



# Full wwPDB X-ray Structure Validation Report ⓘ

Apr 27, 2024 – 11:03 am BST

PDB ID : 1H7W  
Title : Dihydropyrimidine dehydrogenase (DPD) from pig  
Authors : Dobritsch, D.; Schneider, G.; Schnackerz, K.D.; Lindqvist, Y.  
Deposited on : 2001-01-19  
Resolution : 1.90 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 : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36.2  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

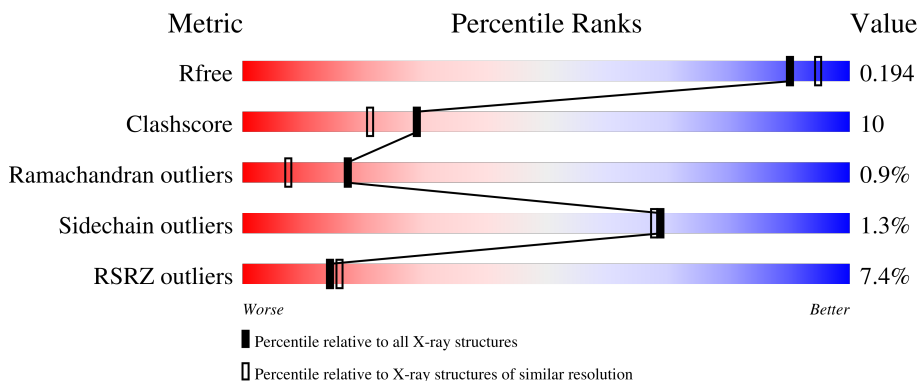
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.90 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))
$R_{free}$	130704	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1025	 7% 81% 17% ..
1	B	1025	 7% 82% 16% ..
1	C	1025	 7% 81% 18% .
1	D	1025	 8% 82% 16% ..

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 36125 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 DIHYDROPYRIMIDINE DEHYDROGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1016	7750	4913	1314	1467	56	66	0	0
1	B	1017	7757	4918	1315	1468	56	70	0	0
1	C	1016	7750	4913	1314	1467	56	28	0	0
1	D	1018	7765	4924	1316	1469	56	43	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	60	ASP	GLY	conflict	UNP Q28943
B	60	ASP	GLY	conflict	UNP Q28943
C	60	ASP	GLY	conflict	UNP Q28943
D	60	ASP	GLY	conflict	UNP Q28943

- Molecule 2 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe<sub>4</sub>S<sub>4</sub>).



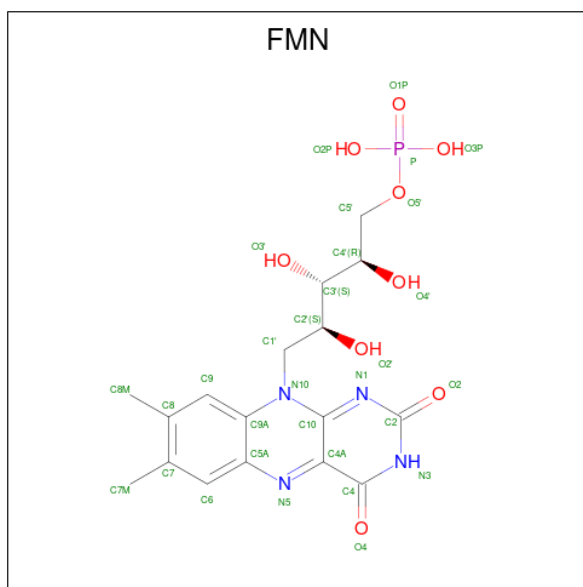
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	Fe	S	0	0
			8	4	4		
2	A	1	Total	Fe	S	0	0
			8	4	4		
2	A	1	Total	Fe	S	0	0
			8	4	4		
2	A	1	Total	Fe	S	0	0
			8	4	4		
2	B	1	Total	Fe	S	0	0
			8	4	4		
2	B	1	Total	Fe	S	0	0
			8	4	4		
2	B	1	Total	Fe	S	0	0
			8	4	4		
2	B	1	Total	Fe	S	0	0
			8	4	4		
2	C	1	Total	Fe	S	0	0
			8	4	4		
2	C	1	Total	Fe	S	0	0
			8	4	4		
2	C	1	Total	Fe	S	0	0
			8	4	4		
2	D	1	Total	Fe	S	0	0
			8	4	4		
2	D	1	Total	Fe	S	0	0
			8	4	4		

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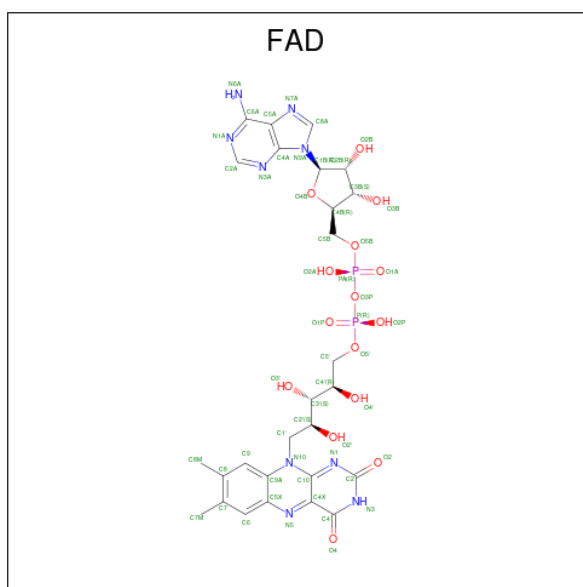
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	D	1	Total	Fe	S	0	0
			8	4	4		
2	D	1	Total	Fe	S	0	0
			8	4	4		

- Molecule 3 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C<sub>17</sub>H<sub>21</sub>N<sub>4</sub>O<sub>9</sub>P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
3	B	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
3	C	1	Total	C	N	O	P	0	0
			31	17	4	9	1		
3	D	1	Total	C	N	O	P	0	0
			31	17	4	9	1		

- Molecule 4 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: C<sub>27</sub>H<sub>33</sub>N<sub>9</sub>O<sub>15</sub>P<sub>2</sub>).

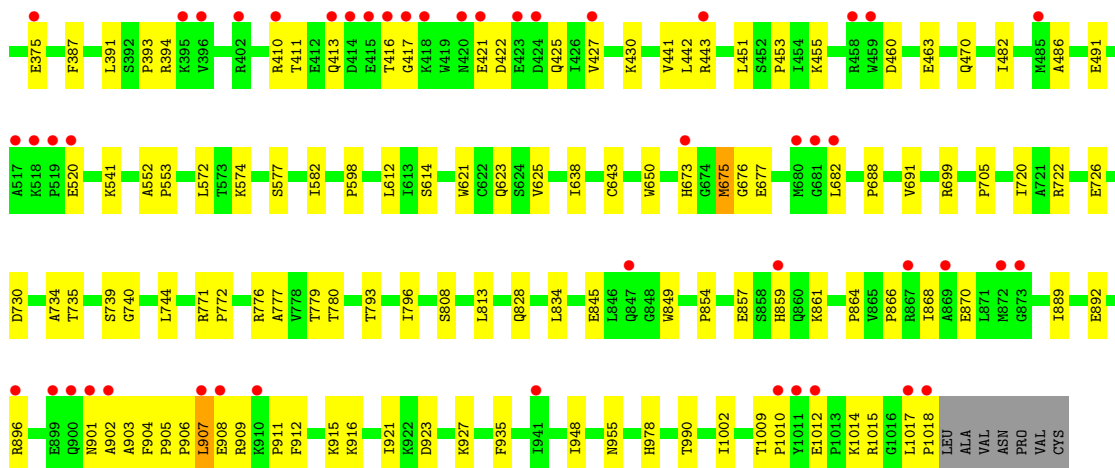


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
4	A	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
4	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
4	C	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
4	D	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

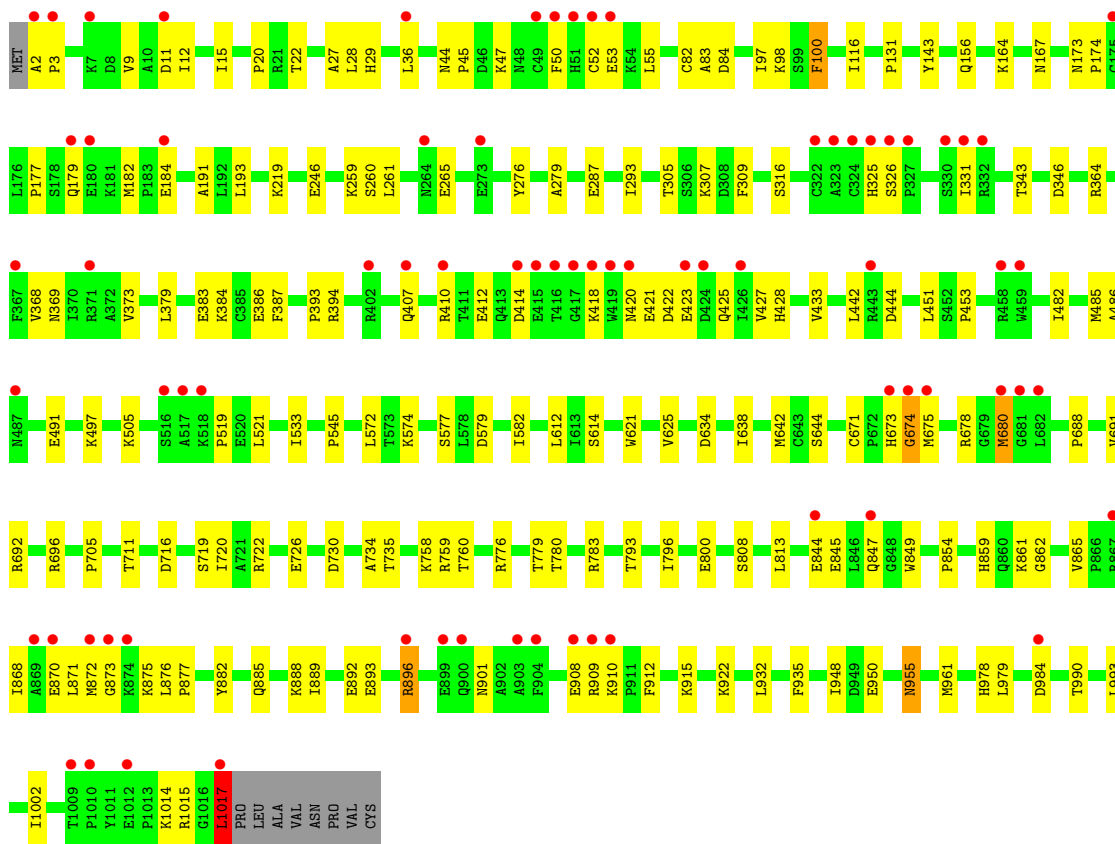
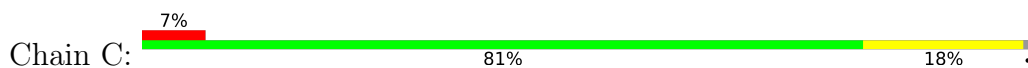
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1148	Total	O	0	0
			1148	1148		
5	B	1125	Total	O	0	0
			1125	1125		
5	C	1176	Total	O	0	0
			1176	1176		
5	D	1190	Total	O	0	0
			1190	1190		

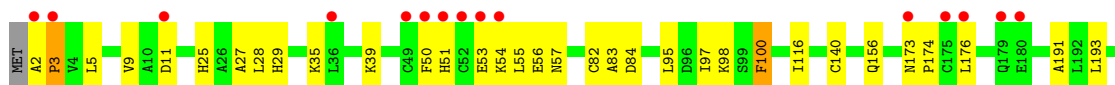
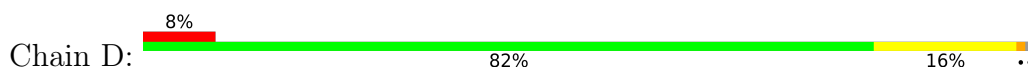




● Molecule 1: DIHYDROPYRIMIDINE DEHYDROGENASE



● Molecule 1: DIHYDROPYRIMIDINE DEHYDROGENASE







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	81.95Å 159.29Å 163.57Å 90.00° 96.04° 90.00°	Depositor
Resolution (Å)	19.97 – 1.90 24.99 – 1.90	Depositor EDS
% Data completeness (in resolution range)	98.9 (19.97-1.90) 99.0 (24.99-1.90)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.07	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	6.83 (at 1.90Å)	Xtrriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.174 , 0.196 0.171 , 0.194	Depositor DCC
$R_{free}$ test set	6485 reflections (1.99%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	12.7	Xtrriage
Anisotropy	0.151	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.41 , 58.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	36125	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	19.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.93% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 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: FMN, SF4, FAD

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	0.35	0/7911	0.63	4/10721 (0.0%)
1	B	0.33	0/7919	0.61	0/10733
1	C	0.34	0/7911	0.63	3/10721 (0.0%)
1	D	0.35	0/7927	0.62	0/10744
All	All	0.34	0/31668	0.62	7/42919 (0.0%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	1017	LEU	N-CA-C	7.26	130.59	111.00
1	A	172	ARG	NE-CZ-NH1	-6.34	117.13	120.30
1	C	1017	LEU	CA-CB-CG	-6.20	101.03	115.30
1	A	905	PRO	N-CA-C	5.18	125.56	112.10
1	C	305	THR	N-CA-C	-5.06	97.33	111.00
1	A	1017	LEU	CA-CB-CG	5.04	126.90	115.30
1	A	375	GLU	OE1-CD-OE2	5.04	129.35	123.30

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	7750	0	7775	179	0
1	B	7757	0	7782	136	1
1	C	7750	0	7775	185	0
1	D	7765	0	7793	173	1
2	A	32	0	0	1	0
2	B	32	0	0	2	0
2	C	32	0	0	1	0
2	D	32	0	0	2	0
3	A	31	0	19	1	0
3	B	31	0	19	1	0
3	C	31	0	19	0	0
3	D	31	0	19	0	0
4	A	53	0	31	2	0
4	B	53	0	31	2	0
4	C	53	0	31	2	0
4	D	53	0	31	2	0
5	A	1148	0	0	38	0
5	B	1125	0	0	34	0
5	C	1176	0	0	39	0
5	D	1190	0	0	41	0
All	All	36125	0	31325	607	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

