Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2023 – 08:32 PM EDT

PDB ID	:	2NO3
Title	:	Novel 4-anilinopyrimidines as potent JNK1 Inhibitors
Authors	:	Abad-Zapatero, C.
Deposited on	:	2006-10-24
Resolution	:	3.20 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

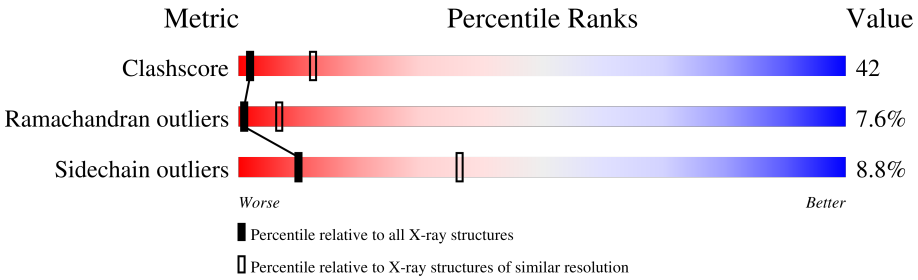
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	370	36% 49% 11%
1	B	370	36% 50% 10%
2	F	11	73% 18% 9%
2	G	11	45% 45% 9%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SO4	A	701	-	-	X	-
4	859	A	901	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 5965 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 Mitogen-activated protein kinase 8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	357	Total	C	N	O	S	0	0	0
			2869	1838	483	526	22			
1	B	357	Total	C	N	O	S	0	0	0
			2860	1834	478	526	22			

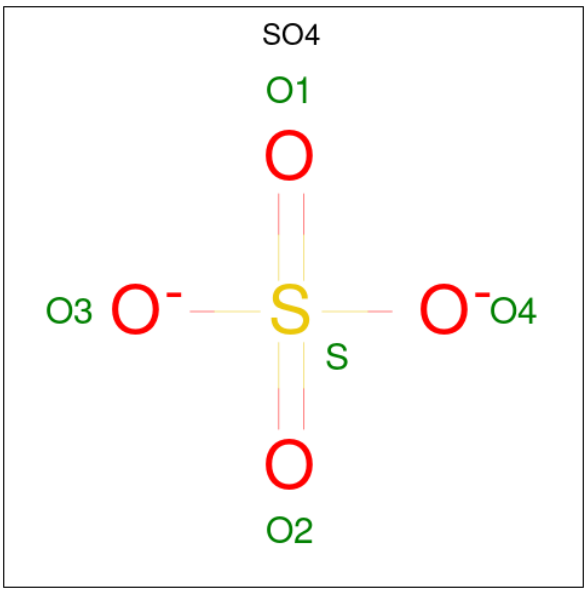
There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	183	GLU	THR	engineered mutation	UNP P45983
A	185	GLU	TYR	engineered mutation	UNP P45983
A	365	HIS	-	expression tag	UNP P45983
A	366	HIS	-	expression tag	UNP P45983
A	367	HIS	-	expression tag	UNP P45983
A	368	HIS	-	expression tag	UNP P45983
A	369	HIS	-	expression tag	UNP P45983
A	370	HIS	-	expression tag	UNP P45983
B	183	GLU	THR	engineered mutation	UNP P45983
B	185	GLU	TYR	engineered mutation	UNP P45983
B	365	HIS	-	expression tag	UNP P45983
B	366	HIS	-	expression tag	UNP P45983
B	367	HIS	-	expression tag	UNP P45983
B	368	HIS	-	expression tag	UNP P45983
B	369	HIS	-	expression tag	UNP P45983
B	370	HIS	-	expression tag	UNP P45983

- Molecule 2 is a protein called C-JUN-AMINO-TERMINAL KINASE-INTERACTING protein 1.

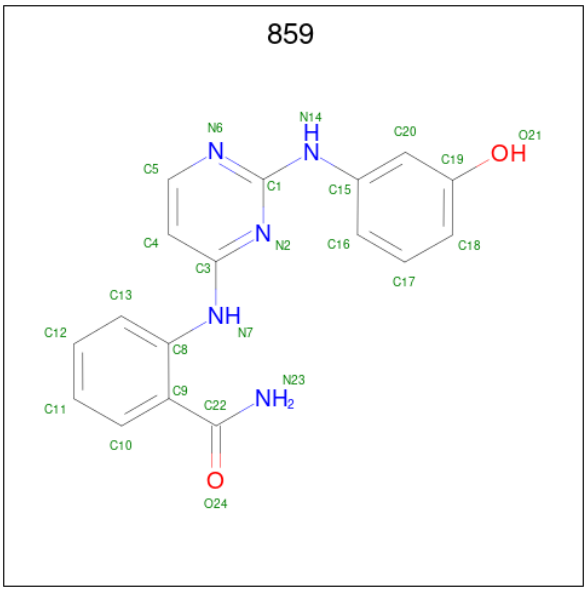
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	F	10	Total	C	N	O	0	0	0
			84	55	15	14			
2	G	10	Total	C	N	O	0	0	0
			84	55	15	14			

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0

- Molecule 4 is 2-({2-[(3-HYDROXYPHENYL)AMINO]PYRIMIDIN-4-YL}AMINO)BENZAMIDE (three-letter code: 859) (formula: $C_{17}H_{15}N_5O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			24	17	5	2		
4	B	1	Total	C	N	O	0	0
			24	17	5	2		

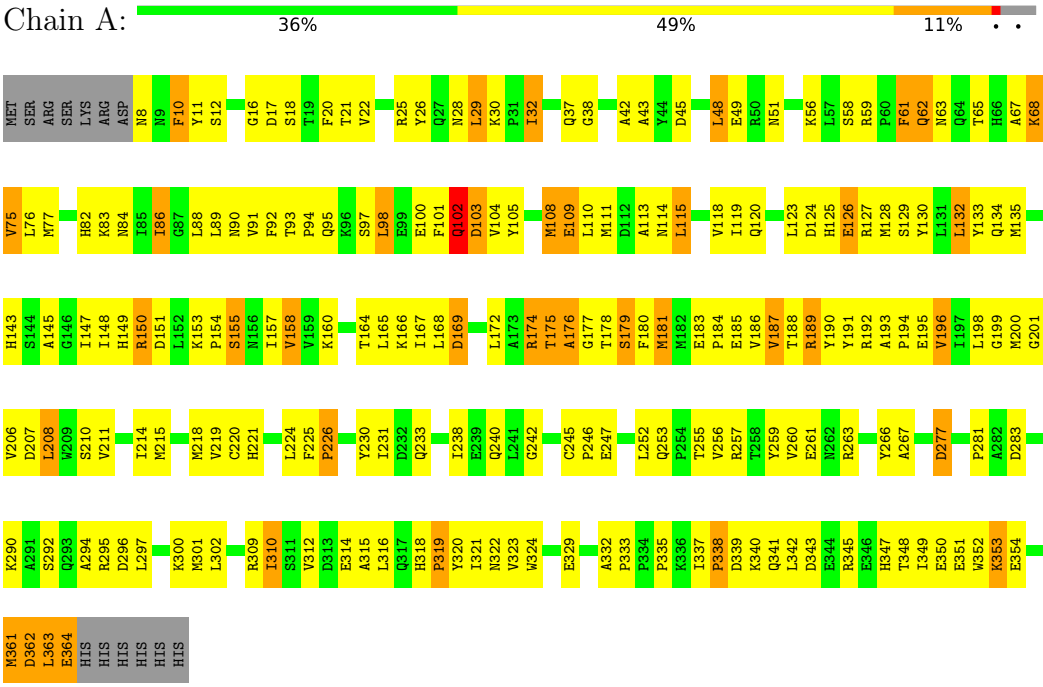
3 Residue-property plots (i)

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.

Note EDS was not executed.

