



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 2, 2024 – 11:07 pm GMT

PDB ID : 2BVH
Title : Crystal structure of 6-hydroxy-D-nicotine oxidase from *Arthrobacter nicotinovorans*. Crystal Form 2 (P21)
Authors : Koetter, J.W.A.; Schulz, G.E.
Deposited on : 2005-06-28
Resolution : 2.90 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

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	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

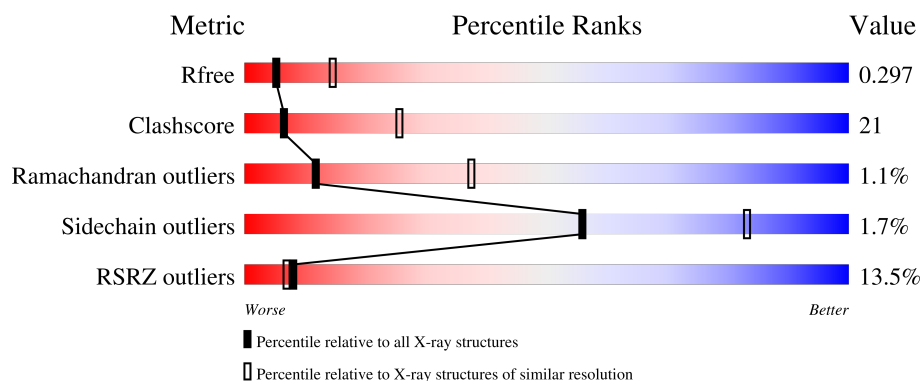
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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}	164625	2335 (2.90-2.90)
Clashscore	180529	2564 (2.90-2.90)
Ramachandran outliers	177936	2514 (2.90-2.90)
Sidechain outliers	177891	2516 (2.90-2.90)
RSRZ outliers	164620	2337 (2.90-2.90)

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 ≥ 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	459	<div> <div>11%</div> <div>64%</div> <div>34%</div> <div>..</div> </div>
1	B	459	<div> <div>12%</div> <div>63%</div> <div>34%</div> <div>..</div> </div>
1	C	459	<div> <div>17%</div> <div>64%</div> <div>34%</div> <div>..</div> </div>
1	D	459	<div> <div>14%</div> <div>63%</div> <div>34%</div> <div>..</div> </div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 13808 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.

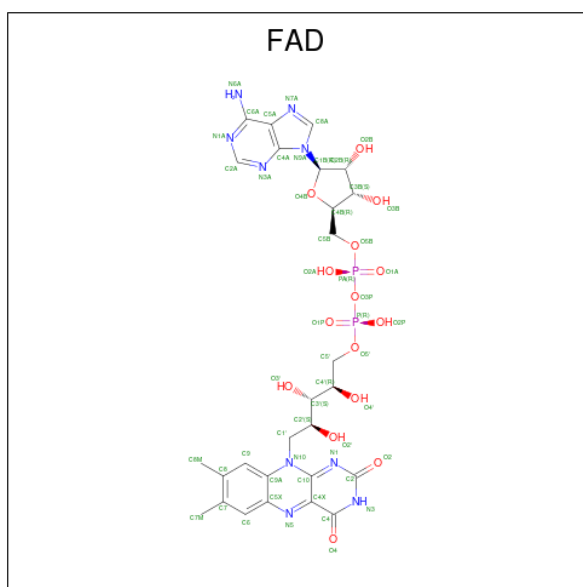
- Molecule 1 is a protein called 6-HYDROXY-D-NICOTINE OXIDASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	453	Total	C	N	O	S	0	0	0
			3399	2133	596	656	14			
1	B	453	Total	C	N	O	S	0	0	0
			3399	2133	596	656	14			
1	C	453	Total	C	N	O	S	0	0	0
			3399	2133	596	656	14			
1	D	453	Total	C	N	O	S	0	0	0
			3399	2133	596	656	14			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	433	SER	CYS	engineered mutation	UNP Q8GAG1
B	433	SER	CYS	engineered mutation	UNP Q8GAG1
C	433	SER	CYS	engineered mutation	UNP Q8GAG1
D	433	SER	CYS	engineered mutation	UNP Q8GAG1

- Molecule 2 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).

