1	A	101	ASN
1	A	107	PHE
1	A	108	LEU
1	A	111	LEU
1	A	116	VAL
1	A	117	LEU
1	A	126	SER
1	A	150	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	152	LEU
1	A	172	PRO
1	A	178	LEU
1	A	232	HIS
1	A	238	LEU
1	A	241	GLN
1	A	245	ARG
1	A	248	LYS
1	A	252	LEU
1	A	253	LYS
1	A	271	VAL
1	A	280	PRO
1	A	283	LEU
1	A	289	GLN
1	A	290	GLU
1	A	291	VAL
1	A	298	LEU
1	A	300	MET
1	A	310	GLN
1	A	316	LEU
1	A	322	GLU
1	A	376	ARG
1	A	377	ILE
1	A	380	GLU
1	A	385	TYR
1	A	389	PRO
1	A	396	ASN
1	A	405	LYS
1	A	412	SER
1	A	422	PHE
1	A	428	ARG
1	A	442	ILE
1	A	463	LEU
1	A	464	ASN
1	A	469	ARG
1	A	484	GLU
1	A	512	PRO
1	A	514	PRO
1	A	528	PRO
1	A	539	ILE
1	A	557	LYS
1	B	38	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	65	TYR
1	B	71	THR
1	B	96	PHE
1	B	101	ASN
1	B	107	PHE
1	B	108	LEU
1	B	111	LEU
1	B	116	VAL
1	B	117	LEU
1	B	126	SER
1	B	150	ARG
1	B	152	LEU
1	B	172	PRO
1	B	176	GLU
1	B	178	LEU
1	B	232	HIS
1	B	238	LEU
1	B	241	GLN
1	B	248	LYS
1	B	252	LEU
1	B	253	LYS
1	B	271	VAL
1	B	280	PRO
1	B	283	LEU
1	B	289	GLN
1	B	290	GLU
1	B	291	VAL
1	B	298	LEU
1	B	300	MET
1	B	310	GLN
1	B	316	LEU
1	B	322	GLU
1	B	376	ARG
1	B	377	ILE
1	B	380	GLU
1	B	385	TYR
1	B	389	PRO
1	B	396	ASN
1	B	405	LYS
1	B	412	SER
1	B	422	PHE
1	B	428	ARG

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Mol	Chain	Res	Type
1	B	442	ILE
1	B	463	LEU
1	B	464	ASN
1	B	469	ARG
1	B	484	GLU
1	B	514	PRO
1	B	539	ILE
1	B	557	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	95	HIS
1	A	203	GLN
1	A	278	HIS
1	A	320	HIS
1	A	350	GLN
1	A	351	HIS
1	A	417	HIS
1	A	565	GLN
1	B	43	ASN
1	B	95	HIS
1	B	203	GLN
1	B	278	HIS
1	B	320	HIS
1	B	350	GLN
1	B	351	HIS
1	B	417	HIS
1	B	454	GLN
1	B	543	GLN
1	B	565	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

10 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
2	NAG	A	661	1	14,14,15	0.64	0	17,19,21	0.52	0
4	S58	B	701	-	25,28,28	2.56	7 (28%)	31,43,43	1.95	8 (25%)
3	HEM	B	682	1	41,50,50	1.50	5 (12%)	45,82,82	1.01	2 (4%)
2	NAG	B	661	1	14,14,15	0.57	0	17,19,21	0.59	0
2	NAG	A	681	1	14,14,15	0.32	0	17,19,21	0.97	1 (5%)
2	NAG	B	681	1	14,14,15	0.68	0	17,19,21	0.84	0
2	NAG	A	671	1	14,14,15	0.42	0	17,19,21	0.81	1 (5%)
4	S58	A	701	-	25,28,28	2.66	8 (32%)	31,43,43	2.20	10 (32%)
2	NAG	B	671	1	14,14,15	0.55	0	17,19,21	0.91	1 (5%)
3	HEM	A	682	1	41,50,50	1.47	5 (12%)	45,82,82	0.93	0