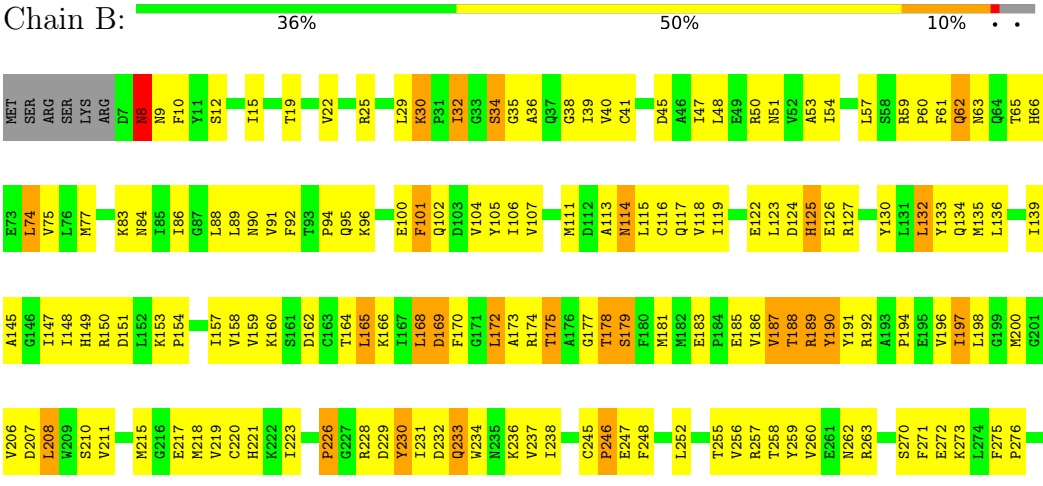
• Molecule 1: Mitogen-activated protein kinase 8

Chain A:



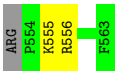
• Molecule 1: Mitogen-activated protein kinase 8

Chain B:



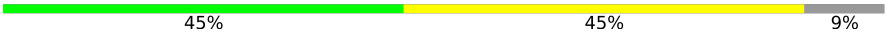
• Molecule 2: C-JUN-AMINO-TERMINAL KINASE-INTERACTING protein 1

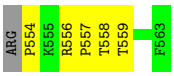
Chain F:



• Molecule 2: C-JUN-AMINO-TERMINAL KINASE-INTERACTING protein 1

Chain G:





4 Data and refinement statistics (i)

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

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	157.20Å 157.20Å 123.36Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.98 – 3.20	Depositor
% Data completeness (in resolution range)	75.2 (19.98-3.20)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
Refinement program	CNX 2002	Depositor
R, R_{free}	0.206 , 0.276	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	5965	wwPDB-VP
Average B, all atoms (Å^2)	64.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, 859

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	0.40	0/2934	0.66	0/3973
1	B	0.39	0/2925	0.64	0/3962
2	F	0.44	0/86	0.85	0/114
2	G	0.38	0/86	0.72	0/114
All	All	0.40	0/6031	0.66	0/8163

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

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	2869	0	2861	248	0
1	B	2860	0	2848	251	0
2	F	84	0	91	2	0
2	G	84	0	91	4	0
3	A	10	0	0	4	0
3	B	10	0	0	1	0
4	A	24	0	15	7	0
4	B	24	0	15	1	0
All	All	5965	0	5921	498	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 42.