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:172:ARG:HD2	5:A:2301:HOH:O	1.29	1.28
1:C:427:VAL:HG13	1:D:410:ARG:CZ	1.78	1.12
1:A:373:VAL:HB	5:A:2254:HOH:O	1.57	1.02
1:C:427:VAL:HG13	1:D:410:ARG:NH1	1.75	1.01
1:C:579:ASP:O	1:C:582:ILE:HG12	1.68	0.93
1:A:410:ARG:NH1	1:B:427:VAL:HG13	1.84	0.93
1:D:682:LEU:HA	5:D:2899:HOH:O	1.70	0.89
1:A:1017:LEU:O	5:A:3139:HOH:O	1.89	0.89
1:A:164:LYS:HG3	1:A:909:ARG:HH21	1.38	0.88
1:D:892:GLU:HG3	5:D:3065:HOH:O	1.72	0.88
1:D:51:HIS:HA	1:D:384:LYS:HG3	1.55	0.88
1:C:1017:LEU:HB3	5:C:2546:HOH:O	1.73	0.87
1:D:892:GLU:CG	5:D:3065:HOH:O	2.21	0.87
1:A:923:ASP:OD1	1:D:937:GLU:HG2	1.75	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:859:HIS:HD2	1:C:862:GLY:H	1.21	0.85
1:D:410:ARG:NH1	1:D:425:GLN:OE1	2.12	0.83
1:C:11:ASP:HB3	5:C:2028:HOH:O	1.78	0.83
1:D:856:THR:HG22	5:D:2184:HOH:O	1.78	0.82
1:D:867:ARG:HG3	1:D:872:MET:HE3	1.62	0.81
1:C:485:MET:HG2	1:D:35:LYS:HE3	1.62	0.80
1:C:343:THR:HA	4:C:1031:FAD:HM73	1.63	0.80
1:D:54:LYS:HE3	1:D:56:GLU:HB2	1.64	0.79
1:A:427:VAL:CG2	1:B:410:ARG:CZ	2.61	0.79
1:B:455:LYS:HD2	5:B:2618:HOH:O	1.81	0.79
1:C:893:GLU:OE1	1:C:896:ARG:NH2	2.16	0.78
1:C:53:GLU:OE2	1:C:55:LEU:HD21	1.84	0.78
1:D:867:ARG:HG3	1:D:872:MET:CE	2.13	0.78
1:A:375:GLU:N	1:A:375:GLU:OE1	2.16	0.77
1:C:428:HIS:N	1:D:410:ARG:HH12	1.83	0.77
1:A:722:ARG:O	1:A:726:GLU:HG3	1.85	0.76
1:A:1016:GLY:C	1:A:1017:LEU:HG	2.06	0.76
1:C:442:LEU:HD22	1:C:482:ILE:HD11	1.68	0.76
1:D:343:THR:HA	4:D:1031:FAD:HM73	1.69	0.76
1:C:177:PRO:HG2	1:C:182:MET:SD	2.26	0.75
1:D:682:LEU:HD23	5:D:2899:HOH:O	1.86	0.75
1:D:54:LYS:HE3	1:D:56:GLU:CB	2.17	0.75
1:A:373:VAL:CG1	5:A:2254:HOH:O	2.35	0.75
1:B:343:THR:HA	4:B:1031:FAD:HM73	1.67	0.75
1:C:164:LYS:O	1:C:909:ARG:NH2	2.21	0.74
1:C:410:ARG:CZ	1:D:427:VAL:HG22	2.17	0.74
1:A:343:THR:HA	4:A:1031:FAD:HM73	1.69	0.73
1:D:173:ASN:HB2	5:D:2372:HOH:O	1.89	0.73
1:D:896:ARG:O	1:D:900:GLN:HG3	1.87	0.73
1:D:984:ASP:HB3	5:D:3145:HOH:O	1.86	0.73
1:D:442:LEU:HD22	1:D:482:ILE:HD11	1.72	0.72
1:A:25:HIS:CD2	1:B:520:GLU:HG3	2.24	0.71
1:C:692:ARG:O	1:C:696:ARG:HG3	1.90	0.71
1:C:634:ASP:OD1	5:C:2793:HOH:O	2.07	0.71
1:D:53:GLU:HG3	1:D:887:LYS:HB3	1.71	0.71
1:B:673:HIS:CE1	1:B:682:LEU:HA	2.26	0.71
1:D:934:THR:OG1	1:D:937:GLU:HG3	1.91	0.71
1:D:1017:LEU:O	5:D:3179:HOH:O	2.08	0.71
1:A:427:VAL:CG2	1:B:410:ARG:NH2	2.54	0.70
1:A:410:ARG:CZ	1:B:427:VAL:HG13	2.21	0.70
1:C:680:MET:HE2	1:C:688:PRO:HD2	1.73	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:950:GLU:HG3	1:D:979:LEU:HD22	1.74	0.70
1:C:859:HIS:CD2	1:C:862:GLY:H	2.08	0.69
1:D:722:ARG:O	1:D:726:GLU:HG3	1.93	0.69
1:A:1016:GLY:O	1:A:1017:LEU:HG	1.91	0.69
1:C:427:VAL:CG1	1:D:410:ARG:CZ	2.66	0.69
1:C:776:ARG:O	1:C:780:THR:HG23	1.93	0.69
1:D:173:ASN:HB3	1:D:176:LEU:HG	1.75	0.69
1:C:2:ALA:N	5:C:2002:HOH:O	2.26	0.69
1:C:316:SER:HA	1:C:325:HIS:CD2	2.27	0.69
1:C:9:VAL:HG23	1:C:11:ASP:OD1	1.93	0.69
1:C:910:LYS:HE2	5:C:3032:HOH:O	1.93	0.69
1:D:885:GLN:HG3	5:D:3057:HOH:O	1.93	0.69
1:D:9:VAL:HG23	1:D:11:ASP:OD1	1.93	0.68
1:C:680:MET:CE	1:C:688:PRO:HD2	2.23	0.68
1:A:856:THR:HA	5:A:2973:HOH:O	1.92	0.68
1:C:164:LYS:HG3	1:C:909:ARG:HH12	1.59	0.68
5:C:2780:HOH:O	1:D:2:ALA:HB3	1.94	0.67
1:C:36:LEU:HD22	5:C:2093:HOH:O	1.93	0.67
1:A:12:ILE:O	1:A:15:ILE:HG22	1.93	0.67
1:C:2:ALA:HB3	5:C:2001:HOH:O	1.94	0.67
1:C:143:TYR:O	1:D:861:LYS:HE3	1.93	0.67
1:C:427:VAL:CG1	1:D:410:ARG:NH1	2.55	0.67
1:C:428:HIS:H	1:D:410:ARG:NH1	1.93	0.66
1:B:259:LYS:HE2	5:B:2415:HOH:O	1.96	0.66
1:C:950:GLU:OE2	1:C:979:LEU:HD13	1.95	0.66
1:A:427:VAL:HG21	1:B:410:ARG:CZ	2.25	0.66
1:A:692:ARG:O	1:A:696:ARG:HG3	1.94	0.66
1:A:915:LYS:O	1:C:675:MET:HB2	1.95	0.66
1:C:950:GLU:HG3	1:C:979:LEU:HD22	1.78	0.66
1:B:169:PRO:HG3	1:B:911:PRO:HB3	1.76	0.65
1:C:260:SER:HB2	1:C:265:GLU:OE1	1.95	0.65
1:D:1008:THR:HG22	5:D:3166:HOH:O	1.94	0.65
1:A:718:VAL:CG2	1:A:780:THR:HG22	2.26	0.65
1:C:12:ILE:O	1:C:15:ILE:HG22	1.96	0.65
1:D:414:ASP:O	1:D:416:THR:N	2.29	0.65
1:A:5:LEU:HD22	1:A:1017:LEU:HD12	1.77	0.65
1:B:343:THR:HG21	5:B:2602:HOH:O	1.96	0.65
1:D:54:LYS:CE	1:D:56:GLU:HB3	2.27	0.65
1:D:1017:LEU:HB3	1:D:1018:PRO:CD	2.26	0.65
1:A:5:LEU:CD2	1:A:1017:LEU:HD12	2.27	0.65
1:B:173:ASN:HB2	5:B:2297:HOH:O	1.97	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:263:GLU:O	1:D:264:ASN:HB3	1.97	0.65
1:B:442:LEU:HD22	1:B:482:ILE:HD11	1.79	0.64
1:C:909:ARG:HG3	5:C:2283:HOH:O	1.96	0.64
1:C:486:ALA:HB3	5:C:2658:HOH:O	1.98	0.64
1:A:483:VAL:HG23	5:A:2663:HOH:O	1.97	0.64
1:A:261:LEU:HD21	1:A:451:LEU:HD21	1.81	0.63
1:A:1016:GLY:O	1:A:1017:LEU:CG	2.46	0.63
1:A:427:VAL:HG22	1:B:410:ARG:CZ	2.27	0.63
1:C:1017:LEU:CB	5:C:2546:HOH:O	2.35	0.63
1:B:722:ARG:O	1:B:726:GLU:HG3	1.98	0.63
1:C:428:HIS:N	1:D:410:ARG:NH1	2.46	0.63
1:A:173:ASN:HD22	1:A:174:PRO:CD	2.12	0.63
1:C:343:THR:HG21	5:C:2599:HOH:O	1.98	0.63
1:B:12:ILE:O	1:B:15:ILE:HG22	1.99	0.62
1:A:281:ILE:HD13	1:A:451:LEU:HD22	1.82	0.62
1:A:263:GLU:O	1:A:264:ASN:HB2	1.98	0.62
1:A:293:ILE:CD1	1:A:393:PRO:HB2	2.29	0.62
1:C:1015:ARG:HB2	1:C:1017:LEU:HG	1.80	0.62
1:A:293:ILE:HD11	1:A:393:PRO:HB2	1.82	0.62
1:B:173:ASN:HB3	1:B:176:LEU:HG	1.81	0.62
1:D:897:LEU:HD23	1:D:900:GLN:OE1	2.00	0.62
1:C:922:LYS:HE3	5:C:3051:HOH:O	2.00	0.61
1:C:410:ARG:NH2	1:D:427:VAL:CG2	2.63	0.61
1:C:978:HIS:HE1	1:D:84:ASP:OD2	1.83	0.61
1:C:410:ARG:HG3	1:C:425:GLN:HB3	1.83	0.61
1:C:877:PRO:HD2	1:C:882:TYR:CG	2.36	0.61
1:C:293:ILE:HD11	1:C:393:PRO:HB2	1.82	0.61
1:D:219:LYS:HG3	1:D:260:SER:OG	2.00	0.61
1:A:990:THR:HG22	1:A:990:THR:O	2.00	0.61
1:B:857:GLU:O	1:B:859:HIS:HD2	1.84	0.61
1:C:688:PRO:HG3	1:C:720:ILE:HD13	1.82	0.61
1:D:54:LYS:CE	1:D:56:GLU:CB	2.78	0.60
1:A:745:LYS:HD2	5:A:2886:HOH:O	2.01	0.60
1:D:688:PRO:HG3	1:D:720:ILE:HD13	1.83	0.60
1:C:22:THR:HG22	5:D:2238:HOH:O	2.02	0.60
1:A:173:ASN:HD22	1:A:174:PRO:N	1.99	0.60
1:A:699:ARG:O	1:A:699:ARG:HD3	2.02	0.60
1:A:787:GLY:HA3	1:D:942:GLU:OE2	2.01	0.60
1:A:1014:LYS:HB3	5:A:3138:HOH:O	1.99	0.60
1:B:411:THR:HG22	1:B:421:GLU:OE1	2.02	0.59
1:C:394:ARG:HH12	1:C:423:GLU:CD	2.06	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:219:LYS:HG3	1:A:260:SER:OG	2.02	0.59
1:A:373:VAL:CB	5:A:2254:HOH:O	2.27	0.59
1:D:866:PRO:O	1:D:868:ILE:N	2.35	0.59
1:A:448:LYS:HD3	5:A:2611:HOH:O	2.01	0.59
1:A:911:PRO:HG2	5:A:2407:HOH:O	2.02	0.59
1:B:53:GLU:HG2	5:B:2124:HOH:O	2.02	0.58
1:C:1017:LEU:HD11	5:D:2379:HOH:O	2.03	0.58
1:C:844:GLU:O	1:C:847:GLN:HG3	2.02	0.58
1:D:990:THR:HG22	1:D:990:THR:O	2.02	0.58
1:A:900:GLN:O	1:A:900:GLN:HG2	2.03	0.58
1:C:783:ARG:HH11	1:C:932:LEU:HB3	1.68	0.58
1:C:990:THR:O	1:C:990:THR:HG22	2.02	0.58
1:C:716:ASP:OD2	1:C:719:SER:HB3	2.03	0.58
1:B:744:LEU:HD21	5:B:2430:HOH:O	2.03	0.58
1:C:410:ARG:CZ	1:D:427:VAL:CG2	2.81	0.58
1:D:923:ASP:O	1:D:927:LYS:HE3	2.04	0.58
1:B:410:ARG:HG3	1:B:425:GLN:HB3	1.85	0.58
1:C:173:ASN:OD1	1:C:174:PRO:HD2	2.04	0.58
1:A:12:ILE:HA	1:A:15:ILE:HG22	1.86	0.58
1:C:875:LYS:HA	1:C:950:GLU:OE2	2.04	0.58
1:A:427:VAL:HG21	1:B:410:ARG:NH2	2.19	0.57
1:C:722:ARG:O	1:C:726:GLU:HG3	2.04	0.57
1:C:410:ARG:NH1	5:C:2580:HOH:O	2.37	0.57
1:C:935:PHE:CE2	1:D:612:LEU:HD11	2.39	0.57
1:A:775:LEU:O	1:A:779:THR:HG23	2.05	0.57
1:A:410:ARG:NH1	1:A:425:GLN:OE1	2.28	0.57
1:A:416:THR:C	1:A:418:LYS:H	2.07	0.57
1:A:410:ARG:NH1	1:B:427:VAL:CG1	2.64	0.57
1:C:845:GLU:HG3	1:C:912:PHE:CE1	2.39	0.57
1:D:486:ALA:HB3	5:D:2715:HOH:O	2.04	0.57
1:A:173:ASN:HD22	1:A:174:PRO:HD2	1.69	0.57
1:B:326:SER:HB3	5:B:2486:HOH:O	2.04	0.57
1:C:50:PHE:HD1	5:C:2116:HOH:O	1.88	0.57
1:B:2:ALA:HB3	5:B:2001:HOH:O	2.03	0.56
1:B:866:PRO:HG3	5:B:2962:HOH:O	2.05	0.56
1:C:36:LEU:HG	5:C:2086:HOH:O	2.05	0.56
1:A:22:THR:HG22	5:B:2211:HOH:O	2.04	0.56
1:A:703:GLN:HG3	5:A:2851:HOH:O	2.04	0.56
1:D:54:LYS:HE2	1:D:56:GLU:HB3	1.87	0.56
1:B:907:LEU:O	1:B:909:ARG:N	2.39	0.56
1:C:293:ILE:CD1	1:C:393:PRO:HB2	2.36	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:261:LEU:HD21	1:B:451:LEU:HD21	1.88	0.56
1:D:845:GLU:HG3	1:D:912:PHE:CE1	2.40	0.56
1:A:866:PRO:HG3	5:A:2142:HOH:O	2.05	0.55
1:C:892:GLU:HG3	5:C:3025:HOH:O	2.07	0.55
1:A:307:LYS:HE3	5:A:2481:HOH:O	2.05	0.55
1:C:410:ARG:HG3	1:C:425:GLN:CB	2.37	0.55
1:C:1015:ARG:C	1:C:1017:LEU:H	2.10	0.55
1:A:173:ASN:HD22	1:A:173:ASN:C	2.10	0.55
1:C:642:MET:HE2	5:C:2797:HOH:O	2.06	0.55
1:C:758:LYS:NZ	5:C:2900:HOH:O	2.38	0.55
1:A:834:LEU:HD21	1:A:921:ILE:HD11	1.88	0.55
1:A:29:HIS:HB2	5:B:2197:HOH:O	2.07	0.55
1:D:379:LEU:O	1:D:383:GLU:HG3	2.07	0.55
1:A:179:GLN:HG3	5:A:2309:HOH:O	2.07	0.54
1:C:780:THR:HG22	1:D:762:TYR:CZ	2.41	0.54
1:A:646:ASN:HD22	1:A:649:ASP:CG	2.10	0.54
1:C:612:LEU:HD11	1:D:935:PHE:CE2	2.43	0.54
1:A:779:THR:HG22	1:A:808:SER:HB3	1.89	0.54
1:C:505:LYS:HE2	5:C:2664:HOH:O	2.07	0.54
1:B:293:ILE:CD1	1:B:393:PRO:HB2	2.37	0.54
1:C:219:LYS:HG3	1:C:260:SER:OG	2.06	0.54
5:C:2196:HOH:O	1:D:29:HIS:HB2	2.07	0.54
1:D:307:LYS:HE3	5:D:2530:HOH:O	2.07	0.54
1:A:173:ASN:HB2	5:A:2347:HOH:O	2.08	0.54
1:C:711:THR:HG22	5:C:2843:HOH:O	2.07	0.54
1:B:990:THR:HG22	1:B:990:THR:O	2.07	0.54
1:C:783:ARG:NH1	1:C:932:LEU:HB3	2.22	0.54
1:A:646:ASN:ND2	1:A:649:ASP:H	2.06	0.53
1:A:688:PRO:HG3	1:A:720:ILE:HD13	1.88	0.53
1:D:53:GLU:HG3	1:D:887:LYS:CB	2.37	0.53
1:A:779:THR:HG21	5:A:2931:HOH:O	2.07	0.53
1:B:1012:GLU:HG2	5:B:3108:HOH:O	2.07	0.53
1:C:27:ALA:O	1:D:497:LYS:HE2	2.08	0.53
1:C:287:GLU:OE2	1:C:444:ASP:HB2	2.07	0.53
1:C:868:ILE:HG22	1:C:870:GLU:H	1.73	0.53
1:D:674:GLY:HA2	5:D:2901:HOH:O	2.08	0.53
1:D:680:MET:CE	1:D:688:PRO:HD2	2.39	0.53
1:A:15:ILE:HD13	1:A:969:GLN:O	2.08	0.53
1:B:691:VAL:HG21	1:B:720:ILE:HG23	1.90	0.53
1:B:849:TRP:CH2	1:B:854:PRO:HG3	2.44	0.53
1:C:179:GLN:HG3	5:C:2301:HOH:O	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:845:GLU:HG3	1:C:912:PHE:CD1	2.43	0.53
1:A:776:ARG:HB2	1:B:740:GLY:HA2	1.89	0.53
1:C:796:ILE:HD13	1:C:813:LEU:HB3	1.91	0.53
1:B:173:ASN:O	1:B:176:LEU:HB2	2.08	0.52
1:C:410:ARG:HB2	1:C:422:ASP:HB2	1.90	0.52
1:B:923:ASP:O	1:B:927:LYS:HE3	2.09	0.52
1:C:261:LEU:HD21	1:C:451:LEU:HD21	1.91	0.52
1:C:410:ARG:NH2	1:D:427:VAL:HG22	2.24	0.52
1:D:82:CYS:O	1:D:98:LYS:HD2	2.08	0.52
1:A:845:GLU:HG3	1:A:912:PHE:CE1	2.45	0.52
1:B:82:CYS:O	1:B:98:LYS:HD2	2.09	0.52
1:B:455:LYS:HD3	1:B:463:GLU:OE1	2.09	0.52
1:B:699:ARG:HA	1:B:699:ARG:NE	2.24	0.52
1:D:845:GLU:HG3	1:D:912:PHE:CD1	2.45	0.52
1:C:423:GLU:OE1	1:C:423:GLU:HA	2.09	0.52
1:B:173:ASN:ND2	5:B:2298:HOH:O	2.37	0.52
1:A:46:ASP:HB3	1:A:49:CYS:SG	2.49	0.52
1:C:22:THR:HA	5:C:2063:HOH:O	2.10	0.52
1:C:1017:LEU:CD1	5:D:2379:HOH:O	2.58	0.52
1:D:907:LEU:O	1:D:908:GLU:C	2.48	0.52
1:C:582:ILE:CD1	1:D:1019:LEU:HD21	2.40	0.52
1:C:691:VAL:HG21	1:C:720:ILE:HG23	1.92	0.51
1:A:172:ARG:HG3	5:A:2343:HOH:O	2.11	0.51
1:A:541:LYS:HD2	5:A:2715:HOH:O	2.10	0.51
1:C:82:CYS:O	1:C:98:LYS:HD2	2.11	0.51
1:D:263:GLU:HA	1:D:263:GLU:OE1	2.11	0.51
1:A:796:ILE:HD13	1:A:813:LEU:HB3	1.93	0.51
1:A:874:LYS:NZ	5:A:2994:HOH:O	2.42	0.51
1:A:955:ASN:HB3	1:A:978:HIS:HB3	1.91	0.51
1:C:955:ASN:HB3	1:C:978:HIS:HB3	1.92	0.51
1:D:263:GLU:O	1:D:264:ASN:CB	2.59	0.51
1:D:909:ARG:NH2	5:D:3071:HOH:O	2.43	0.51
1:A:39:LYS:NZ	5:A:2102:HOH:O	2.43	0.51
1:A:288:PRO:HG3	1:A:307:LYS:HB2	1.92	0.51
1:B:892:GLU:HG3	5:B:2981:HOH:O	2.11	0.51
1:C:978:HIS:HD2	5:D:2284:HOH:O	1.94	0.51
1:B:173:ASN:HB3	1:B:176:LEU:CG	2.40	0.51
1:A:705:PRO:HA	1:A:730:ASP:OD2	2.11	0.50
1:B:1014:LYS:HE3	5:B:3058:HOH:O	2.11	0.50
1:C:1014:LYS:NZ	5:C:3164:HOH:O	2.32	0.50
1:B:175:CYS:HB2	5:B:2300:HOH:O	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:410:ARG:HH22	1:D:391:LEU:HD21	1.76	0.50
1:A:725:LYS:HE3	5:A:2917:HOH:O	2.11	0.50
1:B:191:ALA:O	1:B:279:ALA:HA	2.12	0.50
1:C:394:ARG:NH2	1:C:423:GLU:OE2	2.38	0.50
1:D:796:ILE:HD13	1:D:813:LEU:HB3	1.93	0.50
1:A:935:PHE:CE2	1:B:612:LEU:HD11	2.47	0.50
1:B:358:ARG:NH2	5:B:2544:HOH:O	2.40	0.50
1:C:758:LYS:HD3	5:C:2902:HOH:O	2.11	0.50
1:A:82:CYS:O	1:A:98:LYS:HD2	2.12	0.50
1:B:915:LYS:HG3	5:B:2933:HOH:O	2.10	0.50
1:C:52:CYS:HB2	1:C:384:LYS:HB2	1.93	0.50
1:A:53:GLU:OE2	1:A:55:LEU:HD21	2.11	0.50
1:C:497:LYS:HE2	1:D:27:ALA:O	2.12	0.50
1:C:893:GLU:HA	1:C:896:ARG:HH21	1.77	0.50
1:B:845:GLU:HG3	1:B:912:PHE:CE1	2.46	0.50
1:C:1014:LYS:HB3	5:C:3167:HOH:O	2.12	0.50
1:D:682:LEU:CD2	5:D:2899:HOH:O	2.54	0.49
1:A:572:LEU:HD13	1:A:638:ILE:HB	1.93	0.49
1:B:346:ASP:OD2	4:B:1031:FAD:H6	2.12	0.49
1:A:35:LYS:NZ	5:A:2092:HOH:O	2.44	0.49
1:A:97:ILE:HA	1:A:100:PHE:CD2	2.47	0.49
1:C:364:ARG:NH1	5:C:2586:HOH:O	2.44	0.49
1:C:442:LEU:HD22	1:C:482:ILE:CD1	2.40	0.49
1:A:386:GLU:HA	5:A:2574:HOH:O	2.12	0.49
1:A:672:PRO:HA	1:A:682:LEU:O	2.13	0.49
1:B:870:GLU:N	1:B:870:GLU:OE1	2.44	0.49
1:A:868:ILE:O	1:A:872:MET:HG2	2.13	0.49
1:A:909:ARG:NH1	5:A:3022:HOH:O	2.46	0.49
1:A:413:GLN:CG	1:A:417:GLY:HA2	2.42	0.49
1:B:193:LEU:N	1:B:193:LEU:HD22	2.28	0.49
1:B:442:LEU:HD22	1:B:482:ILE:CD1	2.42	0.49
1:B:430:LYS:HE2	5:B:2594:HOH:O	2.11	0.49
1:C:410:ARG:HD2	5:C:2579:HOH:O	2.13	0.49
1:A:845:GLU:HG3	1:A:912:PHE:CD1	2.48	0.49
1:A:346:ASP:OD2	4:A:1031:FAD:H6	2.13	0.49
1:B:621:TRP:O	1:B:625:VAL:HG23	2.12	0.49
1:A:95:LEU:HD12	1:A:119:ASP:HB2	1.95	0.49
1:A:281:ILE:HD13	1:A:451:LEU:CD2	2.42	0.49
1:A:699:ARG:NH2	1:A:730:ASP:OD2	2.46	0.49
1:B:410:ARG:HG3	1:B:425:GLN:CB	2.42	0.49
1:D:896:ARG:C	1:D:900:GLN:HG3	2.34	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:673:HIS:O	1:C:674:GLY:O	2.30	0.48