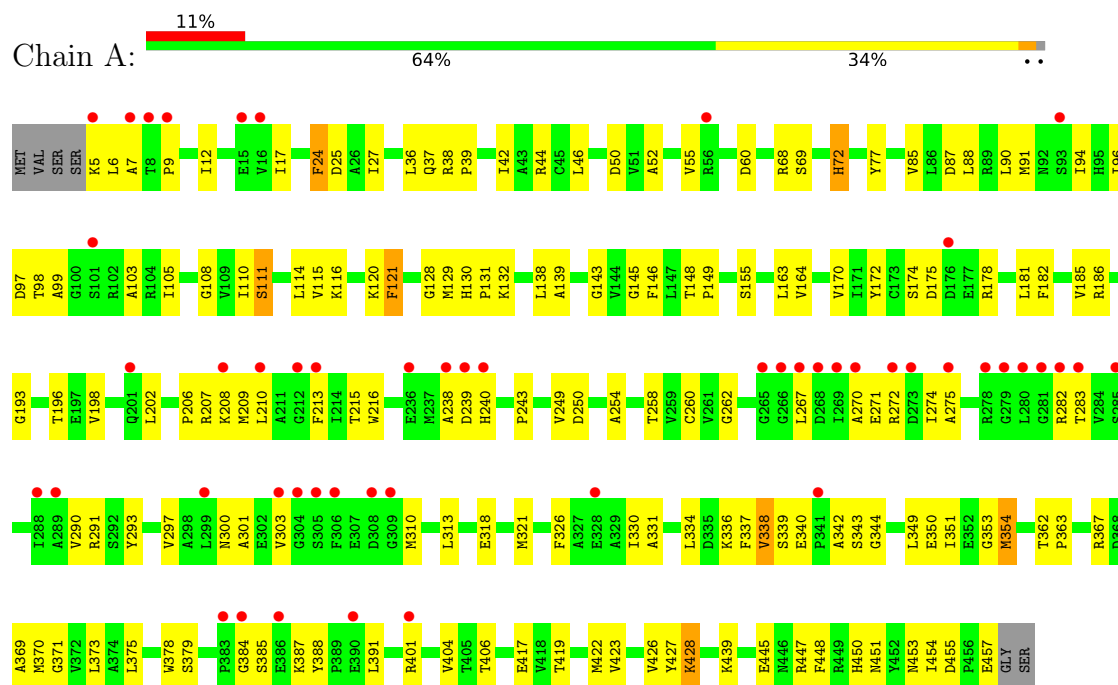


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 53	C 27	N 9	O 15	P 2	0	0
2	B	1	Total 53	C 27	N 9	O 15	P 2	0	0
2	C	1	Total 53	C 27	N 9	O 15	P 2	0	0
2	D	1	Total 53	C 27	N 9	O 15	P 2	0	0

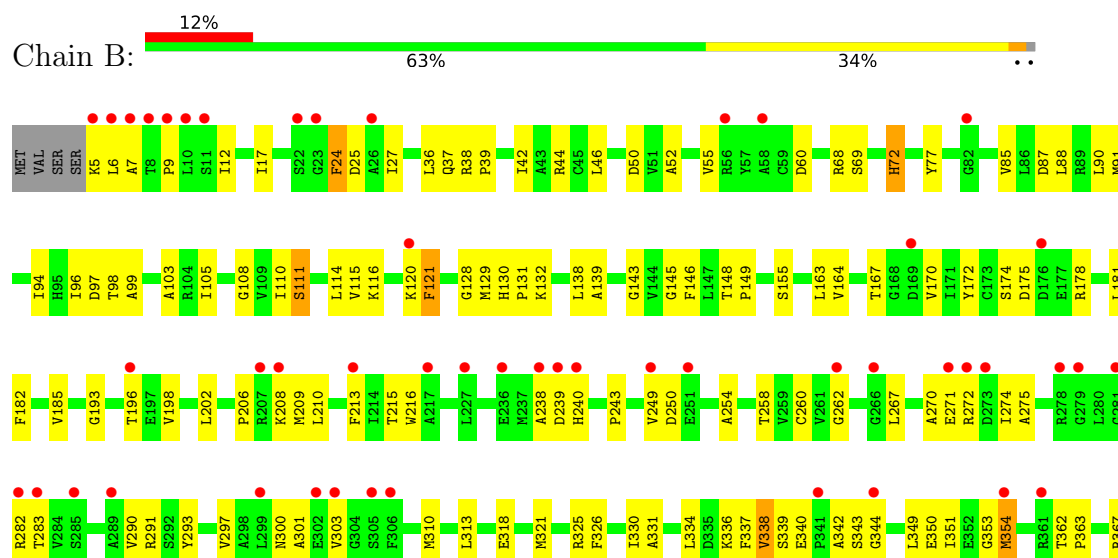
3 Residue-property plots [i](#)