All (498) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:175:THR:HG21	1:B:343:ASP:H	1.27	0.99
1:B:34:SER:HB3	1:B:39:ILE:HG23	1.44	0.98
1:A:72:ARG:HH21	1:A:343:ASP:HA	1.33	0.94
1:A:208:LEU:HD12	1:A:301:MET:HG2	1.53	0.89
1:A:286:HIS:HE1	1:A:288:LYS:HB2	1.39	0.88
1:A:29:LEU:HD22	1:A:43:ALA:HB2	1.54	0.86
1:A:168:LEU:HD23	1:A:169:ASP:N	1.90	0.86
1:A:114:ASN:HD21	1:A:155:SER:HA	1.41	0.85
1:A:32:ILE:HD13	1:A:42:ALA:HB2	1.57	0.85
1:A:318:HIS:HD2	1:A:320:TYR:H	1.24	0.83
1:B:145:ALA:O	1:B:147:ILE:HG13	1.77	0.83
1:B:187:VAL:HG12	1:B:192:ARG:HG2	1.62	0.82
1:B:338:PRO:HG3	1:B:340:LYS:HE2	1.62	0.81
1:A:342:LEU:HB2	1:A:345:ARG:HG2	1.63	0.80
1:A:224:LEU:O	1:A:226:PRO:HD3	1.84	0.78
1:A:95:GLN:HG2	1:A:102:GLN:HE22	1.48	0.78
1:B:61:PHE:CZ	1:B:353:LYS:HG3	2.20	0.76
1:B:317:GLN:HE21	1:B:317:GLN:HA	1.50	0.76
1:B:198:LEU:HB2	1:B:200:MET:HE2	1.66	0.75
1:B:71:TYR:O	1:B:75:VAL:HG23	1.86	0.75
1:B:300:LYS:O	1:B:310:ILE:HG22	1.88	0.74
1:A:111:MET:HE3	1:A:160:LYS:HB2	1.70	0.74
1:B:149:HIS:HD2	1:B:151:ASP:H	1.32	0.74
1:A:172:LEU:HD21	1:A:186:VAL:HG22	1.70	0.73
1:A:82:HIS:CD2	1:A:84:ASN:HB2	2.24	0.73
1:B:114:ASN:HB3	1:B:116:CYS:H	1.54	0.73
1:B:284:SER:HB2	1:B:286:HIS:CD2	2.24	0.72
1:A:114:ASN:HD21	1:A:155:SER:CA	2.02	0.72
1:B:95:GLN:HG2	1:B:102:GLN:N	2.04	0.72
1:B:233:GLN:HA	1:B:233:GLN:HE21	1.55	0.72
1:A:211:VAL:HB	1:A:301:MET:HE3	1.72	0.72
1:A:82:HIS:CD2	1:A:84:ASN:H	2.07	0.72
1:A:29:LEU:HD22	1:A:43:ALA:CB	2.20	0.71
1:A:29:LEU:O	1:A:30:LYS:HG3	1.89	0.71
1:B:228:ARG:HG3	1:B:228:ARG:HH11	1.55	0.71
1:A:72:ARG:NH2	1:A:343:ASP:HA	2.06	0.71
1:B:349:ILE:HG13	1:B:350:GLU:H	1.55	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:GLN:HG2	1:A:102:GLN:NE2	2.04	0.70
1:A:111:MET:CE	1:A:160:LYS:HB2	2.21	0.70
1:A:332:ALA:HB1	1:A:333:PRO:HD2	1.74	0.70
1:A:195:GLU:HA	1:A:200:MET:CE	2.22	0.69
1:B:95:GLN:HG2	1:B:102:GLN:H	1.58	0.69
1:A:181:MET:SD	1:A:184:PRO:HA	2.32	0.69
1:B:177:GLY:HA3	1:B:202:TYR:H	1.57	0.69
1:A:59:ARG:HB3	1:A:62:GLN:HB2	1.75	0.69
1:A:113:ALA:O	1:A:158:VAL:HG12	1.93	0.69
1:B:96:LYS:HB2	1:B:100:GLU:OE1	1.94	0.68
1:B:311:SER:OG	1:B:314:GLU:HG3	1.94	0.68
1:A:283:ASP:OD1	1:A:290:LYS:HA	1.93	0.67
1:B:45:ASP:OD1	1:B:48:LEU:HD13	1.94	0.67
1:A:83:LYS:HD3	1:A:329:GLU:HG2	1.75	0.67
1:B:313:ASP:O	1:B:317:GLN:HG2	1.94	0.67
1:A:148:ILE:HG23	1:A:207:ASP:OD2	1.93	0.67
1:A:286:HIS:CE1	1:A:289:LEU:H	2.13	0.67
1:B:307:SER:O	1:B:309:ARG:N	2.28	0.66
1:A:145:ALA:HB3	1:A:147:ILE:HG12	1.78	0.66
1:B:133:TYR:HE2	1:B:329:GLU:OE1	1.77	0.66
1:A:10:PHE:H	1:A:10:PHE:HD1	1.42	0.66
1:B:211:VAL:HG12	1:B:301:MET:HE1	1.76	0.66
1:A:114:ASN:ND2	1:A:155:SER:HA	2.11	0.65
1:A:361:MET:O	1:A:363:LEU:N	2.28	0.65
1:B:186:VAL:HG13	1:B:187:VAL:H	1.62	0.65
1:B:200:MET:HE1	1:B:252:LEU:HD21	1.79	0.65
1:A:135:MET:HB2	1:A:165:LEU:CD2	2.27	0.64
1:A:286:HIS:CE1	1:A:288:LYS:HB2	2.27	0.64
1:B:149:HIS:CD2	1:B:151:ASP:H	2.13	0.64
1:B:288:LYS:NZ	2:G:554:PRO:HD3	2.12	0.64
1:A:92:PHE:HD1	1:A:93:THR:N	1.96	0.64
1:A:143:HIS:ND1	1:A:312:VAL:HG21	2.12	0.64
1:B:25:ARG:NE	1:B:47:ILE:HD12	2.13	0.64
1:B:187:VAL:CG1	1:B:192:ARG:HG2	2.28	0.64
1:A:22:VAL:HG12	1:A:92:PHE:HZ	1.62	0.63
1:B:177:GLY:C	1:B:179:SER:H	2.00	0.63
1:A:95:GLN:CG	1:A:102:GLN:HE22	2.12	0.63
1:B:310:ILE:HD11	1:B:315:ALA:HA	1.79	0.63
1:B:8:ASN:N	1:B:8:ASN:HD22	1.94	0.63
1:A:310:ILE:HG23	1:A:310:ILE:O	1.99	0.62
1:B:34:SER:CB	1:B:39:ILE:HG23	2.26	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:132:LEU:HD21	1:B:215:MET:HG3	1.79	0.62
1:A:72:ARG:HH21	1:A:343:ASP:CA	2.10	0.62
1:A:130:TYR:O	1:A:133:TYR:HB3	2.00	0.62
1:B:286:HIS:CE1	1:B:288:LYS:HD2	2.34	0.62
1:A:340:LYS:HG3	1:A:341:GLN:N	2.14	0.62
1:A:342:LEU:HB2	1:A:345:ARG:CG	2.29	0.61
1:B:257:ARG:O	1:B:258:THR:C	2.39	0.61
1:A:149:HIS:HD2	1:A:149:HIS:O	1.82	0.61
1:A:290:LYS:HE2	1:A:292:SER:OG	2.00	0.61
2:F:555:LYS:HD2	2:F:556:ARG:H	1.65	0.61
1:B:198:LEU:HD12	1:B:200:MET:HE1	1.82	0.61
1:B:305:ASP:O	1:B:307:SER:N	2.33	0.61
1:A:225:PHE:O	1:A:226:PRO:O	2.18	0.61
1:B:217:GLU:HG3	1:B:223:ILE:HA	1.81	0.61
1:B:160:LYS:HB3	1:B:162:ASP:OD1	2.00	0.61
1:A:342:LEU:HD12	1:A:345:ARG:HB3	1.83	0.60
1:B:307:SER:C	1:B:309:ARG:H	2.04	0.60
1:A:11:TYR:O	1:A:21:THR:HA	2.00	0.60
1:B:15:ILE:HD11	1:B:29:LEU:HB2	1.83	0.60
1:A:211:VAL:HB	1:A:301:MET:CE	2.30	0.60
1:B:294:ALA:HB2	1:B:320:TYR:CE1	2.36	0.60
1:A:195:GLU:HA	1:A:200:MET:HE3	1.83	0.60
1:B:136:LEU:HB2	1:B:316:LEU:HD21	1.83	0.60
1:A:255:THR:CG2	1:B:230:TYR:HB3	2.31	0.60
1:B:142:LEU:HD21	1:B:170:PHE:CE1	2.36	0.60
1:A:134:GLN:HE22	1:A:164:THR:HA	1.68	0.59
1:B:83:LYS:O	1:B:166:LYS:HE2	2.02	0.59
1:B:115:LEU:HD13	1:B:115:LEU:O	2.02	0.59
1:A:203:LYS:O	1:A:206:VAL:HG12	2.03	0.59
1:A:207:ASP:O	1:A:211:VAL:HG23	2.01	0.59
1:A:135:MET:N	1:A:165:LEU:HD23	2.18	0.59
1:A:257:ARG:HG2	1:A:257:ARG:HH11	1.66	0.59
1:B:61:PHE:O	1:B:62:GLN:C	2.40	0.59
1:A:189:ARG:HD3	3:A:701:SO4:O1	2.03	0.59
1:A:189:ARG:O	1:A:191:TYR:N	2.36	0.59
1:A:114:ASN:HD21	1:A:155:SER:C	2.07	0.58
1:A:349:ILE:HG13	1:A:350:GLU:N	2.18	0.58
1:B:338:PRO:HG2	1:B:340:LYS:HG2	1.84	0.58
1:A:82:HIS:HD2	1:A:84:ASN:HB2	1.68	0.58
1:B:270:SER:C	1:B:272:GLU:H	2.06	0.58
1:A:75:VAL:HG13	1:A:340:LYS:HE3	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:59:ARG:HB3	1:B:62:GLN:HB2	1.86	0.58
1:B:111:MET:HG3	1:B:158:VAL:CG2	2.34	0.58
1:B:178:THR:O	1:B:179:SER:HB3	2.03	0.58
1:B:183:GLU:O	1:B:186:VAL:HG12	2.03	0.58
1:B:189:ARG:O	1:B:192:ARG:HG3	2.03	0.58
1:B:206:VAL:HG13	1:B:207:ASP:N	2.18	0.58
1:A:185:GLU:HA	1:A:192:ARG:NH1	2.18	0.58
1:B:111:MET:HE1	1:B:160:LYS:HB2	1.86	0.58
1:B:189:ARG:NH1	1:B:229:ASP:HA	2.19	0.58
1:A:174:ARG:HD3	1:A:175:THR:O	2.02	0.57
1:A:288:LYS:HB3	1:A:319:PRO:O	2.04	0.57
1:B:338:PRO:CG	1:B:340:LYS:HE2	2.34	0.57
1:B:22:VAL:HG11	1:B:54:ILE:HD13	1.87	0.57
1:A:45:ASP:CG	1:A:48:LEU:HB2	2.25	0.57
1:B:175:THR:HG21	1:B:343:ASP:N	2.10	0.57
1:A:132:LEU:HD21	1:A:215:MET:SD	2.44	0.57
1:B:72:ARG:NH1	1:B:174:ARG:HA	2.20	0.57
1:B:88:LEU:HD12	1:B:89:LEU:N	2.20	0.57
1:B:111:MET:HG3	1:B:158:VAL:HG21	1.86	0.57
1:B:142:LEU:HD21	1:B:170:PHE:HE1	1.69	0.57
1:A:94:PRO:HG2	1:A:95:GLN:OE1	2.05	0.57
1:B:136:LEU:CB	1:B:316:LEU:HD21	2.35	0.57
1:B:198:LEU:HD12	1:B:200:MET:CE	2.34	0.57
1:A:61:PHE:CE2	1:A:353:LYS:HG3	2.40	0.56
1:A:133:TYR:HD1	1:A:321:ILE:HG22	1.70	0.56
1:B:183:GLU:C	1:B:185:GLU:H	2.08	0.56
1:A:357:TYR:C	1:A:359:GLU:H	2.08	0.56
1:B:92:PHE:CD1	1:B:92:PHE:C	2.78	0.56
1:A:102:GLN:HE21	1:A:102:GLN:N	2.04	0.56
1:B:84:ASN:ND2	1:B:134:GLN:HB3	2.19	0.56
1:B:190:TYR:HA	1:B:233:GLN:OE1	2.05	0.56
1:B:206:VAL:HG13	1:B:207:ASP:H	1.69	0.56
1:B:233:GLN:HA	1:B:233:GLN:NE2	2.20	0.56
1:A:172:LEU:N	1:A:172:LEU:HD12	2.20	0.56
1:A:255:THR:HG22	1:B:230:TYR:CD2	2.41	0.56
1:A:340:LYS:HG3	1:A:341:GLN:H	1.71	0.56
1:B:293:GLN:O	1:B:296:ASP:N	2.39	0.56
1:A:25:ARG:HH21	1:A:48:LEU:HD23	1.71	0.56
1:A:357:TYR:O	1:A:359:GLU:N	2.39	0.56
1:A:84:ASN:ND2	1:A:134:GLN:HB3	2.21	0.56
1:A:92:PHE:CD1	1:A:93:THR:N	2.74	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:257:ARG:NH1	1:A:261:GLU:OE1	2.38	0.56
1:A:149:HIS:O	1:A:149:HIS:CD2	2.59	0.55
1:A:233:GLN:HA	1:A:233:GLN:NE2	2.21	0.55
1:B:54:ILE:HG12	1:B:107:VAL:HG22	1.88	0.55
1:A:67:ALA:HB1	1:A:352:TRP:CE3	2.41	0.55
1:A:125:HIS:HD1	1:A:320:TYR:HE1	1.54	0.55