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
2	NAG	A	661	1	-	2/6/23/26	0/1/1/1
4	S58	B	701	-	-	0/12/20/20	0/3/3/3
3	HEM	B	682	1	-	5/12/54/54	-
2	NAG	B	661	1	-	2/6/23/26	0/1/1/1
2	NAG	A	681	1	-	0/6/23/26	0/1/1/1
2	NAG	B	681	1	-	0/6/23/26	0/1/1/1
2	NAG	A	671	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	S58	A	701	-	-	0/12/20/20	0/3/3/3
2	NAG	B	671	1	-	2/6/23/26	0/1/1/1
3	HEM	A	682	1	-	5/12/54/54	-

All (25) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	701	S58	S1-N3	8.09	1.76	1.60
4	B	701	S58	S1-N3	7.31	1.74	1.60
4	B	701	S58	C1-C3	6.12	1.47	1.39
4	A	701	S58	C1-C3	5.83	1.47	1.39
3	A	682	HEM	C3C-CAC	-4.57	1.38	1.47
3	B	682	HEM	C3C-CAC	-4.35	1.38	1.47
4	B	701	S58	C8-S1	4.21	1.83	1.77
4	A	701	S58	C3-N2	-4.03	1.28	1.33
4	B	701	S58	BR1-C14	-3.74	1.82	1.90
4	A	701	S58	BR1-C14	-3.61	1.83	1.90
3	B	682	HEM	C3C-C2C	-3.59	1.35	1.40
3	A	682	HEM	C3C-C2C	-3.57	1.35	1.40
3	B	682	HEM	CAB-C3B	-3.47	1.38	1.47
3	A	682	HEM	CAB-C3B	-3.32	1.38	1.47
4	A	701	S58	C2-N1	-3.25	1.36	1.40
4	B	701	S58	C3-N2	-2.97	1.30	1.33
3	B	682	HEM	CBB-CAB	2.93	1.44	1.30
3	A	682	HEM	CBB-CAB	2.91	1.44	1.30
4	B	701	S58	C2-N1	-2.79	1.37	1.40
4	A	701	S58	C8-S1	2.67	1.81	1.77
3	A	682	HEM	CBC-CAC	2.52	1.45	1.29
4	A	701	S58	C1-C2	-2.41	1.32	1.42
4	B	701	S58	C16-C15	2.37	1.41	1.36
4	A	701	S58	C10-C9	2.19	1.41	1.36
3	B	682	HEM	CBC-CAC	2.19	1.43	1.29

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	701	S58	C4-C3-N2	5.59	126.29	119.72
4	A	701	S58	C4-C3-N2	5.39	126.05	119.72
4	A	701	S58	O2-S1-O1	-5.26	110.11	118.76
4	B	701	S58	O2-S1-O1	-4.51	111.34	118.76
4	A	701	S58	O1-S1-N3	4.35	113.81	107.36
4	A	701	S58	O2-S1-C8	3.49	111.25	107.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	701	S58	C9-C10-C5	-3.27	119.06	121.79
4	B	701	S58	C9-C10-C5	-2.93	119.34	121.79
4	B	701	S58	F2-C4-C3	-2.91	107.49	112.47
4	B	701	S58	C6-C5-C10	2.83	120.53	116.27
2	B	671	NAG	C2-N2-C7	-2.78	118.94	122.90
4	A	701	S58	F2-C4-C3	-2.67	107.91	112.47
4	A	701	S58	C6-C5-C10	2.64	120.23	116.27
3	B	682	HEM	CMD-C2D-C1D	2.62	129.03	125.04
4	A	701	S58	C1-C3-N2	-2.59	107.66	111.41
2	A	671	NAG	C2-N2-C7	-2.55	119.28	122.90
4	B	701	S58	C1-C3-N2	-2.54	107.73	111.41
4	B	701	S58	O1-S1-N3	2.25	110.70	107.36
4	A	701	S58	C12-C11-C16	2.24	120.64	118.65
4	B	701	S58	O2-S1-C8	2.18	109.78	107.35
2	A	681	NAG	C1-C2-N2	-2.13	106.85	110.49
4	A	701	S58	F3-C4-C3	-2.09	108.90	112.47
3	B	682	HEM	C4C-CHD-C1D	2.03	125.24	122.56

There are no chirality outliers.