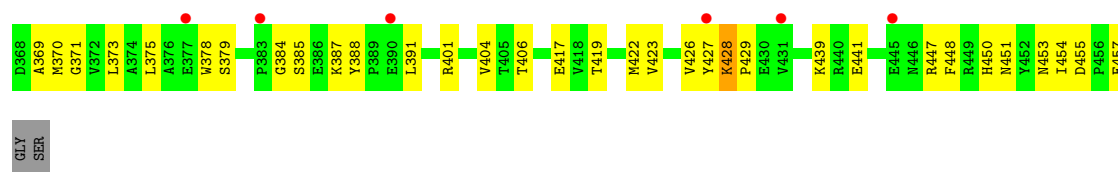
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: 6-HYDROXY-D-NICOTINE OXIDASE

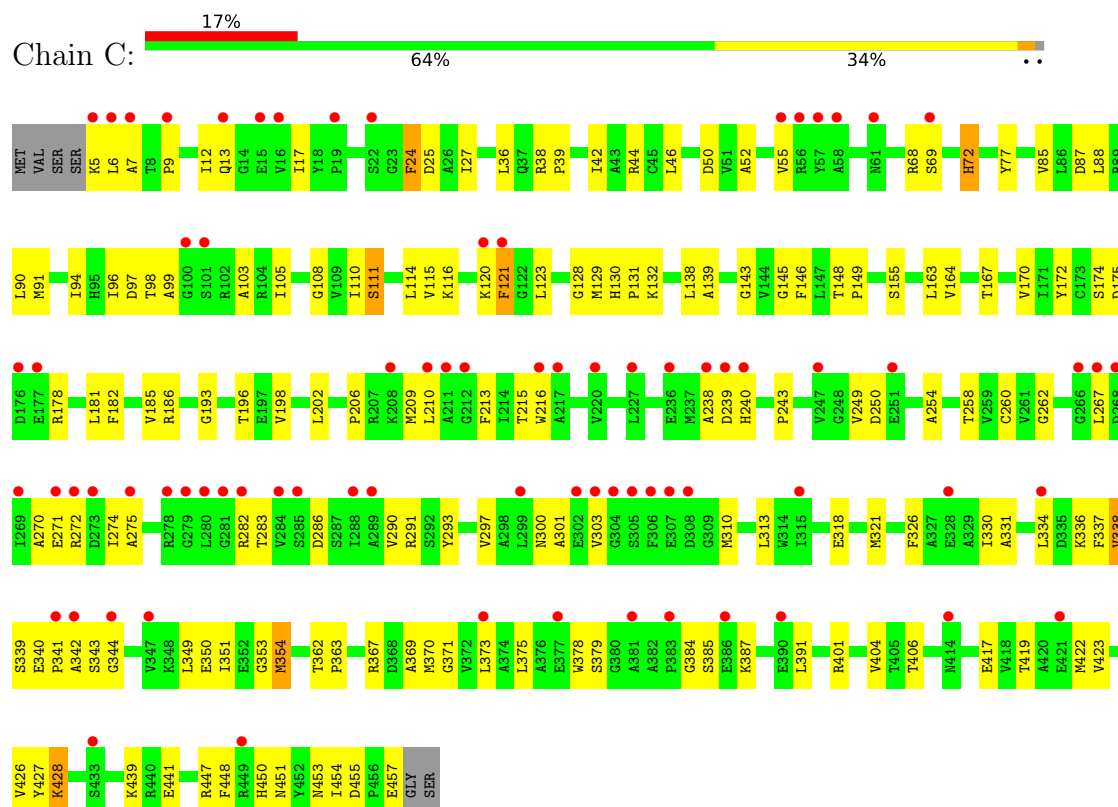


• Molecule 1: 6-HYDROXY-D-NICOTINE OXIDASE

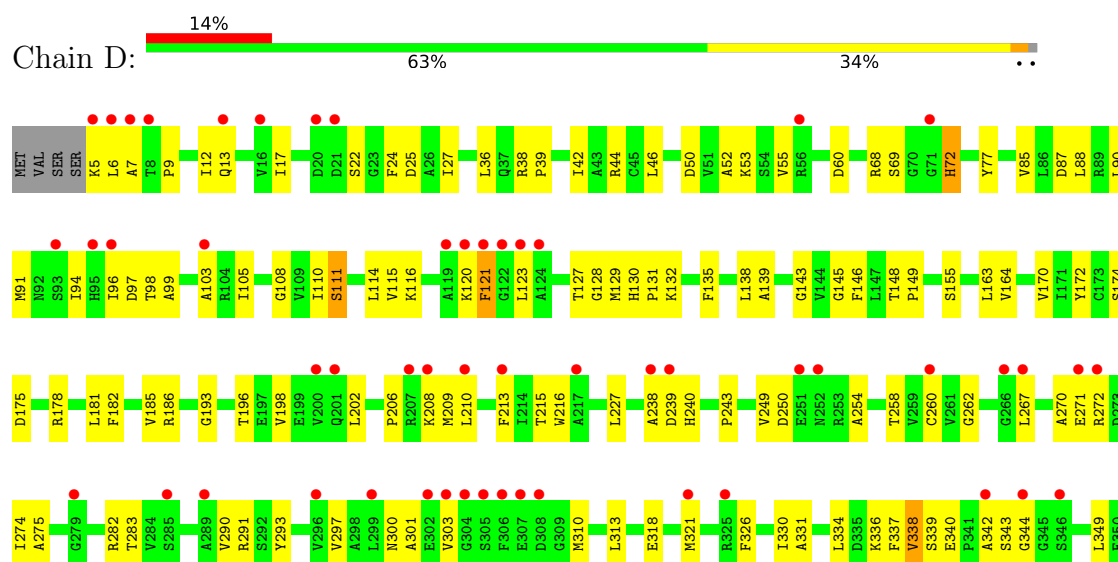


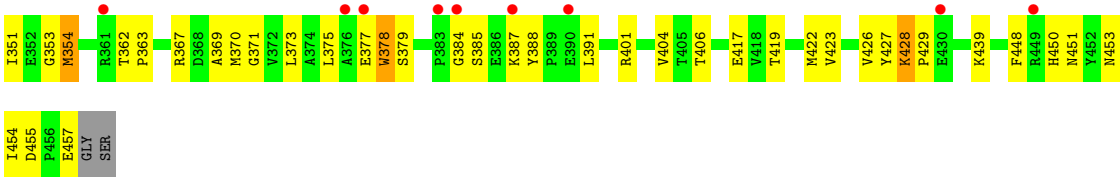


• Molecule 1: 6-HYDROXY-D-NICOTINE OXIDASE



• Molecule 1: 6-HYDROXY-D-NICOTINE OXIDASE





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	103.32Å 90.94Å 104.44Å 90.00° 100.31° 90.00°	Depositor
Resolution (Å)	44.30 – 2.90 44.30 – 2.90	Depositor EDS
% Data completeness (in resolution range)	99.7 (44.30-2.90) 99.6 (44.30-2.90)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.16 (at 2.69Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.274 , 0.297 0.274 , 0.297	Depositor DCC
R_{free} test set	2134 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	42.2	Xtriage
Anisotropy	0.385	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 40.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.024 for l,-k,h	Xtriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	13808	wwPDB-VP