1:B:345:ARG:O	1:B:346:GLU:HB3	2.06	0.55
1:B:361:MET:C	1:B:363:LEU:H	2.10	0.55
1:A:195:GLU:HA	1:A:200:MET:HE2	1.88	0.55
1:B:143:HIS:C	1:B:145:ALA:H	2.10	0.55
1:A:230:TYR:HB3	1:B:255:THR:CG2	2.37	0.54
1:B:177:GLY:O	1:B:179:SER:N	2.41	0.54
1:B:317:GLN:HA	1:B:317:GLN:NE2	2.20	0.54
1:B:309:ARG:HG2	1:B:310:ILE:H	1.72	0.54
1:A:157:ILE:CG2	1:A:165:LEU:HD11	2.38	0.54
1:B:72:ARG:HH21	1:B:341:GLN:HB2	1.71	0.54
1:A:338:PRO:HG2	1:A:340:LYS:HE2	1.90	0.54
1:A:347:HIS:HB2	1:A:352:TRP:NE1	2.21	0.54
1:A:29:LEU:N	1:A:29:LEU:HD23	2.23	0.54
1:A:10:PHE:CD1	1:A:10:PHE:N	2.73	0.54
1:A:48:LEU:O	1:A:49:GLU:HB2	2.07	0.54
1:A:192:ARG:NH2	3:A:701:SO4:O1	2.41	0.54
1:A:220:CYS:O	1:A:221:HIS:HB2	2.08	0.54
1:A:86:ILE:HG23	1:A:86:ILE:O	2.08	0.53
1:B:361:MET:O	1:B:363:LEU:N	2.41	0.53
1:A:90:ASN:ND2	1:A:91:VAL:H	2.05	0.53
1:B:186:VAL:HG13	1:B:187:VAL:N	2.22	0.53
1:A:347:HIS:HB2	1:A:352:TRP:CD1	2.44	0.53
1:B:297:LEU:HD13	1:B:318:HIS:CG	2.43	0.53
1:A:148:ILE:HG22	1:A:149:HIS:N	2.23	0.53
1:B:133:TYR:HD1	1:B:321:ILE:CG2	2.22	0.53
1:A:61:PHE:CZ	1:A:102:GLN:HA	2.44	0.53
1:A:135:MET:HB2	1:A:165:LEU:HD21	1.91	0.53
1:A:297:LEU:O	1:A:300:LYS:N	2.39	0.53
1:B:50:ARG:HG2	1:B:51:ASN:N	2.24	0.53
1:B:10:PHE:CD2	1:B:94:PRO:HB3	2.44	0.53
1:B:234:TRP:CE2	1:B:238:ILE:HG21	2.44	0.52
1:B:342:LEU:O	1:B:343:ASP:HB2	2.08	0.52
1:B:91:VAL:O	1:B:92:PHE:HB3	2.09	0.52
1:B:86:ILE:HB	1:B:168:LEU:HB3	1.90	0.52
1:B:72:ARG:NH2	1:B:341:GLN:HB2	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:288:LYS:HZ2	2:G:554:PRO:HD3	1.75	0.52
1:A:189:ARG:NH1	3:A:701:SO4:S	2.80	0.52
1:A:352:TRP:O	1:A:354:GLU:N	2.43	0.52
1:A:180:PHE:O	1:A:181:MET:HG2	2.10	0.52
1:A:246:PRO:O	1:A:247:GLU:C	2.48	0.52
1:B:118:VAL:HG13	1:B:123:LEU:HD21	1.91	0.52
1:B:177:GLY:C	1:B:179:SER:N	2.61	0.52
1:B:293:GLN:O	1:B:294:ALA:C	2.47	0.52
1:A:124:ASP:OD1	1:A:127:ARG:HG2	2.09	0.52
1:A:255:THR:HG23	1:B:230:TYR:HB3	1.91	0.52
1:A:256:VAL:O	1:A:260:VAL:HG23	2.10	0.51
1:B:30:LYS:O	1:B:32:ILE:HG22	2.09	0.51
1:B:77:MET:HB3	1:B:88:LEU:HD22	1.92	0.51
1:B:71:TYR:OH	1:B:340:LYS:HD2	2.10	0.51
1:A:127:ARG:HG3	1:A:127:ARG:HH11	1.76	0.51
1:B:132:LEU:HD21	1:B:215:MET:CG	2.40	0.51
1:B:190:TYR:CE1	1:B:226:PRO:O	2.63	0.51
1:B:143:HIS:ND1	1:B:312:VAL:HG21	2.25	0.51
1:A:259:TYR:CZ	1:A:263:ARG:HD3	2.45	0.51
1:B:293:GLN:HE22	1:B:319:PRO:HB2	1.76	0.51
1:A:25:ARG:NH2	1:A:48:LEU:HD23	2.26	0.51
1:A:179:SER:O	1:A:201:GLY:HA2	2.10	0.51
1:A:349:ILE:HG13	1:A:350:GLU:H	1.75	0.51
1:A:277:ASP:N	1:A:295:ARG:NH2	2.59	0.50
4:A:901:859:H13	4:A:901:859:H20	1.94	0.50
1:B:215:MET:O	1:B:219:VAL:HG23	2.10	0.50
1:B:259:TYR:CZ	1:B:263:ARG:HD3	2.45	0.50
1:A:348:THR:O	1:A:349:ILE:C	2.50	0.50
1:B:15:ILE:HG22	1:B:15:ILE:O	2.12	0.50
1:B:318:HIS:CG	1:B:319:PRO:HD2	2.47	0.50
1:B:215:MET:O	1:B:218:MET:HB2	2.12	0.50
1:B:8:ASN:HD22	1:B:8:ASN:H	1.59	0.50
1:B:124:ASP:OD2	1:B:127:ARG:HB2	2.10	0.50
1:B:133:TYR:OH	1:B:325:TYR:HA	2.12	0.50
1:B:211:VAL:CG1	1:B:301:MET:HE1	2.42	0.50
1:B:322:ASN:C	1:B:324:TRP:H	2.15	0.50
1:A:187:VAL:HG13	1:A:192:ARG:HD3	1.92	0.50
1:B:113:ALA:O	1:B:159:VAL:HG22	2.12	0.50
1:B:337:ILE:HG22	1:B:338:PRO:HD2	1.92	0.50
1:A:25:ARG:NH2	1:A:48:LEU:CD2	2.75	0.50
1:A:68:LYS:HA	1:A:352:TRP:CH2	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:SER:O	1:A:214:ILE:HG13	2.12	0.50
1:B:15:ILE:HG21	1:B:41:CYS:SG	2.51	0.50
1:B:25:ARG:HH21	1:B:48:LEU:CD1	2.25	0.50
1:B:126:GLU:HA	1:B:289:LEU:HD13	1.94	0.50
1:B:228:ARG:HG3	1:B:228:ARG:NH1	2.23	0.50
1:A:86:ILE:O	1:A:86:ILE:CG2	2.58	0.49
3:A:701:SO4:O4	1:B:255:THR:HG23	2.13	0.49
1:A:347:HIS:HB3	1:A:351:GLU:OE1	2.12	0.49
1:B:149:HIS:HD2	1:B:151:ASP:N	2.05	0.49
1:A:75:VAL:CG1	1:A:340:LYS:HE3	2.42	0.49
1:A:148:ILE:HG22	1:A:150:ARG:H	1.77	0.49
1:A:231:ILE:HD13	1:B:231:ILE:HD13	1.95	0.49
1:A:185:GLU:HA	1:A:192:ARG:HH12	1.78	0.48
4:B:902:859:H13	4:B:902:859:N2	2.28	0.48
1:A:141:HIS:CE1	1:A:335:PRO:HD3	2.48	0.48
1:A:208:LEU:HA	1:A:211:VAL:CG2	2.44	0.48
1:A:338:PRO:HB2	1:A:340:LYS:HG2	1.93	0.48
1:B:234:TRP:O	1:B:238:ILE:HG23	2.13	0.48
1:B:208:LEU:HD11	1:B:312:VAL:HA	1.95	0.48
1:A:153:LYS:NZ	1:A:188:THR:OG1	2.26	0.48
1:A:350:GLU:O	1:A:351:GLU:C	2.50	0.48
1:A:68:LYS:O	1:A:72:ARG:HG3	2.14	0.48
1:A:183:GLU:C	1:A:185:GLU:H	2.17	0.48
1:B:149:HIS:O	1:B:150:ARG:HB2	2.14	0.48
1:B:275:PHE:O	1:B:280:PHE:HE2	1.97	0.48
1:A:97:SER:HA	1:A:357:TYR:OH	2.13	0.48
1:A:172:LEU:N	1:A:172:LEU:CD1	2.75	0.48
1:A:312:VAL:O	1:A:315:ALA:HB3	2.14	0.48
1:B:165:LEU:C	1:B:165:LEU:HD23	2.34	0.48
1:A:296:ASP:OD2	1:A:318:HIS:HE1	1.97	0.48
1:B:153:LYS:O	1:B:154:PRO:C	2.51	0.48
1:B:187:VAL:HG12	1:B:192:ARG:CG	2.38	0.48
1:B:233:GLN:HE21	1:B:233:GLN:CA	2.20	0.48
1:B:293:GLN:NE2	1:B:319:PRO:HB2	2.28	0.48
1:B:259:TYR:O	1:B:262:ASN:N	2.44	0.47
1:B:150:ARG:HD3	1:B:172:LEU:O	2.14	0.47
1:B:8:ASN:N	1:B:8:ASN:ND2	2.61	0.47
1:B:178:THR:O	1:B:179:SER:CB	2.62	0.47
1:A:115:LEU:O	1:A:119:ILE:HG13	2.13	0.47
1:A:208:LEU:HA	1:A:211:VAL:HG23	1.95	0.47
1:B:246:PRO:O	1:B:247:GLU:C	2.52	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:285:GLU:CD	1:B:285:GLU:H	2.17	0.47
1:B:39:ILE:HG22	1:B:40:VAL:N	2.30	0.47
1:A:61:PHE:HZ	1:A:102:GLN:HA	1.79	0.47
1:A:102:GLN:HG2	1:A:103:ASP:OD1	2.15	0.47
1:A:323:VAL:HG23	1:A:324:TRP:CD2	2.50	0.47
1:B:63:ASN:OD1	1:B:65:THR:HB	2.15	0.47
1:B:96:LYS:H	1:B:96:LYS:HD2	1.80	0.47
1:B:132:LEU:HD12	1:B:132:LEU:HA	1.71	0.47
1:B:322:ASN:O	1:B:324:TRP:N	2.47	0.47
1:B:229:ASP:O	1:B:231:ILE:N	2.48	0.47
1:B:256:VAL:O	1:B:257:ARG:C	2.53	0.47
1:A:108:MET:C	1:A:109:GLU:O	2.51	0.47
1:B:70:ALA:O	1:B:71:TYR:C	2.53	0.47
1:B:349:ILE:HG13	1:B:350:GLU:N	2.25	0.47
1:A:10:PHE:HA	1:A:22:VAL:O	2.14	0.47
1:A:74:LEU:O	1:A:77:MET:HB2	2.15	0.47
1:B:148:ILE:O	1:B:173:ALA:HA	2.15	0.47
1:B:189:ARG:HA	1:B:192:ARG:NE	2.29	0.47
1:B:200:MET:CE	1:B:252:LEU:HD21	2.44	0.47
1:A:51:ASN:HB3	1:A:110:LEU:HD23	1.98	0.46
1:A:129:SER:OG	1:A:320:TYR:O	2.28	0.46
1:B:194:PRO:HG2	1:B:304:ILE:HA	1.97	0.46
1:B:288:LYS:HZ1	2:G:554:PRO:HD3	1.78	0.46
1:A:310:ILE:HD11	1:A:315:ALA:HA	1.97	0.46
1:B:245:CYS:O	1:B:248:PHE:HB3	2.15	0.46
1:A:21:THR:HB	1:A:94:PRO:HG3	1.97	0.46
1:B:60:PRO:O	1:B:61:PHE:HD2	1.98	0.46
1:B:62:GLN:NE2	1:B:63:ASN:ND2	2.62	0.46
1:B:72:ARG:HH21	1:B:341:GLN:CB	2.29	0.46
1:A:238:ILE:HG13	1:A:266:TYR:CD2	2.49	0.46
1:B:130:TYR:O	1:B:133:TYR:HB3	2.15	0.46
1:B:310:ILE:HD11	1:B:315:ALA:CA	2.45	0.46
1:A:12:SER:HA	1:A:20:PHE:O	2.15	0.46
1:A:124:ASP:O	1:A:125:HIS:C	2.54	0.46
1:A:310:ILE:CG1	1:A:314:GLU:HB2	2.46	0.46
1:A:310:ILE:HG12	1:A:314:GLU:HB2	1.97	0.46
4:A:901:859:H13	4:A:901:859:C20	2.46	0.46
1:B:307:SER:C	1:B:309:ARG:N	2.66	0.46
1:A:108:MET:CE	4:A:901:859:H4	2.46	0.46
1:B:150:ARG:O	1:B:187:VAL:HG22	2.15	0.46
1:A:62:GLN:HG2	1:A:63:ASN:N	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:108:MET:HE1	4:A:901:859:H4	1.98	0.46
1:A:198:LEU:HB3	1:A:256:VAL:HG11	1.97	0.46
1:A:231:ILE:HD13	1:B:231:ILE:CD1	2.46	0.46
1:B:190:TYR:CD1	1:B:226:PRO:O	2.69	0.46
1:B:194:PRO:C	1:B:196:VAL:H	2.19	0.46
1:A:100:GLU:O	1:A:102:GLN:NE2	2.49	0.46
1:B:8:ASN:H	1:B:8:ASN:ND2	2.12	0.46
1:B:53:ALA:O	1:B:107:VAL:HA	2.15	0.46
1:A:193:ALA:O	1:A:196:VAL:N	2.44	0.45
1:B:312:VAL:O	1:B:315:ALA:HB3	2.16	0.45
1:A:240:GLN:OE1	1:A:240:GLN:HA	2.16	0.45