1:A:379:LEU:O	1:A:383:GLU:HG3	2.13	0.48
1:B:219:LYS:HG3	1:B:260:SER:OG	2.12	0.48
1:C:407:GLN:NE2	5:C:2577:HOH:O	2.47	0.48
1:D:346:ASP:OD2	4:D:1031:FAD:H6	2.12	0.48
1:D:959:CYS:O	1:D:962:THR:HG22	2.12	0.48
1:A:427:VAL:HG22	1:B:410:ARG:NE	2.27	0.48
5:A:2209:HOH:O	1:B:29:HIS:HB2	2.12	0.48
1:C:779:THR:HG22	1:C:808:SER:HB3	1.95	0.48
1:C:246:GLU:OE1	1:C:908:GLU:OE1	2.32	0.48
1:C:412:GLU:OE1	1:C:422:ASP:OD2	2.31	0.48
1:C:418:LYS:HE2	1:C:420:ASN:OD1	2.14	0.48
1:D:451:LEU:O	1:D:454:ILE:HG12	2.14	0.48
1:B:796:ILE:HD13	1:B:813:LEU:HB3	1.95	0.48
1:C:331:ILE:HG23	1:C:433:VAL:HG21	1.95	0.48
1:C:394:ARG:NH2	1:C:421:GLU:OE1	2.47	0.48
1:C:760:THR:CG2	1:D:932:LEU:HD23	2.44	0.48
1:C:780:THR:HG22	1:D:762:TYR:CE2	2.48	0.48
1:C:859:HIS:HA	1:C:865:VAL:HG23	1.96	0.48
1:D:758:LYS:HD3	5:D:2948:HOH:O	2.13	0.48
1:D:933:GLY:HA3	1:D:937:GLU:OE1	2.14	0.48
1:C:346:ASP:OD2	4:C:1031:FAD:H6	2.13	0.48
1:A:582:ILE:HD11	1:B:1015:ARG:CZ	2.43	0.48
1:B:845:GLU:HG3	1:B:912:PHE:CD1	2.48	0.48
1:C:47:LYS:HD3	1:D:373:VAL:HG12	1.96	0.48
1:C:167:ASN:OD1	1:C:909:ARG:NE	2.38	0.48
1:D:193:LEU:N	1:D:193:LEU:HD22	2.28	0.48
1:D:458:ARG:HH21	1:D:459:TRP:HH2	1.62	0.48
1:B:859:HIS:CE1	1:B:864:PRO:HG3	2.48	0.48
1:C:191:ALA:O	1:C:279:ALA:HA	2.14	0.48
1:D:97:ILE:HD11	2:D:1026:SF4:S4	2.53	0.48
1:B:520:GLU:OE1	5:B:2674:HOH:O	2.20	0.47
1:D:673:HIS:HD2	1:D:675:MET:H	1.61	0.47
1:D:950:GLU:OE2	1:D:979:LEU:HD13	2.14	0.47
1:A:387:PHE:HD1	5:A:2574:HOH:O	1.97	0.47
1:B:291:ASP:OD1	1:B:293:ILE:HG12	2.13	0.47
1:B:1014:LYS:HB3	5:B:3114:HOH:O	2.15	0.47
1:C:364:ARG:CZ	5:C:2586:HOH:O	2.62	0.47
1:C:861:LYS:HE3	5:D:2286:HOH:O	2.13	0.47
1:B:5:LEU:HD21	1:B:1017:LEU:HD21	1.95	0.47
1:B:688:PRO:HG3	1:B:720:ILE:HD13	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:53:GLU:O	1:B:55:LEU:HG	2.14	0.47
1:C:193:LEU:N	1:C:193:LEU:HD22	2.30	0.47
1:C:859:HIS:HD2	1:C:862:GLY:N	2.00	0.47
1:D:892:GLU:HG3	5:D:3063:HOH:O	2.15	0.47
1:B:1017:LEU:HB3	1:B:1018:PRO:CD	2.45	0.47
1:C:394:ARG:HD3	1:C:394:ARG:HA	1.68	0.47
1:C:870:GLU:OE1	1:C:889:ILE:HG23	2.14	0.47
1:C:2:ALA:HB3	5:D:2832:HOH:O	2.14	0.47
1:A:143:TYR:O	1:B:861:LYS:HE2	2.14	0.46
1:A:193:LEU:HD22	1:A:193:LEU:N	2.30	0.46
1:A:691:VAL:HG21	1:A:720:ILE:HG23	1.97	0.46
1:A:776:ARG:HD2	1:B:739:SER:OG	2.15	0.46
1:D:468:THR:HA	1:D:502:TYR:CD2	2.50	0.46
1:D:621:TRP:O	1:D:625:VAL:HG23	2.15	0.46
1:D:680:MET:HE1	1:D:688:PRO:HD2	1.95	0.46
1:D:908:GLU:O	1:D:910:LYS:HG2	2.15	0.46
1:B:870:GLU:O	1:B:889:ILE:HD13	2.15	0.46
1:D:892:GLU:HG2	5:D:3065:HOH:O	2.01	0.46
1:A:116:ILE:HD13	1:A:156:GLN:HG3	1.97	0.46
1:A:413:GLN:HE21	1:A:417:GLY:CA	2.28	0.46
1:C:519:PRO:HB3	1:D:28:LEU:HD22	1.97	0.46
1:D:2:ALA:HB1	1:D:3:PRO:HD2	1.98	0.46
1:D:371:ARG:NH1	5:D:2615:HOH:O	2.49	0.46
1:D:552:ALA:HB3	1:D:553:PRO:HD3	1.96	0.46
1:B:955:ASN:HB3	1:B:978:HIS:HB3	1.97	0.46
1:D:2:ALA:HB3	5:D:2001:HOH:O	2.14	0.46
1:C:984:ASP:CG	5:C:3153:HOH:O	2.53	0.46
1:D:672:PRO:HA	1:D:682:LEU:O	2.15	0.46
1:A:173:ASN:C	1:A:173:ASN:ND2	2.67	0.46
1:B:486:ALA:HB1	1:B:491:GLU:OE1	2.15	0.46
1:A:892:GLU:HG3	5:A:3013:HOH:O	2.14	0.46
1:B:572:LEU:HD13	1:B:638:ILE:HB	1.97	0.46
1:C:368:VAL:HG11	1:D:50:PHE:O	2.16	0.46
1:A:131:PRO:HB2	1:A:373:VAL:HG11	1.98	0.46
1:B:7:LYS:NZ	5:B:2017:HOH:O	2.41	0.46
1:C:705:PRO:HA	1:C:730:ASP:OD2	2.15	0.46
1:C:849:TRP:CH2	1:C:854:PRO:HG3	2.51	0.46
1:D:173:ASN:O	1:D:176:LEU:HB2	2.15	0.46
1:D:486:ALA:HB1	1:D:491:GLU:OE1	2.16	0.46
1:D:574:LYS:HG3	1:D:614:SER:HB2	1.98	0.46
1:A:622:CYS:SG	1:A:656:LYS:HD2	2.56	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:GLU:OE1	1:B:375:GLU:HA	2.16	0.46
1:A:263:GLU:O	1:A:264:ASN:CB	2.64	0.45
1:A:486:ALA:HB1	1:A:491:GLU:OE1	2.15	0.45
1:D:53:GLU:HG3	1:D:887:LYS:HD3	1.98	0.45
1:A:164:LYS:O	1:A:909:ARG:NH2	2.47	0.45
1:B:307:LYS:HE3	5:B:2482:HOH:O	2.16	0.45
1:C:393:PRO:HD3	5:C:2562:HOH:O	2.15	0.45
1:D:394:ARG:HH11	1:D:394:ARG:HG2	1.80	0.45
1:D:955:ASN:HB3	1:D:978:HIS:HB3	1.97	0.45
1:B:896:ARG:NH2	5:B:2985:HOH:O	2.48	0.45
1:C:876:LEU:HD22	1:C:885:GLN:OE1	2.17	0.45
1:C:948:ILE:HG12	1:C:1002:ILE:HG12	1.98	0.45
1:A:932:LEU:HD21	5:B:2430:HOH:O	2.16	0.45
1:B:410:ARG:HB2	1:B:422:ASP:HB2	1.99	0.45
1:D:100:PHE:CD1	1:D:100:PHE:C	2.90	0.45
1:D:293:ILE:CD1	1:D:393:PRO:HB2	2.46	0.45
1:D:871:LEU:HG	1:D:889:ILE:HG21	1.98	0.45
5:A:2266:HOH:O	1:B:861:LYS:HE3	2.16	0.45
1:B:574:LYS:CG	1:B:614:SER:HB2	2.47	0.45
1:C:164:LYS:CG	1:C:909:ARG:HH12	2.29	0.45
1:C:915:LYS:HG2	5:C:3037:HOH:O	2.16	0.45
1:D:191:ALA:O	1:D:279:ALA:HA	2.16	0.45
1:A:164:LYS:HG3	1:A:909:ARG:NH2	2.19	0.45
1:A:281:ILE:CD1	1:A:451:LEU:HD22	2.46	0.45
1:D:173:ASN:HA	1:D:174:PRO:HD3	1.86	0.45
1:D:291:ASP:OD1	1:D:293:ILE:HG12	2.16	0.45
1:B:577:SER:HB2	5:B:2718:HOH:O	2.15	0.45
1:D:328:LEU:HD12	5:D:2147:HOH:O	2.15	0.45
1:A:89:LYS:HE2	5:B:2043:HOH:O	2.16	0.45
1:B:293:ILE:HD11	1:B:393:PRO:HB2	1.99	0.45
1:B:552:ALA:HB2	3:B:1030:FMN:HM73	1.99	0.45
1:B:705:PRO:HA	1:B:730:ASP:OD2	2.17	0.45
1:C:28:LEU:HD11	1:D:498:GLN:HA	1.99	0.45
1:C:1014:LYS:CE	5:C:3164:HOH:O	2.63	0.45
1:D:173:ASN:HB3	1:D:176:LEU:CG	2.44	0.45
1:A:84:ASP:CG	1:A:89:LYS:NZ	2.71	0.45
1:A:41:TRP:CE2	1:B:89:LYS:HD2	2.51	0.44
1:A:173:ASN:OD1	5:A:2306:HOH:O	2.21	0.44
1:A:480:GLY:O	1:A:483:VAL:HG22	2.17	0.44
1:A:552:ALA:HB3	1:A:553:PRO:HD3	2.00	0.44
1:A:393:PRO:HD3	5:A:2578:HOH:O	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:413:GLN:HE21	1:A:417:GLY:HA2	1.82	0.44
1:A:710:LEU:HD22	1:A:720:ILE:HG22	2.00	0.44
1:A:870:GLU:O	1:A:874:LYS:HE3	2.17	0.44
1:D:54:LYS:HG3	1:D:55:LEU:N	2.32	0.44
1:D:993:LEU:C	1:D:993:LEU:HD23	2.38	0.44
1:A:107:LYS:NZ	5:A:2231:HOH:O	2.50	0.44
1:A:416:THR:O	1:A:418:LYS:N	2.50	0.44
1:A:828:GLN:NE2	5:A:2942:HOH:O	2.50	0.44
1:B:97:ILE:HA	1:B:100:PHE:CD2	2.53	0.44
1:C:870:GLU:O	1:C:870:GLU:HG2	2.17	0.44
1:B:2:ALA:HB1	1:B:3:PRO:HD2	2.00	0.44
1:B:364:ARG:HA	1:B:391:LEU:O	2.17	0.44
1:C:97:ILE:HD11	2:C:1026:SF4:S4	2.58	0.44
1:C:410:ARG:NH2	1:D:427:VAL:HG21	2.33	0.44
1:A:784:ALA:C	1:A:786:PRO:HD3	2.38	0.44
1:A:849:TRP:CH2	1:A:854:PRO:HG3	2.52	0.44
1:A:191:ALA:O	1:A:279:ALA:HA	2.17	0.44
1:B:53:GLU:CG	5:B:2124:HOH:O	2.63	0.44
1:C:621:TRP:O	1:C:625:VAL:HG23	2.18	0.44
1:A:416:THR:C	1:A:418:LYS:N	2.71	0.44
1:A:917:PRO:HG3	1:C:675:MET:HE3	1.99	0.44
1:D:395:LYS:HD3	5:D:2643:HOH:O	2.18	0.44
1:A:930:GLN:HB3	5:D:3100:HOH:O	2.16	0.44
1:C:871:LEU:O	1:C:873:GLY:N	2.48	0.44
1:D:116:ILE:HD13	1:D:156:GLN:HG3	1.99	0.44
1:D:572:LEU:HD13	1:D:638:ILE:HB	1.99	0.44
1:B:140:CYS:HA	2:B:1027:SF4:S3	2.57	0.43
1:B:911:PRO:HG3	5:B:2133:HOH:O	2.17	0.43
1:C:29:HIS:HB2	5:D:2225:HOH:O	2.18	0.43
1:C:572:LEU:HD13	1:C:638:ILE:HB	1.99	0.43
1:C:845:GLU:HG3	1:C:912:PHE:CZ	2.53	0.43
1:C:870:GLU:O	1:C:889:ILE:HD13	2.18	0.43
1:C:888:LYS:HG2	1:C:892:GLU:OE2	2.18	0.43
1:B:868:ILE:HG22	1:B:870:GLU:H	1.83	0.43
1:C:386:GLU:HB2	5:C:2526:HOH:O	2.18	0.43
1:A:89:LYS:HD2	1:B:41:TRP:CE2	2.53	0.43
1:A:394:ARG:HA	1:A:394:ARG:HD3	1.80	0.43
1:B:320:GLY:O	1:B:321:MET:C	2.56	0.43
1:B:779:THR:HG22	1:B:808:SER:HB3	2.00	0.43
1:B:916:LYS:HD3	5:B:3002:HOH:O	2.17	0.43
1:C:427:VAL:HG13	1:D:410:ARG:NH2	2.27	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:577:SER:HB2	5:D:2789:HOH:O	2.18	0.43
1:D:898:LYS:HE2	5:D:2259:HOH:O	2.17	0.43
1:A:480:GLY:O	1:A:483:VAL:CG2	2.66	0.43
1:B:413:GLN:HG3	1:B:417:GLY:O	2.18	0.43
1:C:1017:LEU:O	1:C:1017:LEU:HD22	2.18	0.43
1:D:868:ILE:HG22	1:D:870:GLU:H	1.83	0.43
1:B:541:LYS:HB3	5:B:2697:HOH:O	2.18	0.43
1:D:691:VAL:HG21	1:D:720:ILE:HG23	1.99	0.43
1:D:948:ILE:HG12	1:D:1002:ILE:HG12	1.99	0.43
1:A:740:GLY:HA2	1:B:776:ARG:HB2	1.99	0.43
1:B:289:LYS:HG3	1:B:441:VAL:HG13	2.00	0.43
1:B:387:PHE:N	1:B:387:PHE:CD1	2.86	0.43
1:D:54:LYS:CE	1:D:56:GLU:HB2	2.42	0.43
1:D:219:LYS:HE2	5:D:3188:HOH:O	2.19	0.43
1:D:298:THR:HB	5:D:2520:HOH:O	2.19	0.43
1:D:391:LEU:HD21	1:D:427:VAL:HG21	2.00	0.43
1:D:734:ALA:HA	1:D:735:THR:HA	1.61	0.43
1:C:191:ALA:HB2	1:C:276:TYR:CD2	2.54	0.43
1:D:297:LEU:HA	1:D:301:GLN:OE1	2.18	0.43
1:A:44:ASN:HB2	1:A:45:PRO:CD	2.49	0.43
1:A:870:GLU:HG2	1:A:889:ILE:HD13	2.01	0.43
1:A:909:ARG:NH1	5:A:3024:HOH:O	2.52	0.43
1:A:1015:ARG:CZ	1:B:582:ILE:HD11	2.49	0.43
1:B:1009:THR:HB	1:B:1010:PRO:HD2	2.01	0.43
1:D:140:CYS:HA	2:D:1027:SF4:S3	2.59	0.43
1:A:612:LEU:HD11	1:B:935:PHE:CE2	2.53	0.43
1:B:173:ASN:HB3	1:B:176:LEU:CD1	2.49	0.43
1:B:367:PHE:O	1:B:370:ILE:HG13	2.19	0.43
1:A:5:LEU:HG	1:B:623:GLN:NE2	2.34	0.43
1:C:427:VAL:CG1	1:D:410:ARG:NH2	2.81	0.43
1:D:867:ARG:HG3	1:D:872:MET:HE1	1.99	0.43
1:A:358:ARG:NH2	5:A:2535:HOH:O	2.51	0.42
1:B:734:ALA:HA	1:B:735:THR:HA	1.61	0.42
1:C:116:ILE:HD13	1:C:156:GLN:HG3	2.01	0.42
1:A:391:LEU:HD21	1:B:410:ARG:HH22	1.84	0.42
1:A:574:LYS:CG	1:A:614:SER:HB2	2.48	0.42
1:A:671:CYS:HA	1:A:672:PRO:HD3	1.80	0.42
1:B:834:LEU:HD21	1:B:921:ILE:HD11	2.00	0.42
1:C:993:LEU:HD23	1:C:993:LEU:C	2.40	0.42
1:A:861:LYS:CE	1:B:143:TYR:O	2.68	0.42
1:A:1015:ARG:C	1:A:1017:LEU:H	2.22	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:173:ASN:HB2	5:C:2333:HOH:O	2.19	0.42
1:A:73:LEU:HD13	1:B:598:PRO:HB2	2.02	0.42
1:A:124:LEU:HD13	1:A:160:SER:HB2	2.02	0.42
1:B:643:CYS:HB2	1:B:650:TRP:CE2	2.54	0.42
1:C:309:PHE:CE1	1:C:331:ILE:HD11	2.55	0.42
1:D:849:TRP:CH2	1:D:854:PRO:HG3	2.54	0.42
1:A:363:PHE:CZ	1:A:387:PHE:HD2	2.37	0.42
1:C:307:LYS:HE3	5:C:2474:HOH:O	2.20	0.42
1:C:369:ASN:ND2	1:D:50:PHE:CD2	2.87	0.42
1:C:574:LYS:CG	1:C:614:SER:HB2	2.49	0.42
1:C:1015:ARG:C	1:C:1017:LEU:N	2.73	0.42
1:D:83:ALA:O	1:D:84:ASP:C	2.58	0.42
1:D:249:LYS:NZ	5:D:2432:HOH:O	2.51	0.42
1:A:261:LEU:HD21	1:A:451:LEU:CD2	2.49	0.42
1:A:269:ASN:O	1:A:273:GLU:HB2	2.19	0.42
1:A:734:ALA:HA	1:A:735:THR:HA	1.62	0.42
1:D:705:PRO:HA	1:D:730:ASP:OD2	2.20	0.42
1:D:1017:LEU:HB3	1:D:1018:PRO:HD3	2.00	0.42
1:D:845:GLU:CD	1:D:845:GLU:H	2.22	0.42
1:A:552:ALA:HB2	3:A:1030:FMN:HM73	2.01	0.42
1:B:169:PRO:HG3	1:B:911:PRO:CB	2.45	0.42
1:B:220:GLN:O	1:B:257:CYS:HB3	2.19	0.42
1:C:760:THR:HG22	1:D:932:LEU:HD23	2.01	0.42
1:D:1015:ARG:HB2	5:D:3176:HOH:O	2.19	0.42
1:A:5:LEU:CD2	1:A:1017:LEU:CD1	2.97	0.42
1:A:291:ASP:OD1	1:A:293:ILE:HG12	2.19	0.42
1:A:394:ARG:NH2	1:A:421:GLU:OE1	2.52	0.42
1:A:622:CYS:SG	1:A:656:LYS:CD	3.08	0.42
1:B:44:ASN:HB2	1:B:45:PRO:CD	2.50	0.42
1:A:191:ALA:HB2	1:A:276:TYR:CD2	2.55	0.41
1:A:200:ILE:CD1	1:A:245:ILE:HD11	2.50	0.41
1:B:311:PRO:O	1:B:315:LYS:HG3	2.19	0.41
1:C:533:ILE:O	1:C:545:PRO:HD3	2.19	0.41
1:C:759:ARG:NH2	1:D:937:GLU:OE1	2.53	0.41
1:A:20:PRO:HG2	1:A:961:MET:SD	2.60	0.41
1:A:39:LYS:NZ	5:A:2103:HOH:O	2.52	0.41
1:B:22:THR:HA	5:B:2056:HOH:O	2.20	0.41
1:B:948:ILE:HG12	1:B:1002:ILE:HG12	2.02	0.41
1:C:20:PRO:HG2	1:C:961:MET:SD	2.60	0.41
1:D:97:ILE:HA	1:D:100:PHE:CD2	2.55	0.41
1:A:133:SER:OG	5:A:2254:HOH:O	2.22	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:448:LYS:NZ	1:D:460:ASP:OD2	2.45	0.41
1:A:771:ARG:N	1:A:772:PRO:CD	2.83	0.41
1:A:845:GLU:HG3	1:A:912:PHE:CZ	2.55	0.41
1:C:644:SER:HA	1:C:671:CYS:SG	2.61	0.41
1:A:204:SER:O	1:A:208:ARG:HG3	2.21	0.41
1:A:394:ARG:HG3	1:A:394:ARG:HH11	1.85	0.41
1:A:549:ALA:HB2	1:A:814:GLN:HB3	2.03	0.41
1:C:379:LEU:O	1:C:383:GLU:HG3	2.20	0.41
1:C:577:SER:HB2	5:C:2733:HOH:O	2.20	0.41
1:A:907:LEU:O	1:A:908:GLU:C	2.59	0.41
1:B:777:ALA:O	1:B:780:THR:HG22	2.20	0.41
1:D:643:CYS:HB2	1:D:650:TRP:CE2	2.55	0.41
1:A:337:VAL:HB	1:A:361:LEU:HD23	2.02	0.41
1:B:901:ASN:OD1	1:B:902:ALA:N	2.53	0.41
1:C:83:ALA:O	1:C:84:ASP:C	2.59	0.41
1:C:97:ILE:HA	1:C:100:PHE:CD2	2.56	0.41
1:C:100:PHE:CD1	1:C:100:PHE:C	2.93	0.41
1:C:901:ASN:C	1:C:901:ASN:OD1	2.59	0.41
1:D:449:GLU:HG2	5:D:2675:HOH:O	2.19	0.41
1:D:533:ILE:O	1:D:545:PRO:HD3	2.20	0.41
1:D:968:TYR:CD1	1:D:968:TYR:N	2.88	0.41
1:A:140:CYS:HA	2:A:1027:SF4:S3	2.61	0.41
1:A:518:LYS:O	1:A:520:GLU:HG3	2.20	0.41
1:B:771:ARG:N	1:B:772:PRO:CD	2.84	0.41
1:C:387:PHE:N	1:C:387:PHE:CD1	2.88	0.41
1:C:486:ALA:HB1	1:C:491:GLU:OE1	2.21	0.41
1:C:582:ILE:HD11	1:D:1019:LEU:HD21	2.02	0.41
1:C:734:ALA:HA	1:C:735:THR:HA	1.66	0.41
1:D:9:VAL:CG2	1:D:11:ASP:OD1	2.67	0.41
1:D:261:LEU:HD21	1:D:451:LEU:HD21	2.03	0.41
1:D:783:ARG:NE	5:D:2973:HOH:O	2.54	0.41
1:A:143:TYR:O	1:B:861:LYS:CE	2.69	0.41
1:B:106:ASN:O	1:B:107:LYS:HB2	2.21	0.41
1:D:335:VAL:HG22	1:D:433:VAL:HB	2.03	0.41
1:D:909:ARG:O	1:D:910:LYS:HD3	2.21	0.41
1:A:497:LYS:HE2	1:B:27:ALA:O	2.21	0.40
1:B:179:GLN:HG3	5:B:2306:HOH:O	2.21	0.40
1:C:780:THR:HG22	1:D:762:TYR:OH	2.21	0.40
1:D:5:LEU:HD21	1:D:1017:LEU:HD21	2.03	0.40
1:D:191:ALA:HB2	1:D:276:TYR:CD2	2.56	0.40
1:D:414:ASP:C	1:D:416:THR:H	2.24	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:647:LYS:O	1:D:651:MET:HG3	2.20	0.40
1:D:950:GLU:CD	1:D:979:LEU:HD13	2.42	0.40
1:C:394:ARG:NH1	1:C:423:GLU:OE2	2.53	0.40
1:C:779:THR:CG2	1:C:808:SER:HB3	2.51	0.40
1:D:521:LEU:HA	1:D:522:PRO:HD3	1.91	0.40
1:B:97:ILE:HD11	2:B:1026:SF4:S4	2.61	0.40
1:B:470:GLN:HG2	5:B:2633:HOH:O	2.22	0.40
1:C:44:ASN:HB2	1:C:45:PRO:CD	2.51	0.40
1:D:39:LYS:HE2	5:D:2111:HOH:O	2.20	0.40
1:D:57:ASN:HB2	5:D:2147:HOH:O	2.20	0.40
1:A:84:ASP:CG	1:A:89:LYS:HZ1	2.25	0.40
1:B:552:ALA:HB3	1:B:553:PRO:HD3	2.03	0.40
1:B:845:GLU:CD	1:B:845:GLU:H	2.23	0.40
1:C:131:PRO:HB2	1:C:373:VAL:HG11	2.03	0.40
1:D:892:GLU:CA	5:D:3065:HOH:O	2.68	0.40
1:A:310:LEU:HB2	1:A:311:PRO:HD3	2.04	0.40
1:A:1014:LYS:HE3	5:A:3082:HOH:O	2.21	0.40
1:B:116:ILE:HD13	1:B:156:GLN:HG3	2.03	0.40
1:C:521:LEU:O	1:D:25:HIS:HB3	2.21	0.40