Average B, all atoms (Å ²)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.05% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: 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	0.43	0/3465	0.69	2/4706 (0.0%)
1	B	0.43	0/3465	0.69	2/4706 (0.0%)
1	C	0.43	0/3465	0.69	2/4706 (0.0%)
1	D	0.43	0/3465	0.69	2/4706 (0.0%)
All	All	0.43	0/13860	0.69	8/18824 (0.0%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	163	LEU	CA-CB-CG	5.47	127.87	115.30
1	A	163	LEU	CA-CB-CG	5.46	127.86	115.30
1	B	163	LEU	CA-CB-CG	5.46	127.86	115.30
1	C	163	LEU	CA-CB-CG	5.46	127.85	115.30
1	C	262	GLY	N-CA-C	-5.12	100.29	113.10
1	A	262	GLY	N-CA-C	-5.12	100.31	113.10
1	B	262	GLY	N-CA-C	-5.11	100.32	113.10
1	D	262	GLY	N-CA-C	-5.11	100.32	113.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3399	0	3344	162	2
1	B	3399	0	3344	149	0
1	C	3399	0	3344	144	2
1	D	3399	0	3344	159	1
2	A	53	0	30	7	0
2	B	53	0	30	7	0
2	C	53	0	30	7	0
2	D	53	0	30	7	0
All	All	13808	0	13496	584	3

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 21.