1:A:126:GLU:H	1:A:126:GLU:HG2	1.46	0.45
1:A:218:MET:HE3	1:A:218:MET:HB3	1.77	0.45
4:A:901:859:H13	4:A:901:859:N2	2.31	0.45
1:B:25:ARG:CZ	1:B:47:ILE:HD12	2.46	0.45
1:A:10:PHE:CE2	1:A:94:PRO:HA	2.52	0.45
1:A:364:GLU:CD	1:A:364:GLU:H	2.20	0.45
1:B:246:PRO:C	1:B:248:PHE:N	2.69	0.45
1:A:127:ARG:HG3	1:A:127:ARG:NH1	2.32	0.45
1:B:32:ILE:O	1:B:32:ILE:CG1	2.65	0.45
1:B:359:GLU:O	1:B:359:GLU:HG3	2.17	0.45
1:A:20:PHE:HA	1:A:105:TYR:OH	2.16	0.45
1:A:58:SER:O	1:A:59:ARG:C	2.54	0.45
1:A:59:ARG:HG3	1:A:59:ARG:HH11	1.82	0.45
1:B:149:HIS:CE1	1:B:169:ASP:O	2.70	0.45
1:A:242:GLY:HA3	1:A:267:ALA:O	2.16	0.45
1:B:208:LEU:HD11	1:B:312:VAL:CA	2.47	0.45
1:A:115:LEU:HD23	1:A:115:LEU:HA	1.77	0.44
1:B:74:LEU:HD21	1:B:91:VAL:HG21	1.98	0.44
1:B:88:LEU:HD12	1:B:89:LEU:H	1.82	0.44
1:B:178:THR:O	1:B:178:THR:HG22	2.17	0.44
1:A:294:ALA:HB2	1:A:320:TYR:CZ	2.52	0.44
1:B:122:GLU:O	1:B:123:LEU:HG	2.17	0.44
1:A:37:GLN:NE2	1:A:169:ASP:OD1	2.50	0.44
1:A:187:VAL:HG22	1:A:192:ARG:HG2	1.99	0.44
1:A:257:ARG:HG2	1:A:257:ARG:NH1	2.32	0.44
1:B:232:ASP:OD2	1:B:236:LYS:HE3	2.18	0.44
1:A:26:TYR:CE1	1:A:45:ASP:OD2	2.71	0.44
1:A:125:HIS:O	1:A:126:GLU:C	2.56	0.44
1:B:77:MET:CB	1:B:88:LEU:HD22	2.46	0.44
1:B:104:VAL:CG1	1:B:105:TYR:N	2.80	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:259:TYR:CE1	1:B:263:ARG:HD3	2.53	0.44
1:B:191:TYR:N	1:B:191:TYR:CD1	2.85	0.44
1:A:38:GLY:HA3	1:A:56:LYS:O	2.18	0.44
1:A:97:SER:O	1:A:100:GLU:N	2.46	0.44
1:A:153:LYS:O	1:A:154:PRO:C	2.53	0.44
1:A:168:LEU:HD21	4:A:901:859:O24	2.17	0.44
1:A:211:VAL:CB	1:A:301:MET:HE3	2.45	0.44
1:A:300:LYS:O	1:A:310:ILE:HG22	2.18	0.44
1:A:135:MET:CA	1:A:165:LEU:HD23	2.48	0.44
1:A:145:ALA:CB	1:A:147:ILE:HG12	2.45	0.44
1:A:310:ILE:O	1:A:310:ILE:CG2	2.66	0.44
1:A:357:TYR:C	1:A:359:GLU:N	2.70	0.44
1:B:134:GLN:HE22	1:B:164:THR:HA	1.82	0.44
1:B:270:SER:C	1:B:272:GLU:N	2.70	0.44
1:B:25:ARG:CD	1:B:47:ILE:HD12	2.48	0.44
1:A:16:GLY:C	1:A:18:SER:H	2.21	0.43
1:A:253:GLN:O	1:A:257:ARG:HB2	2.18	0.43
1:A:352:TRP:O	1:A:353:LYS:C	2.57	0.43
1:B:100:GLU:O	1:B:101:PHE:C	2.55	0.43
1:A:25:ARG:HH21	1:A:48:LEU:CD2	2.31	0.43
1:A:63:ASN:C	1:A:65:THR:H	2.21	0.43
1:A:108:MET:O	1:A:109:GLU:O	2.35	0.43
1:B:40:VAL:HA	1:B:54:ILE:O	2.18	0.43
1:B:142:LEU:HD12	1:B:142:LEU:HA	1.69	0.43
1:B:189:ARG:HA	1:B:192:ARG:HG3	2.01	0.43
1:A:215:MET:O	1:A:219:VAL:HG23	2.19	0.43
1:B:94:PRO:HG2	1:B:95:GLN:HE22	1.81	0.43
1:A:59:ARG:CB	1:A:62:GLN:HB2	2.47	0.43
1:B:50:ARG:CG	1:B:51:ASN:N	2.82	0.43
1:B:305:ASP:O	1:B:306:ALA:C	2.55	0.43
1:B:12:SER:OG	1:B:19:THR:HG22	2.18	0.43
1:B:115:LEU:HB2	1:B:157:ILE:HB	2.01	0.43
1:B:220:CYS:O	1:B:221:HIS:HB2	2.18	0.43
1:B:233:GLN:O	1:B:237:VAL:HG23	2.18	0.43
1:B:273:LYS:O	1:B:276:PRO:HD3	2.18	0.43
1:B:210:SER:O	1:B:211:VAL:C	2.57	0.43
1:B:294:ALA:HB2	1:B:320:TYR:CD1	2.53	0.43
1:A:252:LEU:HD13	1:A:260:VAL:HG21	2.01	0.43
1:A:61:PHE:CD2	1:A:353:LYS:HA	2.54	0.43
1:A:257:ARG:HH12	1:A:261:GLU:CD	2.22	0.43
1:A:302:LEU:HA	1:A:302:LEU:HD23	1.79	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:348:THR:H	1:A:351:GLU:HB3	1.84	0.43
1:A:358:LYS:O	1:A:362:ASP:OD1	2.36	0.43
1:B:286:HIS:ND1	1:B:288:LYS:HD2	2.33	0.43
1:A:220:CYS:O	1:A:221:HIS:CB	2.66	0.43
1:A:224:LEU:C	1:A:226:PRO:HD3	2.38	0.43
1:A:230:TYR:HB3	1:B:255:THR:HG23	2.00	0.43
1:B:102:GLN:HA	1:B:102:GLN:OE1	2.18	0.43
1:B:142:LEU:O	1:B:147:ILE:HB	2.18	0.43
1:B:236:LYS:HA	1:B:236:LYS:HD3	1.76	0.43
1:A:45:ASP:OD1	1:A:48:LEU:N	2.44	0.42
1:B:91:VAL:HA	1:B:105:TYR:O	2.19	0.42
1:B:317:GLN:HE21	1:B:317:GLN:CA	2.19	0.42
1:B:322:ASN:C	1:B:324:TRP:N	2.73	0.42
1:A:74:LEU:HD12	1:A:74:LEU:HA	1.72	0.42
1:B:124:ASP:O	1:B:125:HIS:C	2.56	0.42
1:B:132:LEU:HD21	1:B:215:MET:SD	2.58	0.42
1:A:139:ILE:O	1:A:142:LEU:HB2	2.19	0.42
1:B:101:PHE:CD2	1:B:357:TYR:HB2	2.54	0.42
1:B:133:TYR:CE2	1:B:329:GLU:OE1	2.66	0.42
1:B:91:VAL:HG22	1:B:92:PHE:N	2.35	0.42
1:B:168:LEU:O	1:B:169:ASP:HB3	2.19	0.42
1:B:189:ARG:HD3	3:B:801:SO4:O3	2.18	0.42
1:B:208:LEU:HD11	1:B:312:VAL:N	2.34	0.42
1:A:124:ASP:HA	1:A:281:PRO:HB3	2.02	0.42
1:A:238:ILE:C	1:A:240:GLN:N	2.70	0.42
1:B:57:LEU:HD11	1:B:106:ILE:HG13	2.01	0.42
1:B:149:HIS:HE1	1:B:169:ASP:O	2.02	0.42
1:B:194:PRO:HA	1:B:197:ILE:HG13	2.00	0.42
1:B:150:ARG:O	1:B:187:VAL:CG2	2.68	0.42
1:B:187:VAL:HG12	1:B:192:ARG:HD3	2.01	0.42
1:A:77:MET:HB3	1:A:88:LEU:HD22	2.01	0.42
1:A:104:VAL:HG22	1:A:360:VAL:HG21	2.01	0.42
1:A:345:ARG:HD3	1:A:347:HIS:HE1	1.84	0.42
1:B:211:VAL:CG1	1:B:301:MET:CE	2.97	0.42
1:B:119:ILE:HG23	1:B:217:GLU:O	2.20	0.42
1:B:36:ALA:C	1:B:38:GLY:H	2.23	0.42
1:B:330:ALA:C	1:B:332:ALA:H	2.22	0.42
1:B:151:ASP:OD1	1:B:188:THR:OG1	2.37	0.41
1:B:351:GLU:O	1:B:355:LEU:HG	2.20	0.41
1:A:98:LEU:O	1:A:353:LYS:NZ	2.53	0.41
1:B:135:MET:HE2	1:B:165:LEU:HD11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:118:VAL:CG1	1:A:123:LEU:HD11	2.50	0.41
1:B:361:MET:C	1:B:363:LEU:N	2.73	0.41
1:A:168:LEU:HD11	4:A:901:859:N7	2.35	0.41
1:A:318:HIS:CD2	1:A:318:HIS:C	2.93	0.41
1:B:59:ARG:O	1:B:66:HIS:HB3	2.20	0.41
1:A:91:VAL:HG11	1:A:363:LEU:HG	2.03	0.41
1:A:101:PHE:C	1:A:102:GLN:HE21	2.24	0.41
1:A:111:MET:HB2	1:A:158:VAL:HB	2.02	0.41
1:A:111:MET:HE1	1:A:160:LYS:HB2	1.98	0.41
1:A:128:MET:O	1:A:132:LEU:HB2	2.20	0.41
1:A:132:LEU:HD12	1:A:132:LEU:HA	1.85	0.41
1:A:135:MET:O	1:A:139:ILE:HG13	2.21	0.41
1:A:175:THR:O	1:A:176:ALA:C	2.59	0.41
1:B:57:LEU:HD22	1:B:104:VAL:CG1	2.50	0.41
1:B:96:LYS:HD3	1:B:100:GLU:CD	2.40	0.41
1:B:316:LEU:HD23	1:B:316:LEU:HA	1.87	0.41
2:G:556:ARG:HA	2:G:557:PRO:HD3	1.82	0.41
1:B:356:ILE:C	1:B:358:LYS:N	2.74	0.41
1:A:89:LEU:HD23	1:A:89:LEU:HA	1.78	0.41
1:A:130:TYR:O	1:A:134:GLN:HG3	2.21	0.41
1:A:192:ARG:HB3	1:A:196:VAL:HG12	2.03	0.41
1:A:230:TYR:CE1	1:A:231:ILE:HG13	2.56	0.41
1:B:340:LYS:O	1:B:341:GLN:HB3	2.20	0.41
1:A:92:PHE:CE1	1:A:105:TYR:HB2	2.56	0.41
1:A:97:SER:O	1:A:98:LEU:C	2.58	0.41
1:A:167:ILE:CG2	1:A:168:LEU:N	2.83	0.41
1:A:345:ARG:HD3	1:A:347:HIS:CE1	2.55	0.41
1:B:135:MET:O	1:B:139:ILE:HG13	2.21	0.41
1:B:297:LEU:HA	1:B:297:LEU:HD12	1.84	0.41
1:B:338:PRO:O	1:B:339:ASP:CB	2.68	0.41
1:A:177:GLY:O	1:A:179:SER:N	2.54	0.41
1:A:340:LYS:CG	1:A:341:GLN:N	2.83	0.41
1:A:343:ASP:OD2	1:A:343:ASP:N	2.50	0.41
1:B:204:GLU:H	1:B:204:GLU:HG2	1.60	0.41
1:A:257:ARG:NH1	1:A:261:GLU:CD	2.74	0.40
1:B:25:ARG:HH21	1:B:48:LEU:HD11	1.86	0.40
1:B:95:GLN:CD	1:B:95:GLN:N	2.75	0.40
1:A:104:VAL:CG2	1:A:360:VAL:HG21	2.52	0.40
1:A:109:GLU:OE1	1:A:166:LYS:HE3	2.21	0.40
1:A:135:MET:HB2	1:A:165:LEU:HD23	2.00	0.40
1:A:329:GLU:OE1	2:F:556:ARG:NH2	2.43	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:139:ILE:O	1:B:142:LEU:N	2.55	0.40
1:A:301:MET:O	1:A:309:ARG:HD3	2.22	0.40
1:A:364:GLU:OE1	1:A:364:GLU:N	2.52	0.40
1:A:76:LEU:O	1:A:77:MET:C	2.60	0.40
1:A:149:HIS:O	1:A:151:ASP:N	2.53	0.40
1:B:32:ILE:CG2	1:B:41:CYS:HA	2.52	0.40
1:B:89:LEU:HD23	1:B:89:LEU:HA	1.88	0.40
1:B:190:TYR:HB2	1:B:191:TYR:CE1	2.57	0.40
1:A:294:ALA:HB2	1:A:320:TYR:CE1	2.56	0.40
1:B:333:PRO:HA	1:B:334:PRO:HD2	1.82	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	355/370 (96%)	253 (71%)	71 (20%)	31 (9%)	1 4
1	B	355/370 (96%)	249 (70%)	82 (23%)	24 (7%)	1 9
2	F	8/11 (73%)	8 (100%)	0	0	100 100
2	G	8/11 (73%)	8 (100%)	0	0	100 100
All	All	726/762 (95%)	518 (71%)	153 (21%)	55 (8%)	1 7