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:460:ASP:OD1	1:D:395:LYS:NZ[1_656]	2.16	0.04

## 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	1014/1025 (99%)	974 (96%)	32 (3%)	8 (1%)	<b>19</b> <b>9</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	1015/1025 (99%)	967 (95%)	36 (4%)	12 (1%)	13	4
1	C	1014/1025 (99%)	970 (96%)	38 (4%)	6 (1%)	25	15
1	D	1016/1025 (99%)	972 (96%)	34 (3%)	10 (1%)	15	6
All	All	4059/4100 (99%)	3883 (96%)	140 (3%)	36 (1%)	17	7

All (36) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	904	PHE
1	A	908	GLU
1	B	675	MET
1	B	677	GLU
1	B	906	PRO
1	C	678	ARG
1	C	872	MET
1	D	415	GLU
1	D	867	ARG
1	D	903	ALA
1	D	906	PRO
1	D	1017	LEU
1	A	901	ASN
1	B	416	THR
1	B	903	ALA
1	B	908	GLU
1	C	414	ASP
1	C	674	GLY
1	D	676	GLY
1	A	907	LEU
1	B	3	PRO
1	B	321	MET
1	D	3	PRO
1	D	908	GLU
1	D	1018	PRO
1	A	417	GLY
1	A	678	ARG
1	B	905	PRO
1	C	680	MET
1	D	866	PRO
1	A	175	CYS
1	A	906	PRO
1	B	175	CYS

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Mol	Chain	Res	Type
1	B	676	GLY
1	C	3	PRO
1	B	904	PHE

### 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	846/854 (99%)	828 (98%)	18 (2%)	53	48
1	B	847/854 (99%)	837 (99%)	10 (1%)	71	70
1	C	846/854 (99%)	836 (99%)	10 (1%)	71	70
1	D	848/854 (99%)	843 (99%)	5 (1%)	86	87
All	All	3387/3416 (99%)	3344 (99%)	43 (1%)	69	68

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	ARG
1	A	100	PHE
1	A	133	SER
1	A	173	ASN
1	A	273	GLU
1	A	407	GLN
1	A	453	PRO
1	A	483	VAL
1	A	541	LYS
1	A	656	LYS
1	A	677	GLU
1	A	776	ARG
1	A	793	THR
1	A	800	GLU
1	A	906	PRO
1	A	932	LEU
1	A	955	ASN
1	A	1017	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	95	LEU
1	B	100	PHE
1	B	273	GLU
1	B	394	ARG
1	B	443	ARG
1	B	453	PRO
1	B	675	MET
1	B	793	THR
1	B	828	GLN
1	B	907	LEU
1	C	100	PHE
1	C	184	GLU
1	C	259	LYS
1	C	326	SER
1	C	453	PRO
1	C	793	THR
1	C	800	GLU
1	C	896	ARG
1	C	955	ASN
1	C	1017	LEU
1	D	95	LEU
1	D	100	PHE
1	D	453	PRO
1	D	599	MET
1	D	800	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	173	ASN
1	A	295	GLN
1	A	407	GLN
1	A	413	GLN
1	A	646	ASN
1	B	295	GLN
1	B	703	GLN
1	B	859	HIS
1	C	295	GLN
1	C	407	GLN
1	C	859	HIS
1	C	978	HIS
1	D	48	ASN

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Mol	Chain	Res	Type
1	D	242	ASN
1	D	673	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

24 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	SF4	C	1026	1	0,12,12	-	-	-		
4	FAD	B	1031	-	53,58,58	1.93	19 (35%)	68,89,89	1.25	6 (8%)
2	SF4	C	1029	1	0,12,12	-	-	-		
2	SF4	B	1028	1	0,12,12	-	-	-		
4	FAD	C	1031	-	53,58,58	1.90	20 (37%)	68,89,89	1.23	9 (13%)
2	SF4	A	1028	1	0,12,12	-	-	-		
3	FMN	A	1030	-	33,33,33	1.91	8 (24%)	48,50,50	1.96	13 (27%)
3	FMN	D	1030	-	33,33,33	1.93	8 (24%)	48,50,50	1.95	13 (27%)
2	SF4	A	1029	1	0,12,12	-	-	-		
2	SF4	B	1026	1	0,12,12	-	-	-		
3	FMN	B	1030	-	33,33,33	1.89	9 (27%)	48,50,50	1.97	14 (29%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	SF4	C	1028	1	0,12,12	-	-	-		
2	SF4	D	1027	1	0,12,12	-	-	-		
3	FMN	C	1030	-	33,33,33	1.99	8 (24%)	48,50,50	1.97	15 (31%)
2	SF4	D	1029	1	0,12,12	-	-	-		
2	SF4	A	1027	1	0,12,12	-	-	-		
2	SF4	D	1026	1	0,12,12	-	-	-		
2	SF4	B	1027	1	0,12,12	-	-	-		
2	SF4	A	1026	1	0,12,12	-	-	-		
2	SF4	D	1028	1	0,12,12	-	-	-		
4	FAD	D	1031	-	53,58,58	1.89	21 (39%)	68,89,89	1.23	8 (11%)
2	SF4	C	1027	1	0,12,12	-	-	-		
2	SF4	B	1029	1	0,12,12	-	-	-		
4	FAD	A	1031	-	53,58,58	1.90	19 (35%)	68,89,89	1.26	10 (14%)

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	SF4	C	1026	1	-	-	0/6/5/5
4	FAD	B	1031	-	-	4/30/50/50	0/6/6/6
2	SF4	C	1029	1	-	-	0/6/5/5
2	SF4	B	1028	1	-	-	0/6/5/5
4	FAD	C	1031	-	-	3/30/50/50	0/6/6/6
2	SF4	A	1028	1	-	-	0/6/5/5
3	FMN	A	1030	-	-	1/18/18/18	0/3/3/3
3	FMN	D	1030	-	-	1/18/18/18	0/3/3/3
2	SF4	A	1029	1	-	-	0/6/5/5
2	SF4	B	1026	1	-	-	0/6/5/5
3	FMN	B	1030	-	-	1/18/18/18	0/3/3/3
2	SF4	C	1028	1	-	-	0/6/5/5
2	SF4	D	1027	1	-	-	0/6/5/5
3	FMN	C	1030	-	-	1/18/18/18	0/3/3/3
2	SF4	D	1029	1	-	-	0/6/5/5
2	SF4	A	1027	1	-	-	0/6/5/5
2	SF4	D	1026	1	-	-	0/6/5/5
2	SF4	B	1027	1	-	-	0/6/5/5
2	SF4	A	1026	1	-	-	0/6/5/5
2	SF4	D	1028	1	-	-	0/6/5/5
4	FAD	D	1031	-	-	5/30/50/50	0/6/6/6

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SF4	C	1027	1	-	-	0/6/5/5
2	SF4	B	1029	1	-	-	0/6/5/5
4	FAD	A	1031	-	-	3/30/50/50	0/6/6/6