All (584) 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:C:441:GLU:HG3	1:D:7:ALA:HB1	1.31	1.09
1:C:441:GLU:HG3	1:D:7:ALA:CB	1.84	1.07
1:A:7:ALA:CB	1:B:441:GLU:HA	1.98	0.93
1:A:282:ARG:HE	1:A:283:THR:N	1.67	0.92
1:C:282:ARG:HE	1:C:283:THR:N	1.67	0.91
1:A:120:LYS:CA	1:D:53:LYS:HE2	2.01	0.91
1:D:282:ARG:HE	1:D:283:THR:N	1.67	0.91
1:B:282:ARG:HE	1:B:283:THR:N	1.67	0.90
1:A:72:HIS:CE1	2:A:600:FAD:HM71	2.13	0.83
1:C:72:HIS:CE1	2:C:600:FAD:HM71	2.13	0.83
1:D:72:HIS:CE1	2:D:600:FAD:HM71	2.13	0.83
1:B:72:HIS:CE1	2:B:600:FAD:HM71	2.13	0.83
1:A:120:LYS:HB3	1:D:53:LYS:HE2	1.59	0.83
1:A:120:LYS:CB	1:D:53:LYS:HE2	2.10	0.81
1:A:207:ARG:NH1	1:D:13:GLN:HG2	1.97	0.79
1:C:167:THR:HG22	1:D:60:ASP:HB3	1.65	0.79
1:A:120:LYS:HB3	1:D:53:LYS:CE	2.14	0.78
1:D:210:LEU:HD12	1:D:270:ALA:HB1	1.67	0.76
1:B:210:LEU:HD12	1:B:270:ALA:HB1	1.67	0.76
1:C:210:LEU:HD12	1:C:270:ALA:HB1	1.67	0.76
1:B:282:ARG:HA	1:B:282:ARG:NE	2.01	0.75
1:C:282:ARG:HA	1:C:282:ARG:NE	2.01	0.75
1:A:282:ARG:HA	1:A:282:ARG:NE	2.01	0.75
1:A:7:ALA:HB1	1:B:441:GLU:HA	1.69	0.74
1:C:441:GLU:HG3	1:D:7:ALA:HB2	1.70	0.74
1:A:427:TYR:O	1:A:428:LYS:HB2	1.88	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:282:ARG:NE	1:D:282:ARG:HA	2.01	0.74
1:A:210:LEU:HD12	1:A:270:ALA:HB1	1.67	0.73
1:B:271:GLU:HA	1:B:271:GLU:OE1	1.88	0.73
1:A:373:LEU:HG	1:A:375:LEU:CD1	2.18	0.73
1:B:373:LEU:HG	1:B:375:LEU:CD1	2.18	0.73
1:C:373:LEU:HG	1:C:375:LEU:CD1	2.18	0.73
1:C:427:TYR:O	1:C:428:LYS:HB2	1.88	0.73
1:D:427:TYR:O	1:D:428:LYS:HB2	1.88	0.72
1:B:427:TYR:O	1:B:428:LYS:HB2	1.88	0.72
1:C:98:THR:HG23	1:C:121:PHE:HD1	1.55	0.72
1:D:373:LEU:HG	1:D:375:LEU:CD1	2.19	0.72