All (55) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	62	GLN
1	A	102	GLN
1	A	176	ALA
1	A	189	ARG
1	A	190	TYR

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Mol	Chain	Res	Type
1	A	226	PRO
1	A	339	ASP
1	A	361	MET
1	A	362	ASP
1	B	62	GLN
1	B	226	PRO
1	B	306	ALA
1	B	308	LYS
1	B	339	ASP
1	B	341	GLN
1	B	362	ASP
1	A	86	ILE
1	A	109	GLU
1	A	178	THR
1	A	353	LYS
1	A	358	LYS
1	B	35	GLY
1	B	101	PHE
1	B	114	ASN
1	B	178	THR
1	B	189	ARG
1	B	190	TYR
1	B	230	TYR
1	B	323	VAL
1	B	349	ILE
1	A	68	LYS
1	A	155	SER
1	A	179	SER
1	A	277	ASP
1	A	310	ILE
1	A	338	PRO
1	B	34	SER
1	B	179	SER
1	B	343	ASP
1	A	17	ASP
1	A	74	LEU
1	A	98	LEU
1	A	181	MET
1	B	70	ALA
1	A	28	ASN
1	A	150	ARG
1	A	205	ASN

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Mol	Chain	Res	Type
1	A	319	PRO
1	B	8	ASN
1	B	169	ASP
1	B	271	PHE
1	A	75	VAL
1	A	32	ILE
1	A	199	GLY
1	B	260	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	316/334 (95%)	288 (91%)	28 (9%)	9 35
1	B	315/334 (94%)	288 (91%)	27 (9%)	10 38
2	F	10/11 (91%)	10 (100%)	0	100 100
2	G	10/11 (91%)	8 (80%)	2 (20%)	1 6
All	All	651/690 (94%)	594 (91%)	57 (9%)	10 36