All (18) torsion outliers are listed below:

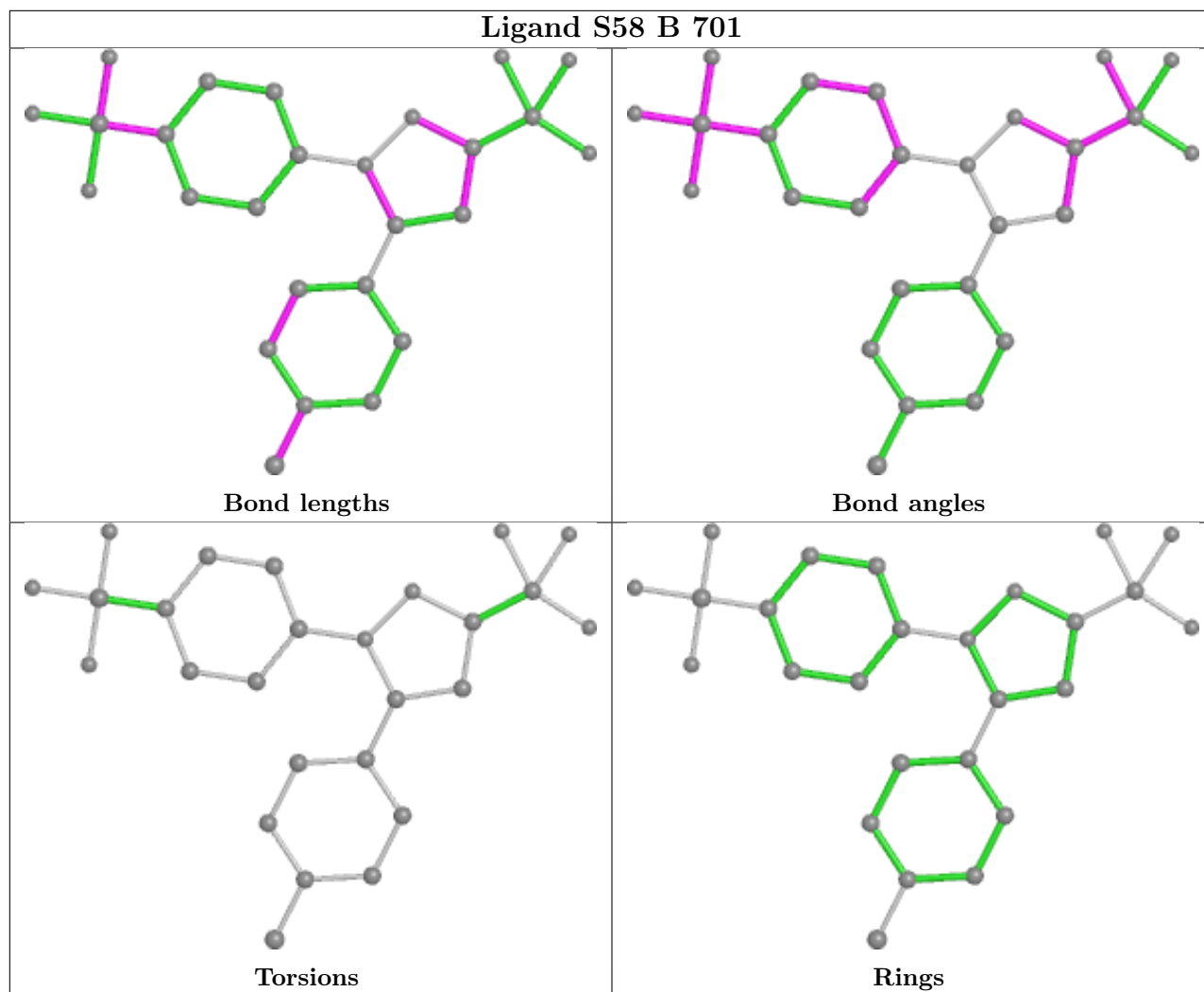
Mol	Chain	Res	Type	Atoms
3	A	682	HEM	C2A-CAA-CBA-CGA
3	A	682	HEM	C2B-C3B-CAB-CBB
3	B	682	HEM	C2A-CAA-CBA-CGA
3	B	682	HEM	C2B-C3B-CAB-CBB
2	A	671	NAG	O5-C5-C6-O6
2	B	671	NAG	O5-C5-C6-O6
2	A	671	NAG	C4-C5-C6-O6
2	A	661	NAG	O5-C5-C6-O6
2	B	671	NAG	C4-C5-C6-O6
2	B	661	NAG	O5-C5-C6-O6
2	A	661	NAG	C4-C5-C6-O6
2	B	661	NAG	C4-C5-C6-O6
3	A	682	HEM	C4B-C3B-CAB-CBB
3	B	682	HEM	C4B-C3B-CAB-CBB
3	A	682	HEM	CAA-CBA-CGA-O2A
3	B	682	HEM	CAA-CBA-CGA-O2A
3	A	682	HEM	CAA-CBA-CGA-O1A
3	B	682	HEM	CAA-CBA-CGA-O1A