All (112) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	1030	FMN	C4A-N5	5.09	1.40	1.30
3	C	1030	FMN	C4A-N5	5.05	1.40	1.30
3	A	1030	FMN	C4A-N5	5.04	1.40	1.30
3	B	1030	FMN	C4A-N5	4.71	1.39	1.30
4	C	1031	FAD	O4B-C1B	4.40	1.47	1.41
4	B	1031	FAD	O4B-C1B	4.38	1.47	1.41
3	A	1030	FMN	C7M-C7	4.32	1.59	1.51
3	B	1030	FMN	C7M-C7	4.27	1.59	1.51
4	D	1031	FAD	PA-O2A	-4.22	1.35	1.55
3	C	1030	FMN	C7M-C7	4.20	1.59	1.51
4	C	1031	FAD	PA-O2A	-4.20	1.35	1.55
4	B	1031	FAD	PA-O2A	-4.12	1.36	1.55
4	A	1031	FAD	PA-O2A	-4.07	1.36	1.55
3	D	1030	FMN	C7M-C7	4.03	1.59	1.51
4	A	1031	FAD	O4B-C1B	3.98	1.46	1.41
4	C	1031	FAD	C4X-N5	3.92	1.38	1.30
4	D	1031	FAD	O4B-C1B	3.90	1.46	1.41
4	A	1031	FAD	C4X-N5	3.82	1.38	1.30
4	D	1031	FAD	C4X-N5	3.78	1.38	1.30
3	C	1030	FMN	C9A-C5A	3.77	1.47	1.41
4	B	1031	FAD	C4X-N5	3.76	1.38	1.30
3	C	1030	FMN	C1'-N10	-3.71	1.38	1.48
3	A	1030	FMN	C1'-N10	-3.69	1.38	1.48
3	D	1030	FMN	C1'-N10	-3.66	1.38	1.48
3	B	1030	FMN	C1'-N10	-3.51	1.39	1.48
4	B	1031	FAD	C9A-N10	3.50	1.47	1.41
4	D	1031	FAD	P-O2P	-3.48	1.39	1.55
4	C	1031	FAD	C9A-N10	3.44	1.47	1.41
4	A	1031	FAD	C9A-N10	3.38	1.47	1.41
4	A	1031	FAD	P-O2P	-3.38	1.39	1.55
4	B	1031	FAD	P-O2P	-3.37	1.39	1.55
4	C	1031	FAD	P-O2P	-3.35	1.39	1.55
3	B	1030	FMN	C9A-C5A	3.26	1.46	1.41
3	C	1030	FMN	C4'-C3'	3.18	1.59	1.53
4	D	1031	FAD	C9A-C5X	3.16	1.46	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	1031	FAD	C9A-N10	3.13	1.46	1.41
3	D	1030	FMN	C9A-C5A	3.09	1.46	1.41
3	A	1030	FMN	C4'-C3'	3.03	1.59	1.53
3	C	1030	FMN	C9A-N10	3.03	1.46	1.41
4	A	1031	FAD	C9A-C5X	3.02	1.46	1.41
4	A	1031	FAD	C8-C7	2.95	1.48	1.40
4	B	1031	FAD	C9A-C5X	2.95	1.46	1.41
3	D	1030	FMN	C4'-C3'	2.94	1.59	1.53
4	D	1031	FAD	C8-C7	2.93	1.48	1.40
4	B	1031	FAD	C8-C7	2.93	1.48	1.40
3	A	1030	FMN	C9A-N10	2.87	1.46	1.41
4	C	1031	FAD	C9A-C5X	2.85	1.46	1.41
4	A	1031	FAD	C2B-C1B	-2.83	1.49	1.53
3	B	1030	FMN	C4'-C3'	2.83	1.58	1.53
4	B	1031	FAD	C2A-N3A	2.80	1.36	1.32
4	A	1031	FAD	O5'-C5'	2.77	1.55	1.44
4	C	1031	FAD	C8-C7	2.76	1.47	1.40
3	A	1030	FMN	C9A-C5A	2.76	1.45	1.41
3	D	1030	FMN	C9A-N10	2.76	1.46	1.41
3	D	1030	FMN	C1'-C2'	2.73	1.56	1.52
4	B	1031	FAD	C2B-C1B	-2.70	1.49	1.53
4	C	1031	FAD	O5'-C5'	2.69	1.55	1.44
4	B	1031	FAD	C6-C5X	2.69	1.44	1.40
4	B	1031	FAD	O5'-C5'	2.67	1.55	1.44
4	D	1031	FAD	C2A-N3A	2.66	1.36	1.32
4	D	1031	FAD	C2B-C1B	-2.65	1.49	1.53
4	D	1031	FAD	O5'-C5'	2.65	1.55	1.44
4	B	1031	FAD	C10-N1	2.63	1.38	1.33
4	D	1031	FAD	C4A-N3A	2.59	1.39	1.35
4	A	1031	FAD	C6-C5X	2.58	1.44	1.40
4	A	1031	FAD	C4A-N3A	2.57	1.39	1.35
4	C	1031	FAD	C4A-N3A	2.57	1.39	1.35
3	A	1030	FMN	C1'-C2'	2.57	1.56	1.52
3	B	1030	FMN	C9A-N10	2.57	1.45	1.41
4	B	1031	FAD	O4B-C4B	2.52	1.50	1.45
4	C	1031	FAD	C2A-N3A	2.51	1.36	1.32
4	A	1031	FAD	C9-C9A	2.50	1.43	1.39
4	C	1031	FAD	C6-C5X	2.49	1.43	1.40
3	B	1030	FMN	C1'-C2'	2.48	1.56	1.52
4	B	1031	FAD	C9-C9A	2.47	1.43	1.39
4	C	1031	FAD	C10-N1	2.44	1.38	1.33
4	D	1031	FAD	C9-C9A	2.43	1.43	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1031	FAD	C10-N1	2.38	1.38	1.33
4	D	1031	FAD	C6-C5X	2.38	1.43	1.40
3	C	1030	FMN	C1'-C2'	2.38	1.56	1.52
3	D	1030	FMN	C10-N1	2.37	1.38	1.33
4	C	1031	FAD	C2B-C1B	-2.33	1.50	1.53
4	C	1031	FAD	O4B-C4B	2.31	1.50	1.45
4	B	1031	FAD	C4A-N3A	2.30	1.38	1.35
4	D	1031	FAD	O4B-C4B	2.29	1.50	1.45
4	A	1031	FAD	C2A-N3A	2.28	1.35	1.32
4	C	1031	FAD	C2A-N1A	2.26	1.38	1.33
4	A	1031	FAD	O4B-C4B	2.23	1.50	1.45
4	D	1031	FAD	C10-N1	2.21	1.37	1.33
3	B	1030	FMN	C10-N1	2.21	1.37	1.33
4	D	1031	FAD	C5B-C4B	2.20	1.58	1.51
4	C	1031	FAD	P-O5'	-2.17	1.50	1.59
4	B	1031	FAD	C5B-C4B	2.17	1.58	1.51
3	C	1030	FMN	C10-N1	2.17	1.37	1.33
4	B	1031	FAD	C2A-N1A	2.15	1.37	1.33
4	A	1031	FAD	O2-C2	-2.12	1.20	1.24
4	D	1031	FAD	C2-N3	2.12	1.44	1.39
4	D	1031	FAD	P-O5'	-2.11	1.50	1.59
4	C	1031	FAD	C5B-C4B	2.10	1.58	1.51
4	A	1031	FAD	C2A-N1A	2.10	1.37	1.33
4	B	1031	FAD	P-O5'	-2.09	1.50	1.59
4	B	1031	FAD	C2-N3	2.09	1.43	1.39
3	B	1030	FMN	C6-C7	2.08	1.42	1.39
4	C	1031	FAD	C3B-C4B	2.08	1.58	1.53
4	C	1031	FAD	C2-N3	2.07	1.43	1.39
4	A	1031	FAD	C3B-C4B	2.07	1.58	1.53
4	D	1031	FAD	C2A-N1A	2.06	1.37	1.33
3	A	1030	FMN	C10-N1	2.05	1.37	1.33
4	C	1031	FAD	C9-C9A	2.05	1.43	1.39
4	D	1031	FAD	C3B-C4B	2.05	1.58	1.53
4	D	1031	FAD	C9-C8	2.01	1.42	1.39
4	A	1031	FAD	C9-C8	2.01	1.42	1.39

All (88) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	1030	FMN	C10-N1-C2	5.09	127.07	116.90
3	D	1030	FMN	C10-N1-C2	5.07	127.05	116.90
3	C	1030	FMN	C10-N1-C2	5.05	127.01	116.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1030	FMN	C10-N1-C2	5.02	126.93	116.90
3	C	1030	FMN	C4A-C10-N1	-4.30	114.74	124.73
3	D	1030	FMN	C4A-C10-N1	-4.26	114.85	124.73
3	A	1030	FMN	C4A-C10-N1	-4.24	114.90	124.73
3	B	1030	FMN	C4A-C10-N1	-4.22	114.94	124.73
3	B	1030	FMN	C4-C4A-C10	4.13	123.72	116.79
3	C	1030	FMN	C4-C4A-C10	4.11	123.69	116.79
3	D	1030	FMN	C4-C4A-C10	4.08	123.64	116.79
3	A	1030	FMN	C4-C4A-C10	4.07	123.63	116.79
3	C	1030	FMN	O4'-C4'-C3'	3.89	118.56	109.10
3	A	1030	FMN	O4'-C4'-C3'	3.84	118.44	109.10
3	D	1030	FMN	O4'-C4'-C3'	3.75	118.20	109.10
3	B	1030	FMN	O4'-C4'-C3'	3.71	118.13	109.10
3	D	1030	FMN	O3'-C3'-C2'	-3.69	99.91	108.81
3	A	1030	FMN	O3'-C3'-C2'	-3.67	99.94	108.81
4	D	1031	FAD	O2A-PA-O1A	3.59	129.99	112.24
4	A	1031	FAD	O2A-PA-O1A	3.54	129.75	112.24
3	B	1030	FMN	O3'-C3'-C2'	-3.54	100.26	108.81
3	D	1030	FMN	O2'-C2'-C1'	3.52	118.31	109.80
4	B	1031	FAD	O2A-PA-O1A	3.51	129.62	112.24
3	A	1030	FMN	O2'-C2'-C1'	3.51	118.28	109.80
3	B	1030	FMN	O2'-C2'-C1'	3.50	118.27	109.80
3	C	1030	FMN	O2'-C2'-C1'	3.47	118.19	109.80
3	C	1030	FMN	O3'-C3'-C2'	-3.39	100.62	108.81
4	C	1031	FAD	O2A-PA-O1A	3.37	128.89	112.24
3	C	1030	FMN	P-O5'-C5'	3.21	127.14	118.30
3	B	1030	FMN	P-O5'-C5'	3.09	126.81	118.30
3	C	1030	FMN	C5'-C4'-C3'	-3.07	106.27	112.20
3	A	1030	FMN	C5'-C4'-C3'	-3.07	106.28	112.20
3	D	1030	FMN	P-O5'-C5'	3.06	126.74	118.30
3	A	1030	FMN	P-O5'-C5'	3.05	126.70	118.30
3	D	1030	FMN	C5'-C4'-C3'	-2.99	106.42	112.20
3	B	1030	FMN	C5'-C4'-C3'	-2.96	106.48	112.20
4	B	1031	FAD	C5'-C4'-C3'	-2.89	106.62	112.20
4	C	1031	FAD	C5'-C4'-C3'	-2.74	106.90	112.20
4	D	1031	FAD	C5'-C4'-C3'	-2.71	106.97	112.20
3	C	1030	FMN	C4A-C10-N10	2.70	120.43	116.48
3	D	1030	FMN	C4A-C10-N10	2.64	120.33	116.48
3	A	1030	FMN	C4A-C10-N10	2.63	120.33	116.48
3	B	1030	FMN	C4A-C10-N10	2.62	120.31	116.48
4	A	1031	FAD	C5'-C4'-C3'	-2.58	107.22	112.20
4	A	1031	FAD	C2A-N1A-C6A	2.53	123.09	118.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	1030	FMN	O3'-C3'-C4'	2.53	114.92	108.81
4	B	1031	FAD	C2A-N1A-C6A	2.41	122.87	118.75
4	D	1031	FAD	C2A-N1A-C6A	2.36	122.79	118.75
4	A	1031	FAD	C5A-C6A-N1A	-2.35	115.03	120.35
3	D	1030	FMN	O3'-C3'-C4'	2.34	114.45	108.81
3	A	1030	FMN	O3'-C3'-C4'	2.31	114.40	108.81
4	C	1031	FAD	C2A-N1A-C6A	2.31	122.71	118.75
4	C	1031	FAD	C5A-C6A-N1A	-2.27	115.20	120.35
4	B	1031	FAD	C5A-C6A-N1A	-2.26	115.22	120.35
3	C	1030	FMN	O3'-C3'-C4'	2.24	114.23	108.81
3	C	1030	FMN	N10-C10-N1	2.24	124.80	118.35
3	D	1030	FMN	N10-C10-N1	2.24	124.80	118.35
3	A	1030	FMN	N10-C10-N1	2.23	124.77	118.35
3	B	1030	FMN	N10-C10-N1	2.23	124.75	118.35
4	D	1031	FAD	C5A-C6A-N1A	-2.21	115.33	120.35
3	B	1030	FMN	N3-C2-N1	-2.21	115.05	119.38
3	C	1030	FMN	C4-C4A-N5	-2.20	115.10	118.23
3	D	1030	FMN	N3-C2-N1	-2.20	115.07	119.38
3	C	1030	FMN	C6-C5A-C9A	2.17	122.01	118.94
3	B	1030	FMN	C6-C5A-C9A	2.15	121.98	118.94
4	B	1031	FAD	P-O3P-PA	2.15	140.21	132.83
4	A	1031	FAD	C4-N3-C2	-2.13	121.70	125.64
3	A	1030	FMN	C6-C5A-C9A	2.13	121.95	118.94
4	C	1031	FAD	C4A-C5A-N7A	2.13	111.62	109.40
4	A	1031	FAD	P-O3P-PA	2.13	140.13	132.83
4	C	1031	FAD	P-O3P-PA	2.11	140.06	132.83
4	A	1031	FAD	C4A-C5A-N7A	2.11	111.60	109.40
3	A	1030	FMN	N3-C2-N1	-2.11	115.25	119.38
4	D	1031	FAD	P-O3P-PA	2.10	140.04	132.83
3	C	1030	FMN	N3-C2-N1	-2.09	115.28	119.38
4	A	1031	FAD	C10-N1-C2	2.08	121.06	116.90
3	B	1030	FMN	C4-C4A-N5	-2.08	115.27	118.23
4	D	1031	FAD	C10-N1-C2	2.08	121.05	116.90
4	B	1031	FAD	C4-N3-C2	-2.07	121.81	125.64
4	C	1031	FAD	C10-N1-C2	2.07	121.03	116.90
4	C	1031	FAD	C4-N3-C2	-2.04	121.87	125.64
4	A	1031	FAD	C5X-C9A-N10	-2.04	115.85	117.95
3	D	1030	FMN	C4-C4A-N5	-2.02	115.36	118.23
4	D	1031	FAD	C4A-C5A-N7A	2.02	111.50	109.40
4	C	1031	FAD	O2A-PA-O5B	2.02	117.11	107.75
3	C	1030	FMN	O4'-C4'-C5'	2.01	114.43	109.92
4	D	1031	FAD	C4-N3-C2	-2.01	121.94	125.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1031	FAD	C5A-C6A-N6A	2.00	123.39	120.35

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1031	FAD	C5B-O5B-PA-O1A
4	A	1031	FAD	PA-O3P-P-O5'
4	B	1031	FAD	C5B-O5B-PA-O1A
4	B	1031	FAD	PA-O3P-P-O5'
4	C	1031	FAD	C5B-O5B-PA-O1A
4	C	1031	FAD	PA-O3P-P-O5'
4	D	1031	FAD	C5B-O5B-PA-O1A
4	D	1031	FAD	PA-O3P-P-O5'
3	C	1030	FMN	C4'-C5'-O5'-P
3	A	1030	FMN	C4'-C5'-O5'-P
3	D	1030	FMN	C4'-C5'-O5'-P
3	B	1030	FMN	C4'-C5'-O5'-P
4	B	1031	FAD	P-O3P-PA-O1A
4	D	1031	FAD	P-O3P-PA-O1A
4	D	1031	FAD	P-O3P-PA-O2A
4	B	1031	FAD	O4B-C4B-C5B-O5B
4	A	1031	FAD	O4B-C4B-C5B-O5B
4	C	1031	FAD	O4B-C4B-C5B-O5B
4	D	1031	FAD	O4B-C4B-C5B-O5B

There are no ring outliers.