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	ASN
1	A	10	PHE
1	A	29	LEU
1	A	48	LEU
1	A	61	PHE
1	A	74	LEU
1	A	102	GLN
1	A	103	ASP
1	A	108	MET
1	A	115	LEU
1	A	120	GLN
1	A	126	GLU
1	A	132	LEU

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Mol	Chain	Res	Type
1	A	158	VAL
1	A	169	ASP
1	A	174	ARG
1	A	175	THR
1	A	187	VAL
1	A	194	PRO
1	A	196	VAL
1	A	202	TYR
1	A	208	LEU
1	A	245	CYS
1	A	316	LEU
1	A	322	ASN
1	A	337	ILE
1	A	363	LEU
1	A	364	GLU
1	B	8	ASN
1	B	9	ASN
1	B	30	LYS
1	B	32	ILE
1	B	74	LEU
1	B	90	ASN
1	B	117	GLN
1	B	125	HIS
1	B	132	LEU
1	B	142	LEU
1	B	165	LEU
1	B	168	LEU
1	B	172	LEU
1	B	175	THR
1	B	181	MET
1	B	187	VAL
1	B	188	THR
1	B	197	ILE
1	B	208	LEU
1	B	233	GLN
1	B	246	PRO
1	B	285	GLU
1	B	286	HIS
1	B	310	ILE
1	B	313	ASP
1	B	317	GLN
1	B	339	ASP

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Mol	Chain	Res	Type
2	G	558	THR
2	G	559	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	8	ASN
1	A	27	GLN
1	A	37	GLN
1	A	62	GLN
1	A	66	HIS
1	A	82	HIS
1	A	90	ASN
1	A	102	GLN
1	A	117	GLN
1	A	141	HIS
1	A	149	HIS
1	A	233	GLN
1	A	262	ASN
1	A	317	GLN
1	A	318	HIS
1	A	322	ASN
1	A	347	HIS
1	B	8	ASN
1	B	62	GLN
1	B	90	ASN
1	B	114	ASN
1	B	117	GLN
1	B	149	HIS
1	B	205	ASN
1	B	233	GLN
1	B	286	HIS
1	B	293	GLN
1	B	317	GLN
1	B	341	GLN

5.3.3 RNA

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)

6 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	SO4	B	802	-	4,4,4	0.39	0	6,6,6	0.14	0
3	SO4	A	701	-	4,4,4	0.49	0	6,6,6	0.10	0
4	859	B	902	-	26,26,26	1.28	3 (11%)	35,35,35	1.63	7 (20%)
3	SO4	B	801	-	4,4,4	0.67	0	6,6,6	0.11	0
4	859	A	901	-	26,26,26	1.26	2 (7%)	35,35,35	1.62	9 (25%)
3	SO4	A	702	-	4,4,4	0.52	0	6,6,6	0.06	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
4	859	B	902	-	-	0/12/12/12	0/3/3/3
4	859	A	901	-	-	0/12/12/12	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	902	859	C9-C8	3.21	1.46	1.41
4	A	901	859	C20-C15	2.70	1.43	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	902	859	C13-C8	2.60	1.44	1.39
4	A	901	859	C13-C8	2.55	1.44	1.39
4	B	902	859	C16-C15	2.15	1.42	1.39