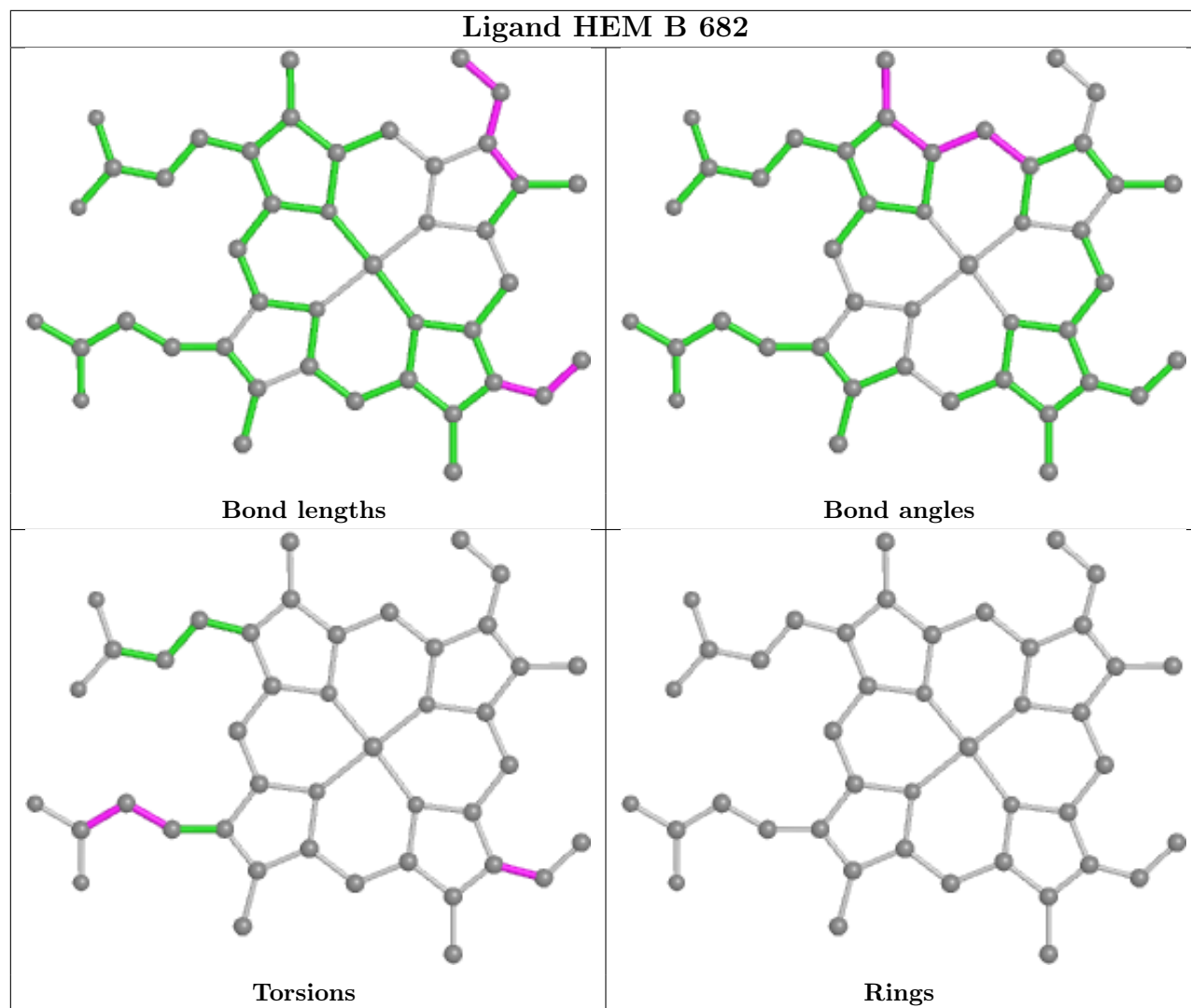
There are no ring outliers.