12 monomers are involved in 16 short contacts:

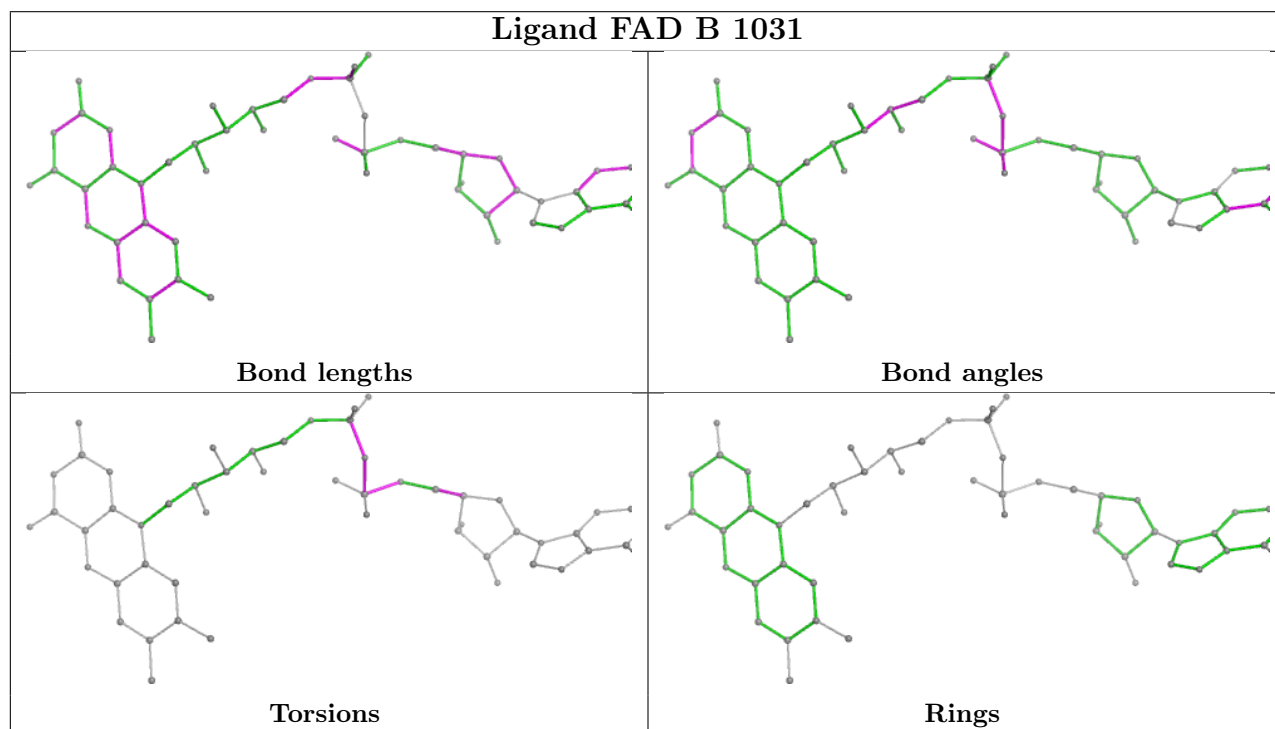
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1026	SF4	1	0
4	B	1031	FAD	2	0
4	C	1031	FAD	2	0
3	A	1030	FMN	1	0
2	B	1026	SF4	1	0
3	B	1030	FMN	1	0
2	D	1027	SF4	1	0
2	A	1027	SF4	1	0
2	D	1026	SF4	1	0
2	B	1027	SF4	1	0
4	D	1031	FAD	2	0

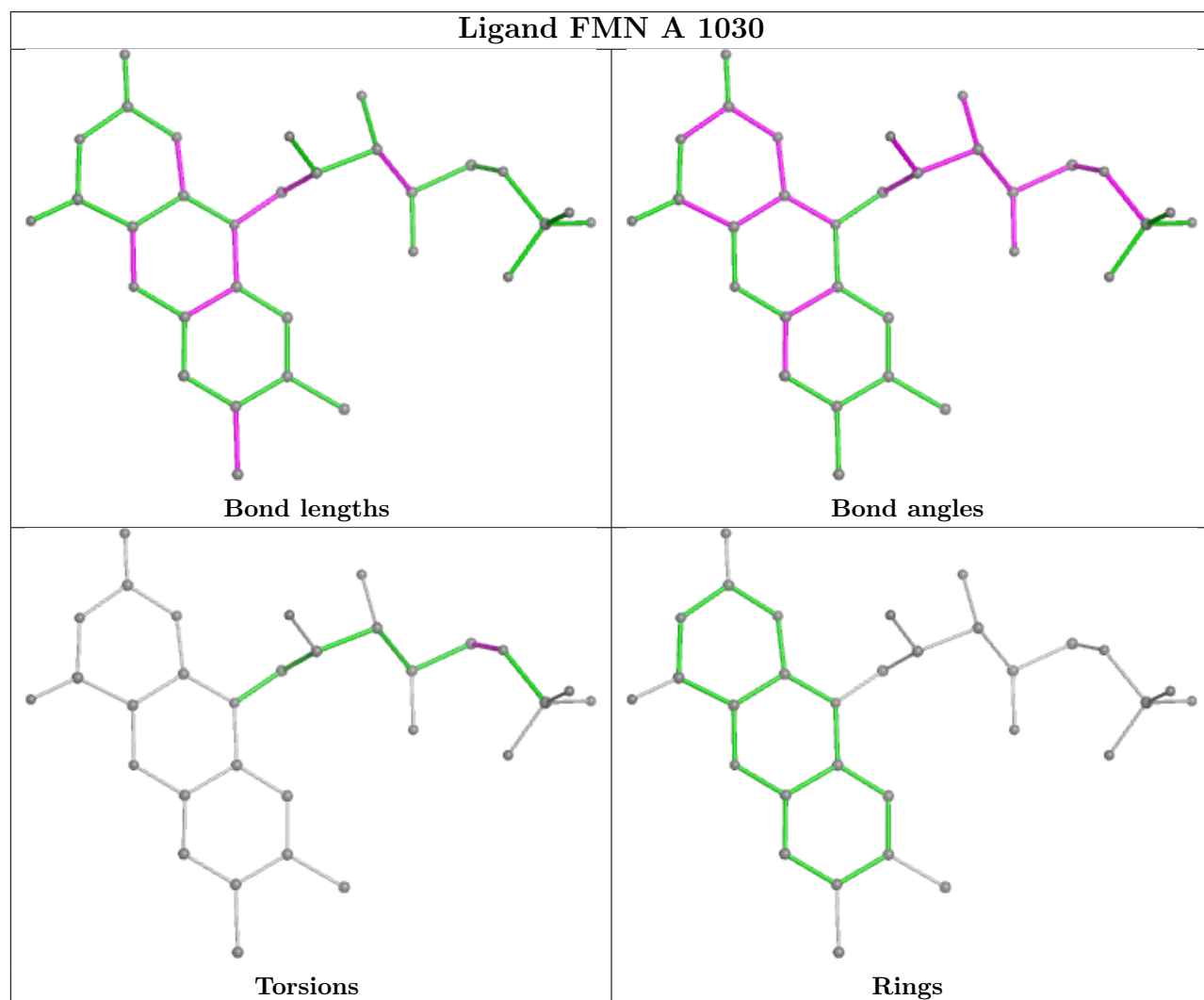
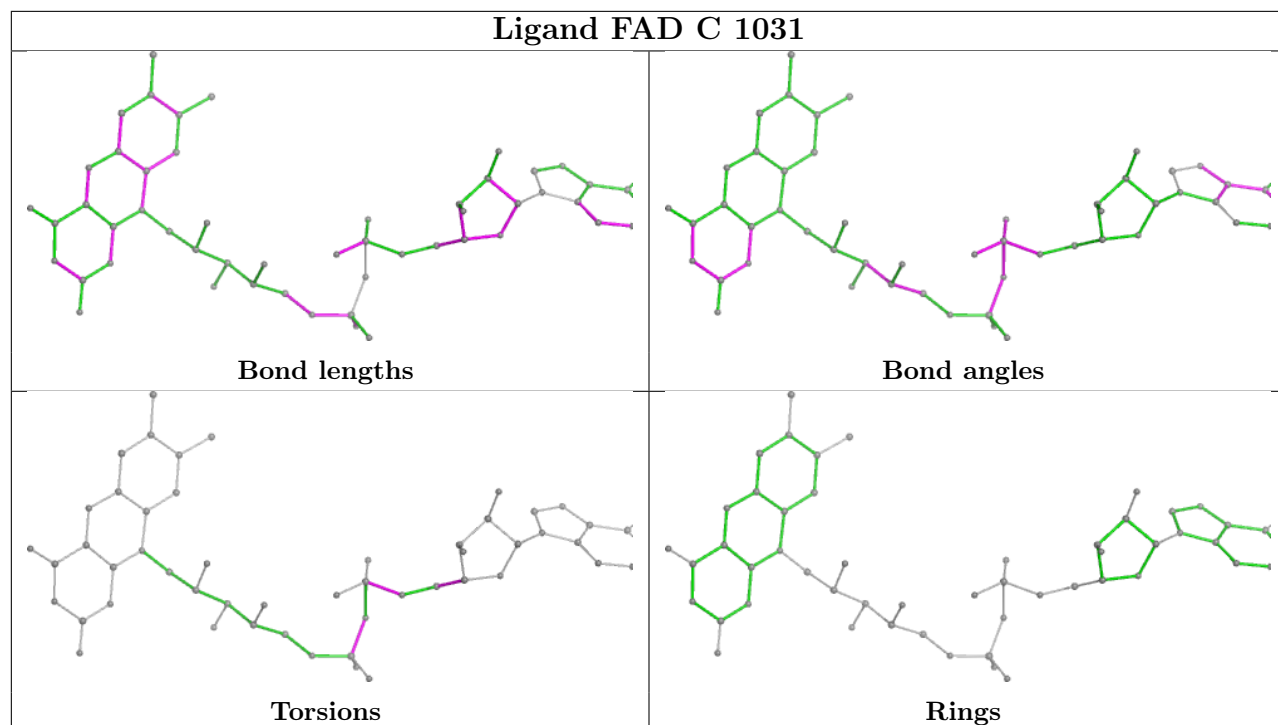
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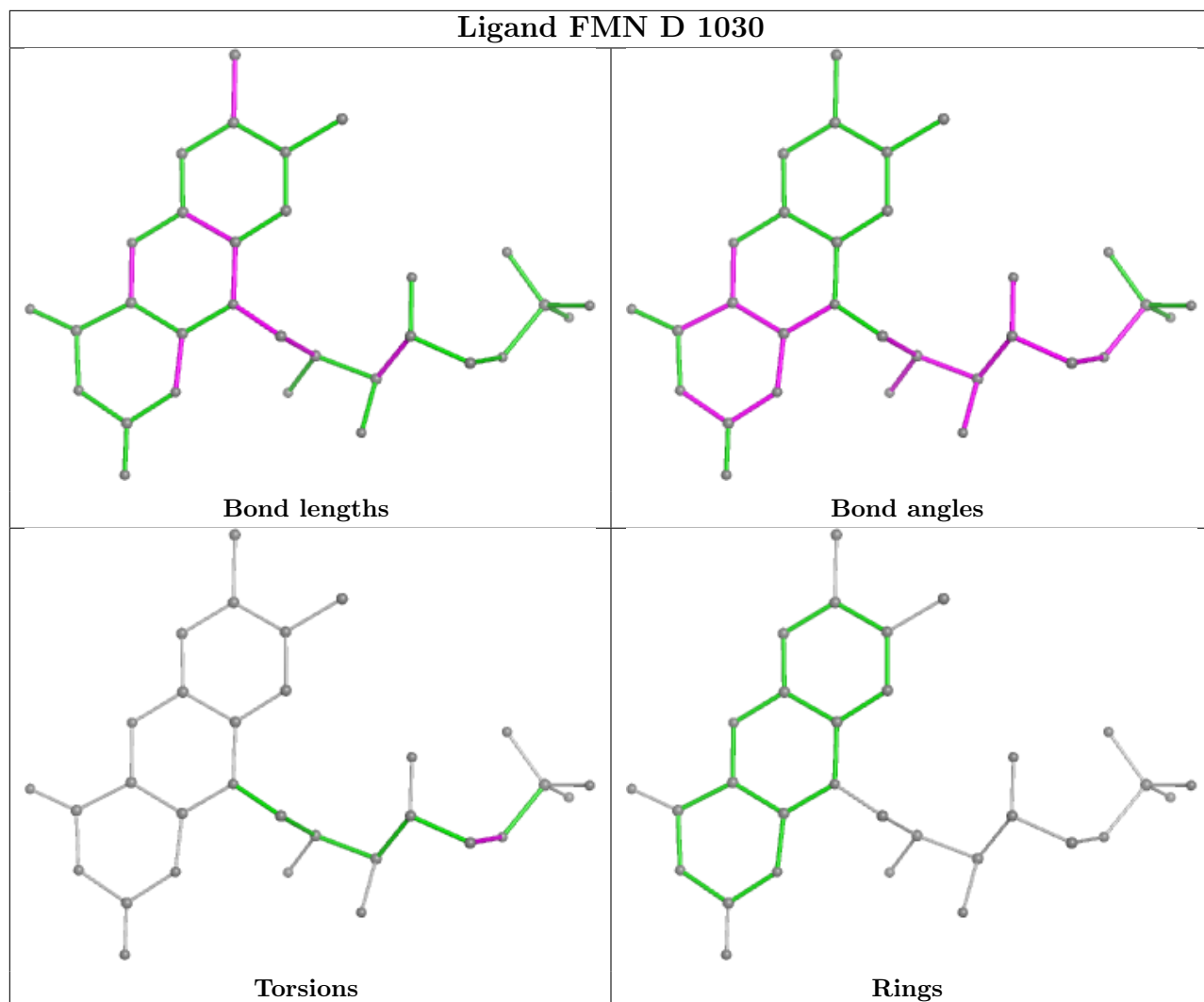
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1031	FAD	2	0

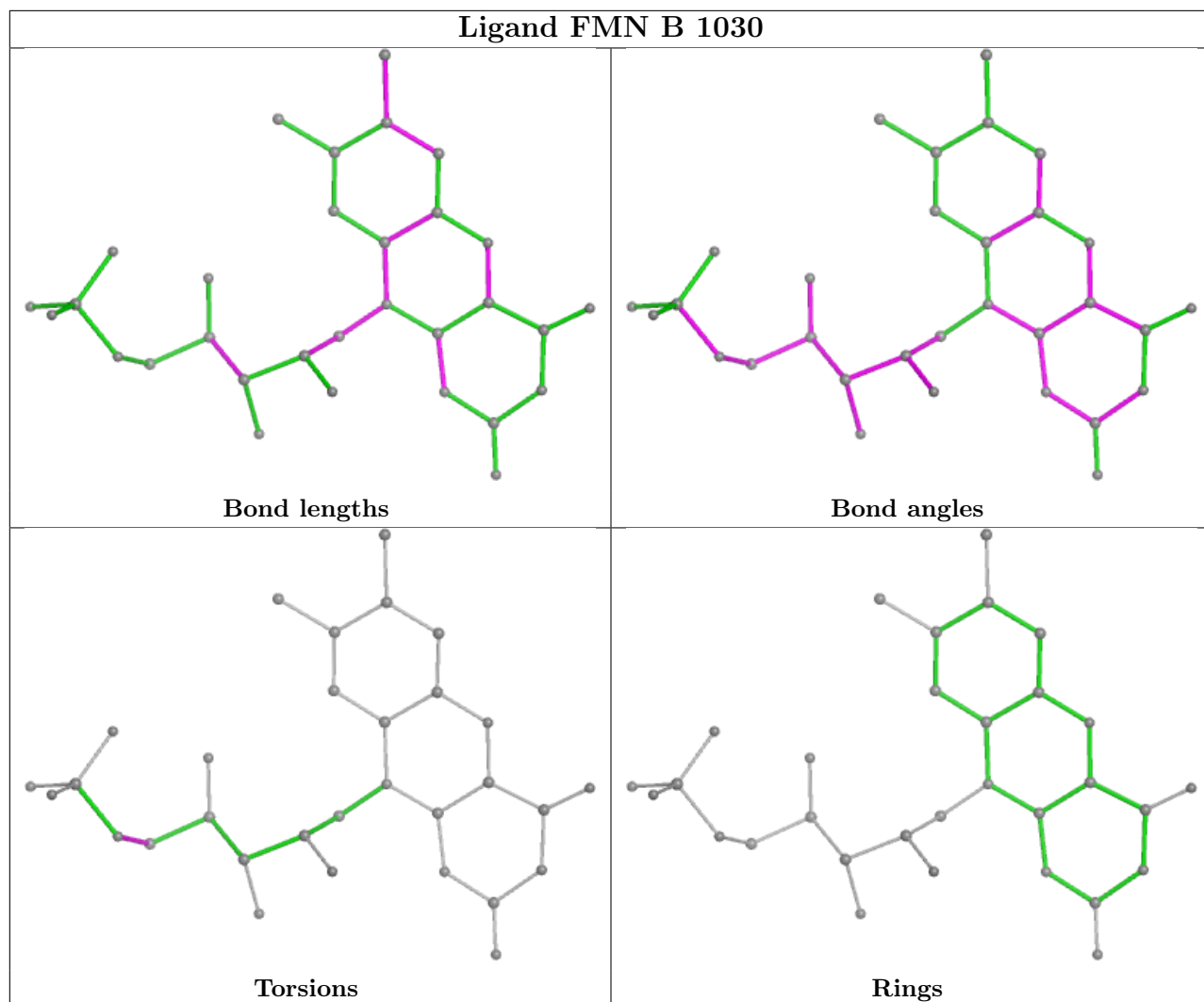
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