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	901	859	N6-C1-N2	-4.56	122.23	126.55
4	B	902	859	N6-C1-N2	-4.49	122.29	126.55
4	B	902	859	O24-C22-C9	4.00	124.95	120.24
4	B	902	859	O24-C22-N23	-2.79	118.61	122.58
4	A	901	859	O24-C22-C9	2.75	123.48	120.24
4	A	901	859	C15-C20-C19	2.75	122.20	119.67
4	A	901	859	C5-N6-C1	2.72	117.86	115.45
4	B	902	859	C1-N2-C3	2.64	121.54	116.28
4	A	901	859	C1-N2-C3	2.59	121.44	116.28
4	B	902	859	C5-N6-C1	2.51	117.67	115.45
4	B	902	859	C15-C20-C19	2.32	121.81	119.67
4	B	902	859	C13-C8-C9	-2.23	116.45	119.38
4	A	901	859	C16-C15-C20	-2.18	117.06	119.65
4	A	901	859	O24-C22-N23	-2.16	119.50	122.58
4	A	901	859	C13-C8-C9	-2.15	116.55	119.38
4	A	901	859	C12-C13-C8	2.15	123.09	118.62

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

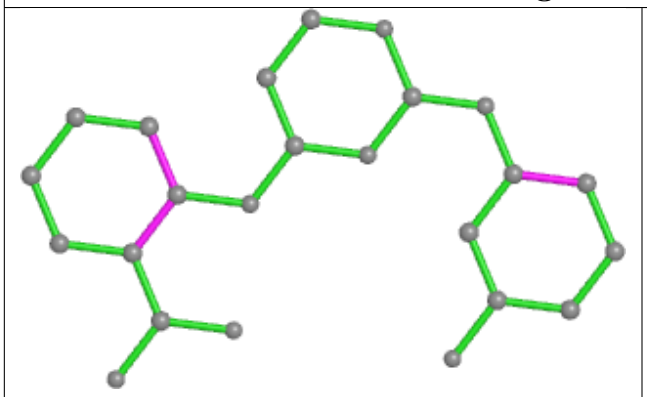
4 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	701	SO4	4	0
4	B	902	859	1	0
3	B	801	SO4	1	0
4	A	901	859	7	0

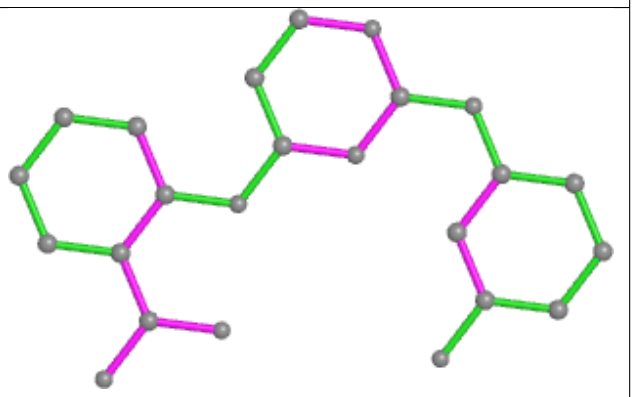
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 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.

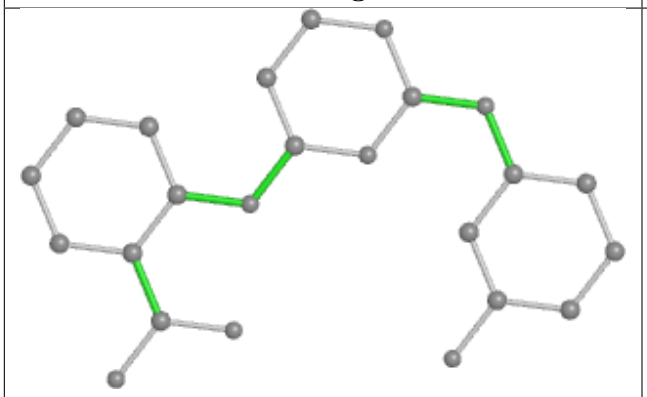
Ligand 859 B 902



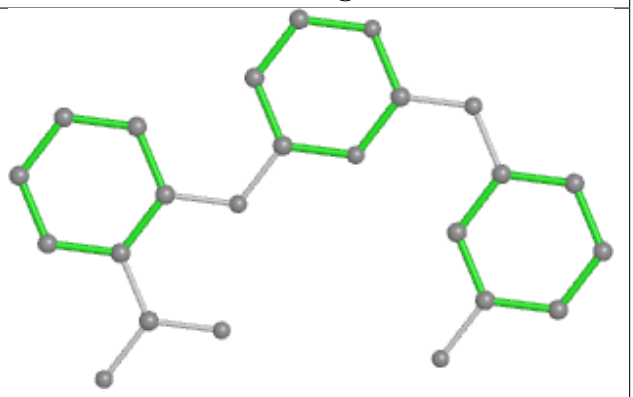
Bond lengths



Bond angles

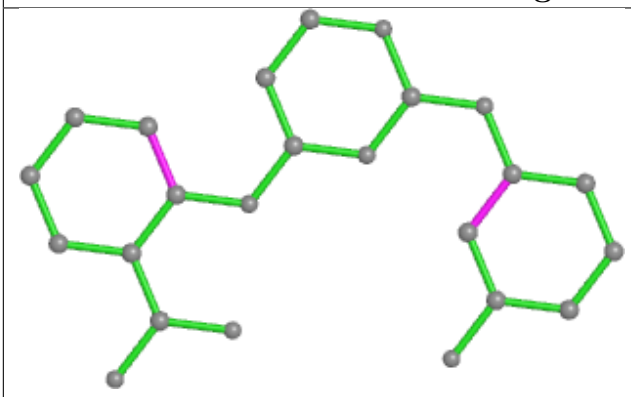


Torsions

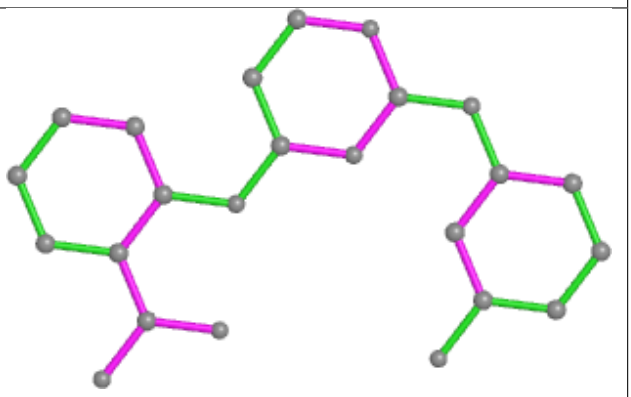


Rings

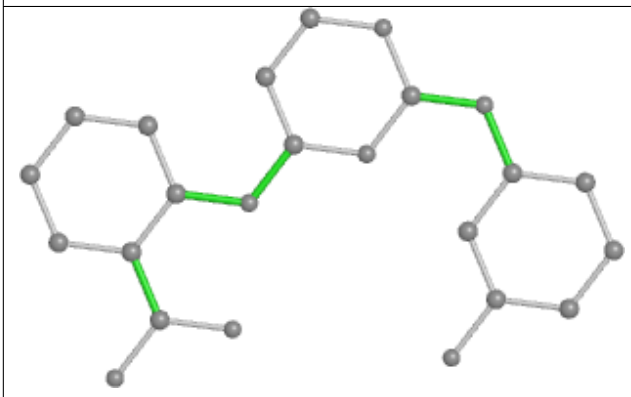
Ligand 859 A 901



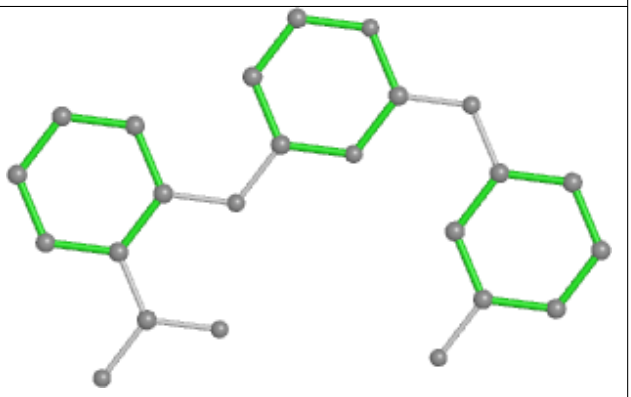
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.