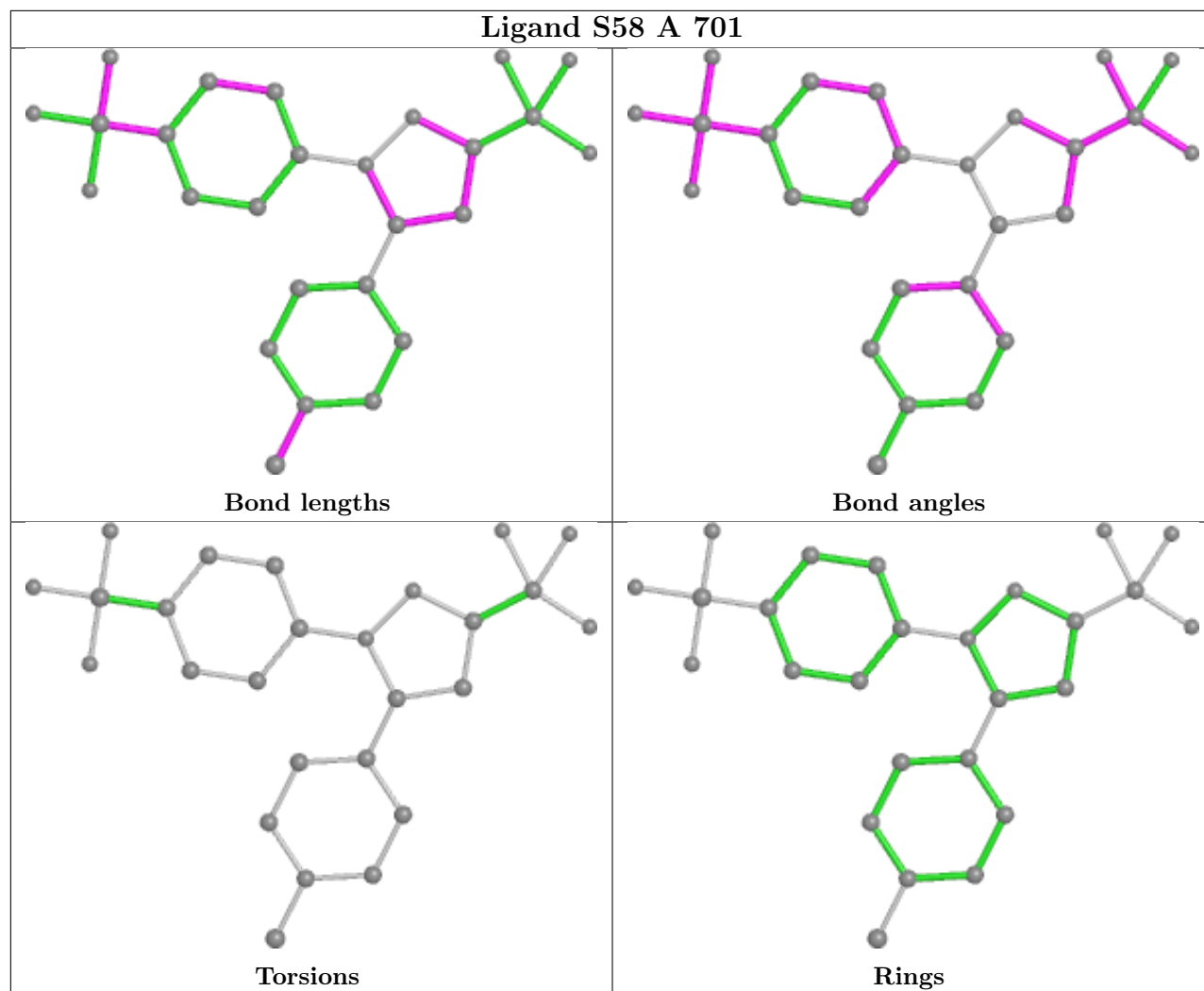
5 monomers are involved in 9 short contacts:

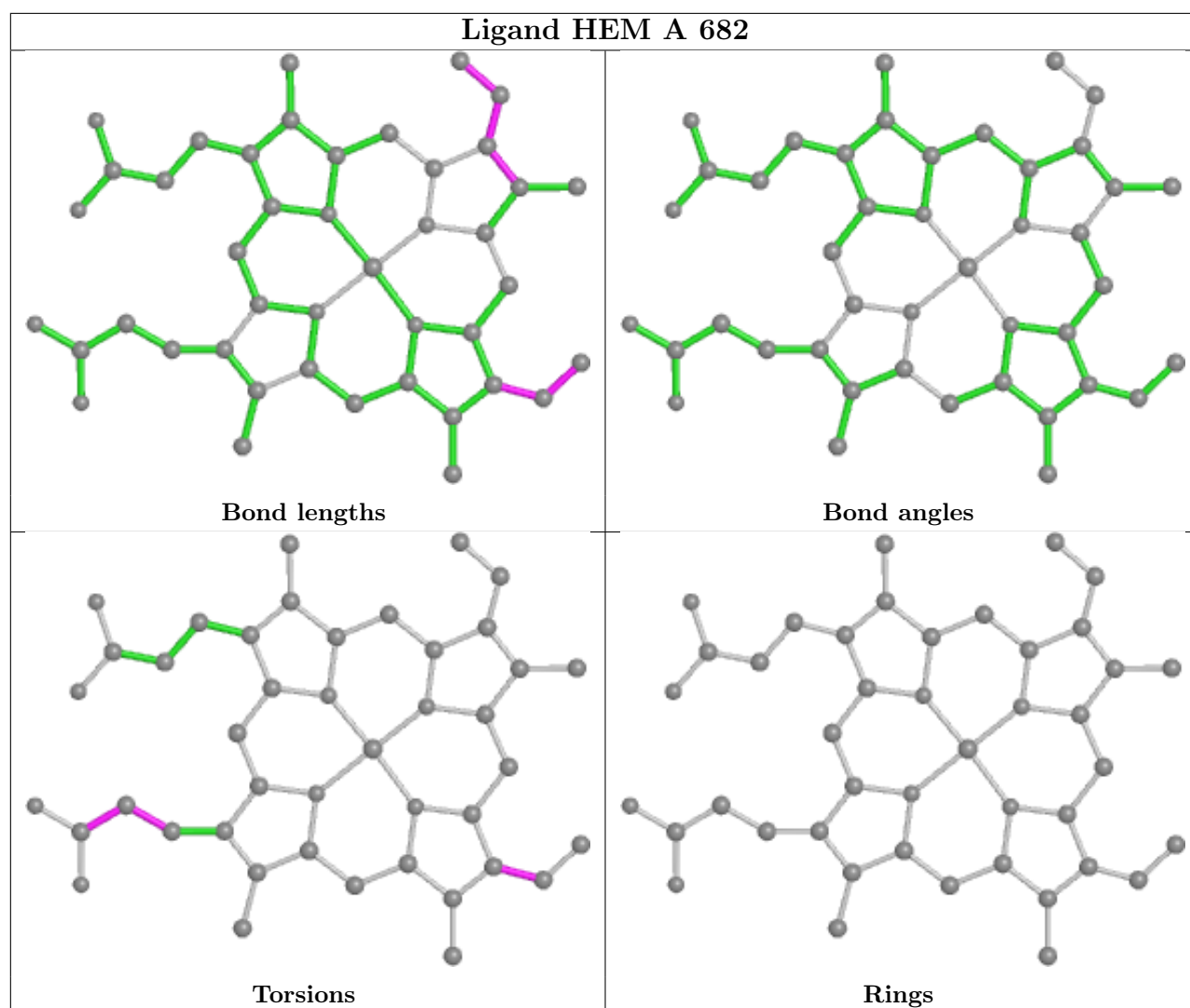
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	661	NAG	1	0
4	B	701	S58	2	0
3	B	682	HEM	1	0
4	A	701	S58	3	0
3	A	682	HEM	2	0

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.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

### 6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.