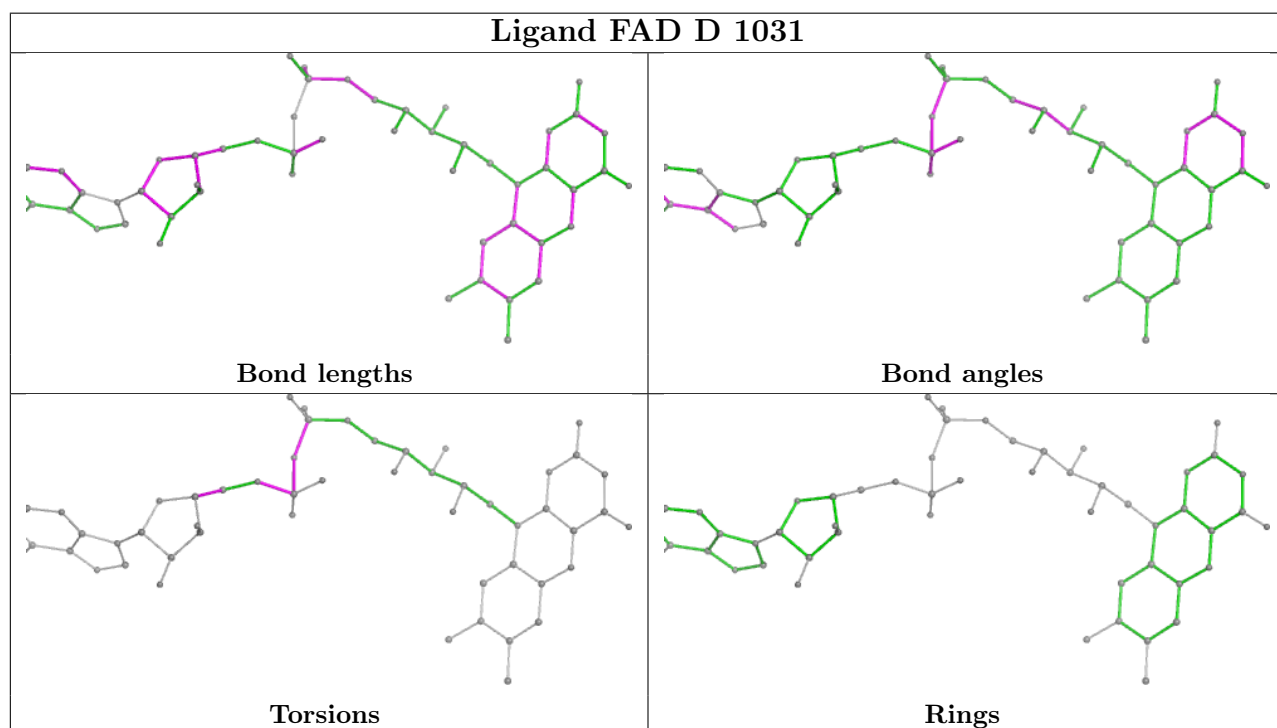
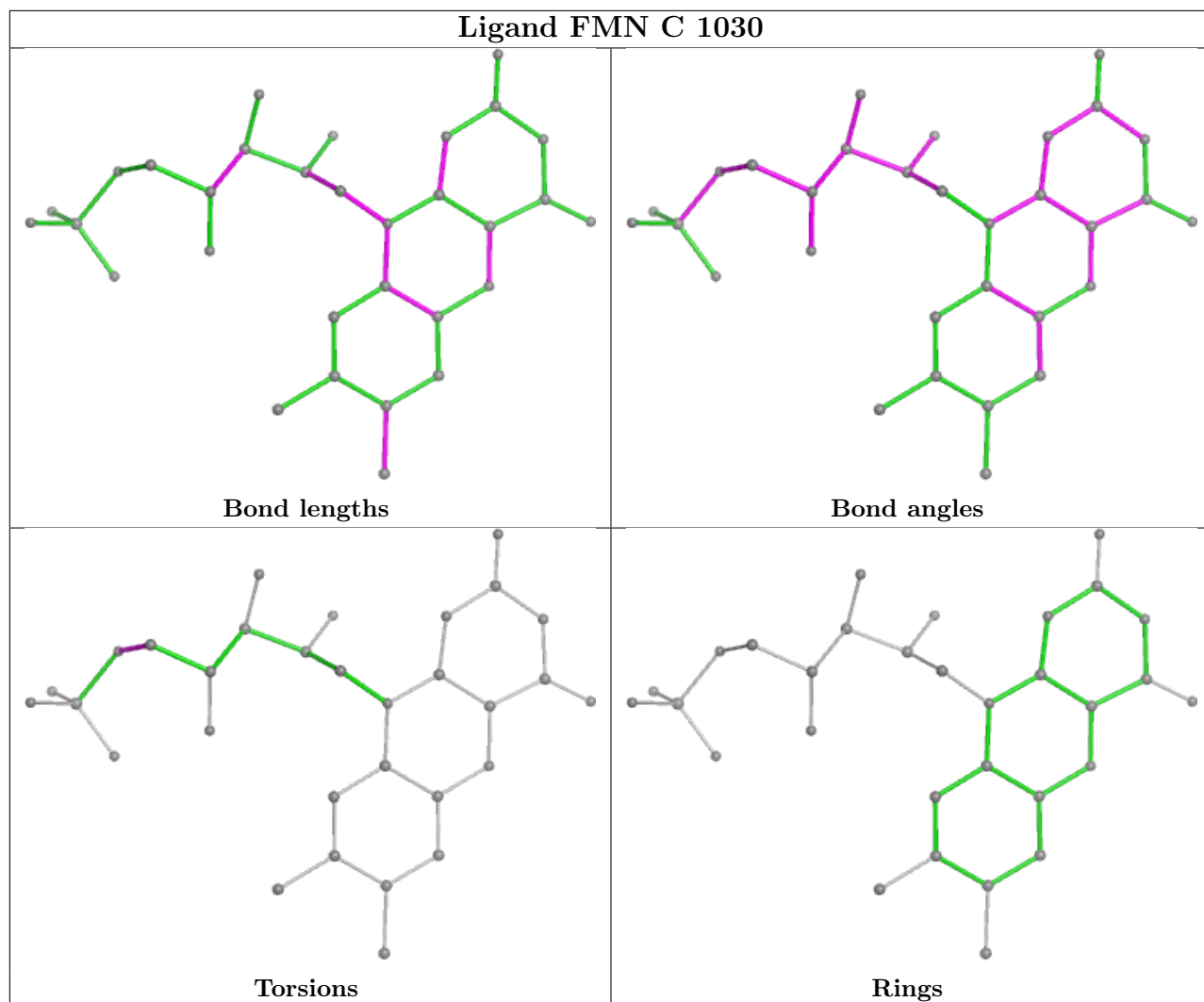


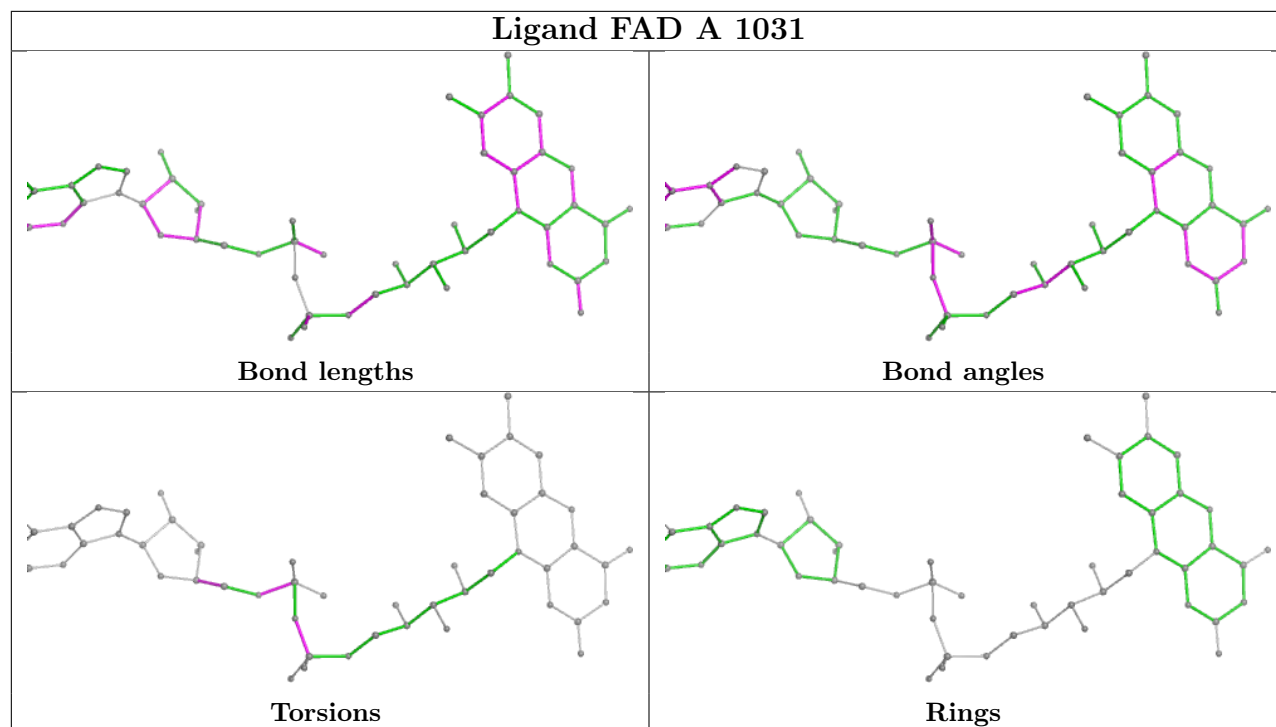












## 5.7 Other polymers [i](#)

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](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	1007/1025 (98%)	0.21	68 (6%) 17 19	7, 14, 36, 56	0
1	B	1007/1025 (98%)	0.23	76 (7%) 14 15	6, 14, 36, 55	0
1	C	1012/1025 (98%)	0.22	74 (7%) 15 16	6, 14, 38, 54	0
1	D	1012/1025 (98%)	0.24	82 (8%) 12 13	6, 14, 37, 55	0
All	All	4038/4100 (98%)	0.23	300 (7%) 14 16	6, 14, 37, 56	0

All (300) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	2	ALA	18.1
1	A	1017	LEU	16.1
1	D	2	ALA	16.0
1	C	1017	LEU	14.9
1	A	2	ALA	14.4
1	C	2	ALA	12.6
1	B	907	LEU	12.4
1	D	907	LEU	12.1
1	A	907	LEU	11.7
1	D	52	CYS	11.3
1	D	1017	LEU	10.0
1	B	1017	LEU	9.2
1	B	1018	PRO	9.0
1	A	324	CYS	8.9
1	C	674	GLY	8.7
1	C	675	MET	8.7
1	B	51	HIS	8.4
1	D	902	ALA	7.8
1	C	415	GLU	7.6
1	A	51	HIS	7.4
1	B	52	CYS	7.4

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Mol	Chain	Res	Type	RSRZ
1	B	680	MET	7.2
1	A	867	ARG	7.1
1	D	50	PHE	7.1
1	A	325	HIS	7.0
1	C	51	HIS	7.0
1	D	51	HIS	6.9
1	D	459	TRP	6.8
1	A	416	THR	6.7
1	D	901	ASN	6.6
1	B	415	GLU	6.6
1	B	872	MET	6.6
1	A	52	CYS	6.6
1	B	416	THR	6.5
1	C	417	GLY	6.5
1	A	675	MET	6.4
1	B	908	GLU	6.3
1	A	908	GLU	6.2
1	D	867	ARG	6.1
1	C	872	MET	6.1
1	C	680	MET	6.1
1	A	175	CYS	6.0
1	A	902	ALA	6.0
1	A	417	GLY	6.0
1	B	902	ALA	5.9
1	D	415	GLU	5.9
1	C	867	ARG	5.9
1	B	459	TRP	5.8
1	B	900	GLN	5.8
1	B	323	ALA	5.7
1	C	682	LEU	5.7
1	D	175	CYS	5.7
1	B	867	ARG	5.6
1	B	417	GLY	5.6
1	A	415	GLU	5.6
1	C	50	PHE	5.5
1	A	418	LYS	5.5
1	C	416	THR	5.5
1	C	410	ARG	5.4
1	D	872	MET	5.4
1	C	53	GLU	5.2
1	D	1018	PRO	5.2
1	A	1016	GLY	5.2

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Mol	Chain	Res	Type	RSRZ
1	D	417	GLY	5.2
1	D	909	ARG	5.2
1	D	679	GLY	5.2
1	D	53	GLU	5.2
1	B	175	CYS	5.1
1	D	899	GLU	5.1
1	D	418	LYS	5.1
1	C	681	GLY	5.1
1	A	682	LEU	5.1
1	A	1010	PRO	5.0
1	A	458	ARG	5.0
1	B	682	LEU	5.0
1	C	459	TRP	4.8
1	B	673	HIS	4.8
1	C	332	ARG	4.8
1	C	175	CYS	4.8
1	B	901	ASN	4.7
1	D	1010	PRO	4.7
1	D	674	GLY	4.6
1	A	322	CYS	4.6
1	A	681	GLY	4.6
1	C	325	HIS	4.6
1	D	866	PRO	4.5
1	C	52	CYS	4.5
1	A	1009	THR	4.5
1	C	673	HIS	4.4
1	D	414	ASP	4.4
1	D	458	ARG	4.4
1	A	673	HIS	4.3
1	B	180	GLU	4.3
1	B	1010	PRO	4.2
1	D	3	PRO	4.2
1	B	424	ASP	4.2
1	B	418	LYS	4.1
1	B	1011	TYR	4.1
1	B	325	HIS	4.1
1	C	899	GLU	4.1
1	B	869	ALA	4.1
1	C	326	SER	4.0
1	C	909	ARG	4.0
1	D	856	THR	4.0
1	A	901	ASN	4.0

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Mol	Chain	Res	Type	RSRZ
1	B	322	CYS	4.0
1	B	324	CYS	4.0
1	B	458	ARG	4.0
1	C	873	GLY	3.9
1	B	410	ARG	3.8
1	D	908	GLU	3.8
1	D	54	LYS	3.8
1	D	1009	THR	3.8
1	C	517	ALA	3.8
1	C	324	CYS	3.8
1	D	416	THR	3.7
1	C	908	GLU	3.7
1	A	900	GLN	3.7
1	D	680	MET	3.6
1	D	678	ARG	3.6
1	B	367	PHE	3.6
1	D	1019	LEU	3.6
1	A	179	GLN	3.6
1	C	330	SER	3.5
1	C	414	ASP	3.5
1	D	410	ARG	3.5
1	B	53	GLU	3.5
1	B	3	PRO	3.5
1	C	900	GLN	3.5
1	D	913	ILE	3.4
1	B	443	ARG	3.4
1	D	900	GLN	3.4
1	A	49	CYS	3.4
1	A	872	MET	3.4
1	D	868	ILE	3.4
1	C	423	GLU	3.4
1	A	517	ALA	3.4
1	D	1012	GLU	3.4
1	C	870	GLU	3.4
1	D	296	GLY	3.4
1	A	414	ASP	3.4
1	A	459	TRP	3.3
1	B	520	GLU	3.3
1	C	458	ARG	3.3
1	C	323	ALA	3.3
1	B	421	GLU	3.3
1	C	180	GLU	3.3

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Mol	Chain	Res	Type	RSRZ
1	D	367	PHE	3.3
1	B	49	CYS	3.3
1	D	295	GLN	3.3
1	D	855	GLY	3.2
1	A	870	GLU	3.2
1	B	50	PHE	3.2
1	C	402	ARG	3.2
1	D	1011	TYR	3.2
1	A	180	GLU	3.1
1	D	179	GLN	3.1
1	B	519	PRO	3.1
1	C	869	ALA	3.1
1	D	870	GLU	3.1
1	B	326	SER	3.1
1	B	899	GLU	3.1
1	D	675	MET	3.1
1	D	869	ALA	3.1
1	C	487	ASN	3.1
1	C	910	LYS	3.0
1	C	367	PHE	3.0
1	C	847	GLN	3.0
1	B	517	ALA	3.0
1	D	420	ASN	3.0
1	D	517	ALA	3.0
1	D	857	GLU	3.0
1	A	3	PRO	3.0
1	A	896	ARG	3.0
1	A	518	LYS	2.9
1	D	180	GLU	2.9
1	A	367	PHE	2.9
1	A	1012	GLU	2.8
1	C	424	ASP	2.8
1	D	917	PRO	2.8
1	A	273	GLU	2.8
1	D	264	ASN	2.8
1	D	423	GLU	2.8
1	B	847	GLN	2.8
1	C	49	CYS	2.8
1	A	319	ALA	2.7
1	A	674	GLY	2.7
1	A	11	ASP	2.7
1	B	179	GLN	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	426	ILE	2.7
1	C	904	PHE	2.7
1	D	36	LEU	2.7
1	B	413	GLN	2.7
1	B	518	LYS	2.7
1	D	1014	LYS	2.7
1	A	36	LEU	2.7
1	D	11	ASP	2.7
1	D	291	ASP	2.7
1	D	443	ARG	2.6
1	B	427	VAL	2.6
1	D	896	ARG	2.6
1	B	273	GLU	2.6
1	C	327	PRO	2.6
1	C	264	ASN	2.6
1	D	173	ASN	2.6
1	D	682	LEU	2.6
1	B	414	ASP	2.6
1	B	681	GLY	2.6
1	B	36	LEU	2.5
1	B	896	ARG	2.5
1	C	36	LEU	2.5
1	C	371	ARG	2.5
1	C	419	TRP	2.5
1	A	292	ASP	2.5
1	C	418	LYS	2.5
1	D	364	ARG	2.5
1	D	371	ARG	2.5
1	A	23	GLN	2.5
1	A	917	PRO	2.5
1	A	910	LYS	2.5
1	A	426	ILE	2.5
1	C	1010	PRO	2.5
1	C	273	GLU	2.5
1	C	407	GLN	2.5
1	D	915	LYS	2.5
1	B	423	GLU	2.5
1	D	599	MET	2.5
1	B	375	GLU	2.5
1	B	941	ILE	2.4
1	D	859	HIS	2.4
1	D	273	GLU	2.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	868	ILE	2.4
1	A	1011	TYR	2.4
1	D	49	CYS	2.4
1	C	518	LYS	2.4
1	A	696	ARG	2.4
1	C	331	ILE	2.4
1	D	427	VAL	2.4
1	A	181	LYS	2.4
1	C	874	LYS	2.4
1	A	50	PHE	2.4
1	C	516	SER	2.3
1	D	910	LYS	2.3
1	B	859	HIS	2.3
1	C	3	PRO	2.3
1	A	424	ASP	2.3
1	D	322	CYS	2.3
1	D	487	ASN	2.3
1	A	869	ALA	2.3
1	B	22	THR	2.3
1	D	1008	THR	2.3
1	D	865	VAL	2.3
1	B	485	MET	2.3
1	D	395	LYS	2.3
1	A	402	ARG	2.3
1	B	332	ARG	2.3
1	A	410	ARG	2.3
1	C	903	ALA	2.3
1	B	173	ASN	2.3
1	C	7	LYS	2.3
1	B	371	ARG	2.3
1	C	11	ASP	2.3
1	B	221	GLU	2.2
1	C	1009	THR	2.2
1	A	371	ARG	2.2
1	B	11	ASP	2.2
1	B	873	GLY	2.2
1	B	402	ARG	2.2
1	C	984	ASP	2.2
1	A	323	ALA	2.2
1	A	844	GLU	2.2
1	C	896	ARG	2.2
1	B	1012	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	844	GLU	2.2
1	B	54	LYS	2.2
1	B	181	LYS	2.2
1	B	395	LYS	2.2
1	C	179	GLN	2.2
1	D	402	ARG	2.2
1	A	857	GLU	2.2
1	A	393	PRO	2.1
1	D	323	ALA	2.1
1	C	443	ARG	2.1
1	A	22	THR	2.1
1	A	941	ILE	2.1
1	B	910	LYS	2.1
1	A	899	GLU	2.1
1	D	874	LYS	2.1
1	B	420	ASN	2.1
1	A	375	GLU	2.1
1	A	885	GLN	2.1
1	C	184	GLU	2.1
1	C	1012	GLU	2.1
1	D	325	HIS	2.1
1	B	327	PRO	2.1
1	D	176	LEU	2.1
1	B	320	GLY	2.1
1	B	396	VAL	2.0
1	C	420	ASN	2.0
1	C	322	CYS	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

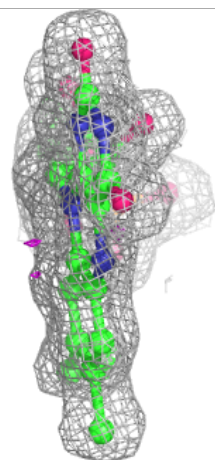
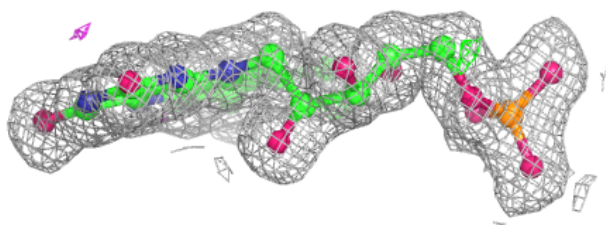
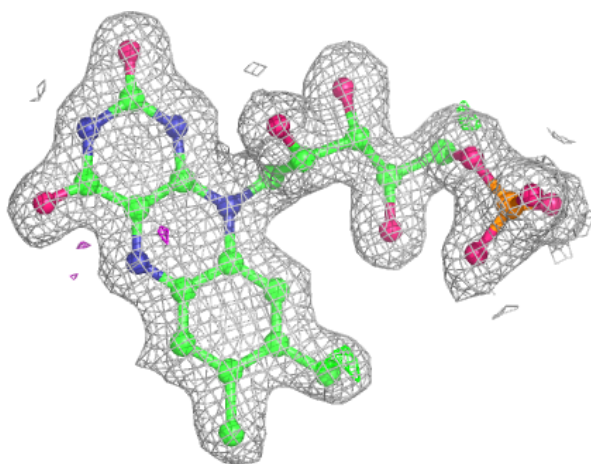
median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	FMN	A	1030	31/31	0.96	0.09	8,10,13,13	0
4	FAD	A	1031	53/53	0.96	0.10	8,11,13,14	0
2	SF4	A	1028	8/8	0.97	0.09	9,11,11,13	0
2	SF4	A	1029	8/8	0.97	0.09	10,11,13,13	0
2	SF4	B	1026	8/8	0.97	0.10	10,10,12,12	0
2	SF4	B	1027	8/8	0.97	0.09	8,9,11,11	0
2	SF4	B	1028	8/8	0.97	0.09	10,11,12,13	0
2	SF4	B	1029	8/8	0.97	0.09	10,11,13,13	0
2	SF4	C	1026	8/8	0.97	0.09	10,10,12,12	0
2	SF4	C	1027	8/8	0.97	0.10	8,9,11,11	0
2	SF4	C	1028	8/8	0.97	0.09	8,9,10,12	0
2	SF4	C	1029	8/8	0.97	0.09	9,10,12,12	0
2	SF4	D	1026	8/8	0.97	0.09	9,10,11,12	0
2	SF4	D	1027	8/8	0.97	0.09	7,8,10,11	0
2	SF4	D	1028	8/8	0.97	0.09	9,10,12,12	0
2	SF4	D	1029	8/8	0.97	0.09	10,11,12,13	0
2	SF4	A	1026	8/8	0.97	0.09	10,10,12,12	0
3	FMN	B	1030	31/31	0.97	0.09	7,10,12,15	0
3	FMN	C	1030	31/31	0.97	0.09	8,9,12,15	0
3	FMN	D	1030	31/31	0.97	0.08	7,10,12,13	0
2	SF4	A	1027	8/8	0.97	0.10	8,9,11,12	0
4	FAD	B	1031	53/53	0.97	0.10	9,12,14,15	0
4	FAD	C	1031	53/53	0.97	0.08	7,11,14,15	0
4	FAD	D	1031	53/53	0.97	0.09	8,11,13,14	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

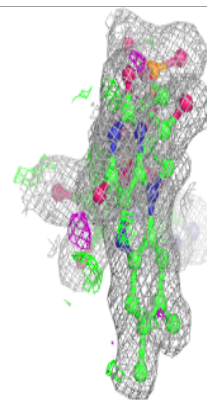
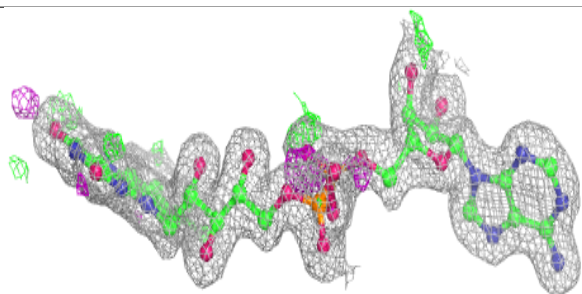
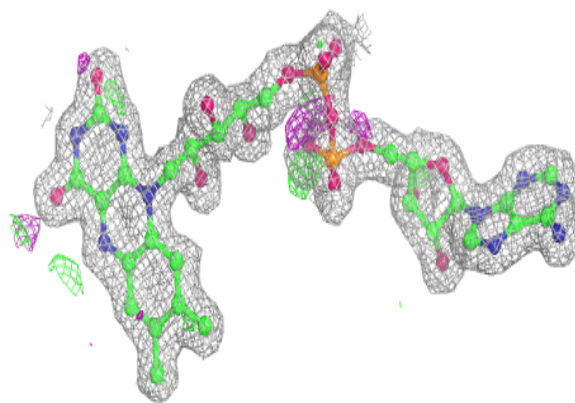
**Electron density around FMN A 1030:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

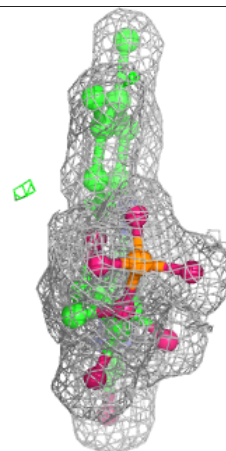
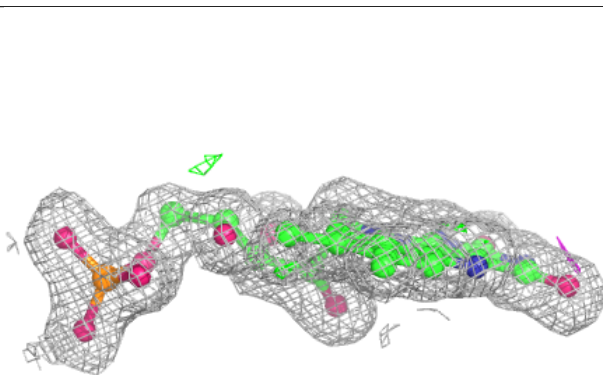
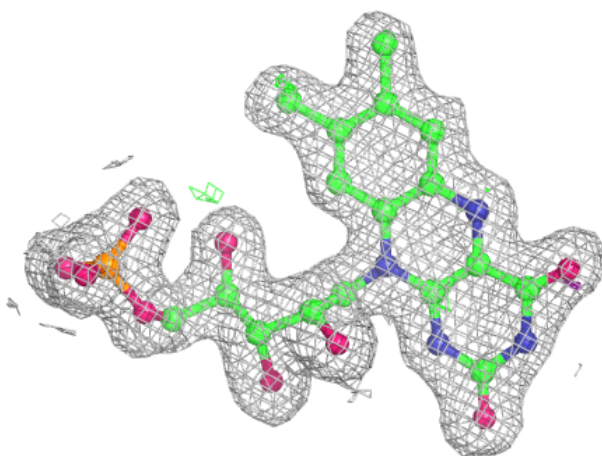


**Electron density around FAD A 1031:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

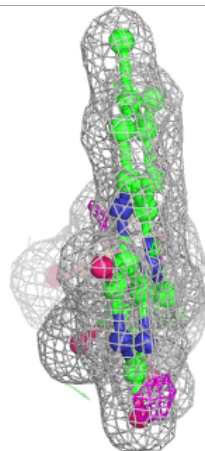
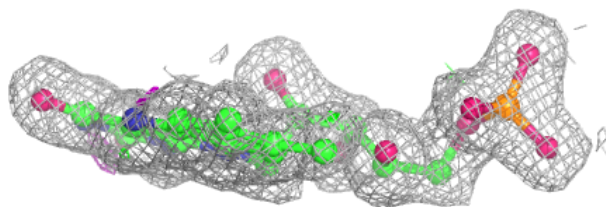
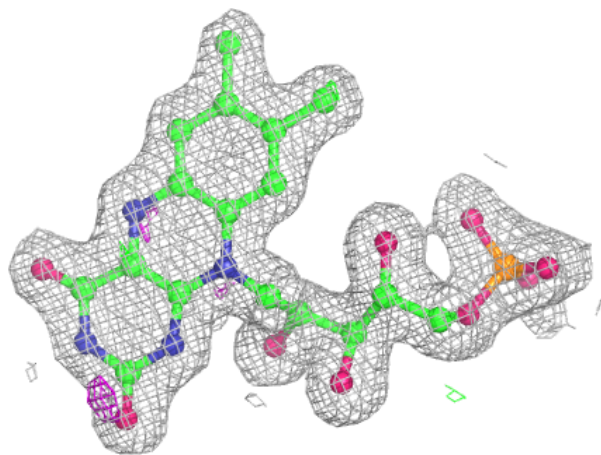
**Electron density around FMN B 1030:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around FMN C 1030:**

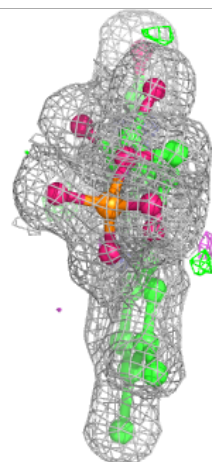
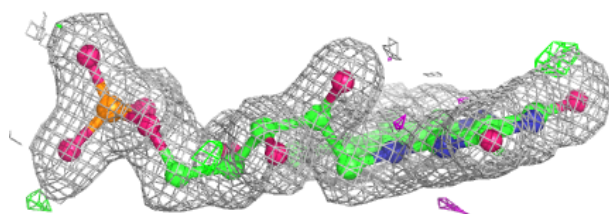
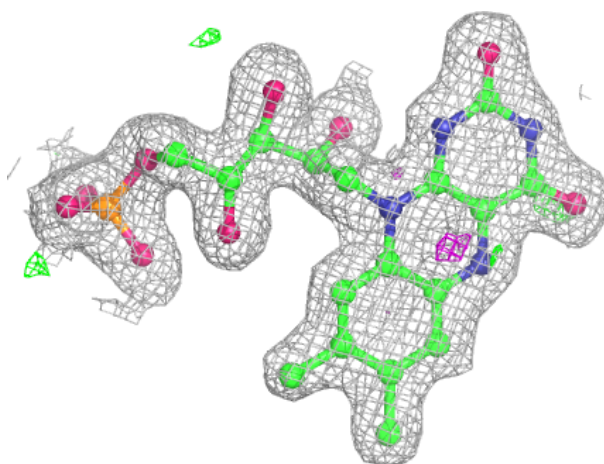
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





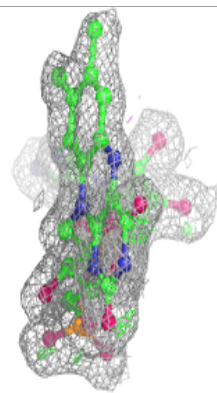
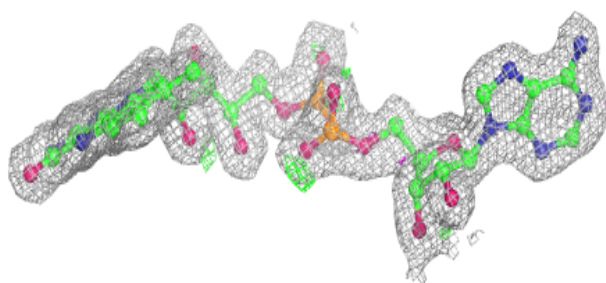
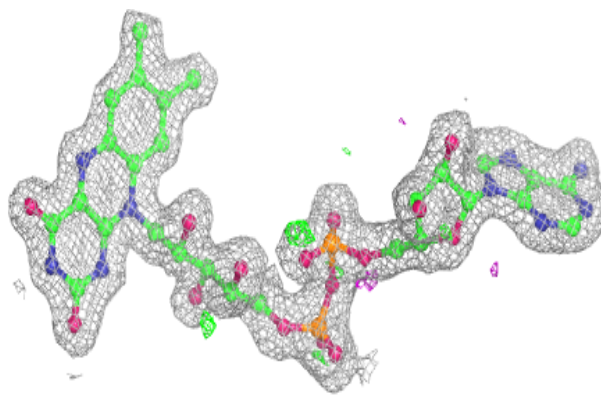
**Electron density around FMN D 1030:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

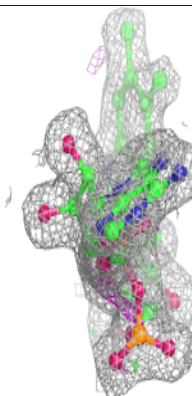
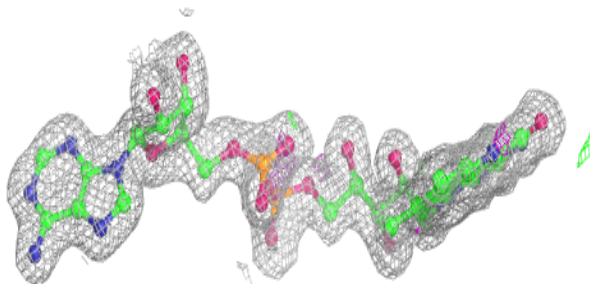
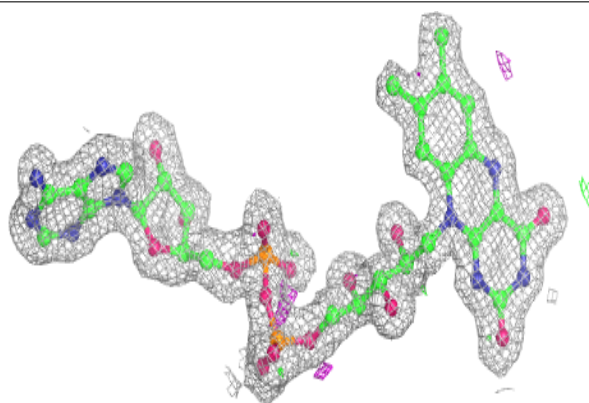


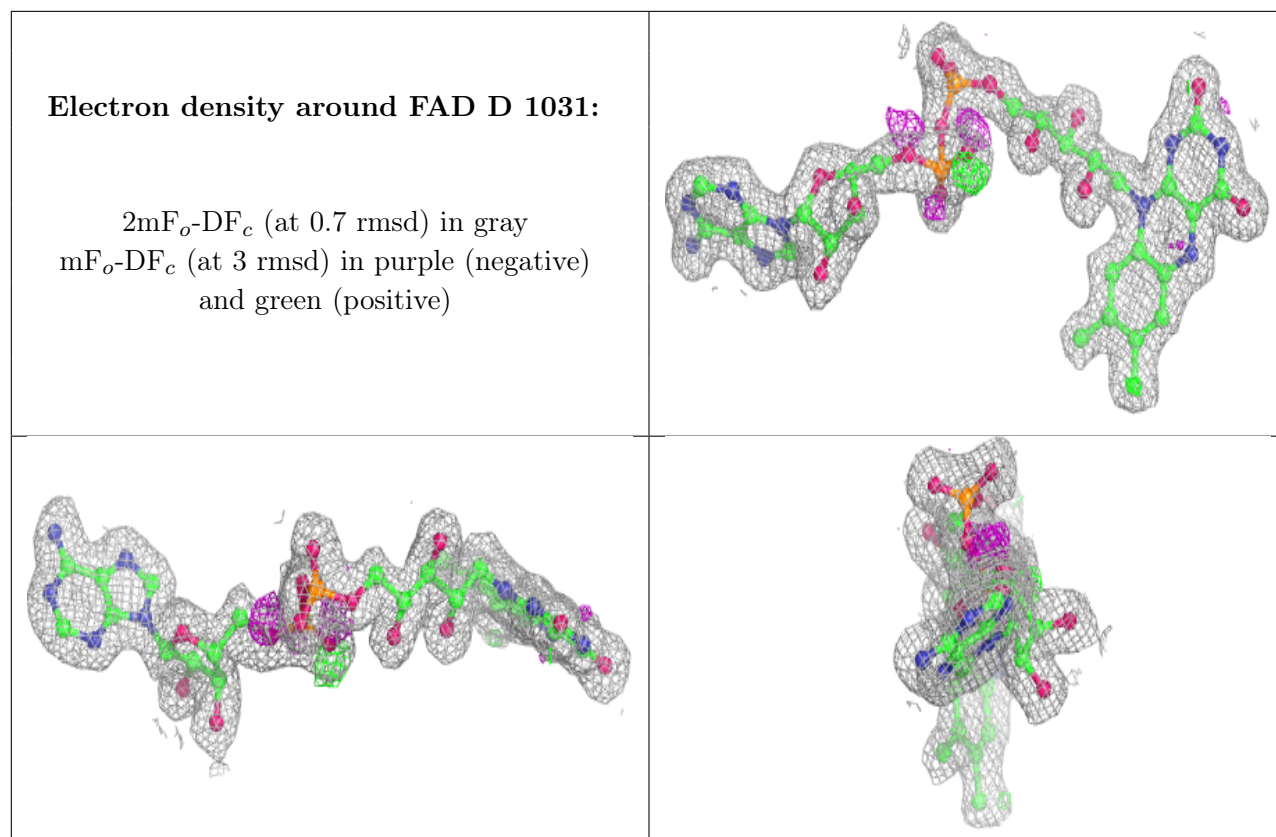
**Electron density around FAD B 1031:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around FAD C 1031:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





## 6.5 Other polymers [i](#)

There are no such residues in this entry.