1:A:98:THR:HG23	1:A:121:PHE:HD1	1.55	0.72
1:C:271:GLU:OE1	1:C:271:GLU:HA	1.88	0.72
1:A:271:GLU:OE1	1:A:271:GLU:HA	1.88	0.72
1:C:250:ASP:OD2	1:C:254:ALA:HB3	1.90	0.71
1:D:422:MET:O	1:D:426:VAL:HG23	1.91	0.71
1:B:98:THR:HG23	1:B:121:PHE:HD1	1.55	0.71
1:B:250:ASP:OD2	1:B:254:ALA:HB3	1.90	0.71
1:A:422:MET:O	1:A:426:VAL:HG23	1.91	0.71
1:C:422:MET:O	1:C:426:VAL:HG23	1.91	0.71
1:D:271:GLU:OE1	1:D:271:GLU:HA	1.88	0.71
1:D:131:PRO:CG	1:D:301:ALA:HB2	2.21	0.70
1:D:250:ASP:OD2	1:D:254:ALA:HB3	1.90	0.70
1:A:250:ASP:OD2	1:A:254:ALA:HB3	1.90	0.70
1:D:72:HIS:HE1	2:D:600:FAD:HM71	1.57	0.70
1:D:129:MET:HG3	1:D:145:GLY:HA2	1.73	0.70
1:A:129:MET:HG3	1:A:145:GLY:HA2	1.73	0.70
1:B:72:HIS:HE1	2:B:600:FAD:HM71	1.57	0.70
1:B:422:MET:O	1:B:426:VAL:HG23	1.91	0.70
1:B:129:MET:HG3	1:B:145:GLY:HA2	1.73	0.70
1:B:131:PRO:CG	1:B:301:ALA:HB2	2.21	0.70
1:A:131:PRO:CG	1:A:301:ALA:HB2	2.21	0.69
1:C:131:PRO:CG	1:C:301:ALA:HB2	2.21	0.69
1:D:98:THR:HG23	1:D:121:PHE:HD1	1.55	0.69
1:C:129:MET:HG3	1:C:145:GLY:HA2	1.74	0.69
1:D:331:ALA:HA	1:D:334:LEU:HD21	1.75	0.69
1:B:331:ALA:HA	1:B:334:LEU:HD21	1.75	0.69
1:A:72:HIS:HE1	2:A:600:FAD:HM71	1.57	0.68
1:A:103:ALA:HB2	1:A:202:LEU:HD11	1.76	0.68
1:C:103:ALA:HB2	1:C:202:LEU:HD11	1.76	0.68
1:A:120:LYS:HA	1:D:53:LYS:HE2	1.76	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:282:ARG:HE	1:C:282:ARG:C	1.97	0.68
1:D:131:PRO:HG3	1:D:301:ALA:HB2	1.76	0.68
1:B:131:PRO:HG3	1:B:301:ALA:HB2	1.76	0.67
1:B:282:ARG:HE	1:B:282:ARG:CA	2.08	0.67
1:B:103:ALA:HB2	1:B:202:LEU:HD11	1.76	0.67
1:A:282:ARG:HE	1:A:282:ARG:C	1.97	0.67
1:A:331:ALA:HA	1:A:334:LEU:HD21	1.75	0.67
1:A:131:PRO:HG3	1:A:301:ALA:HB2	1.76	0.67
1:C:331:ALA:HA	1:C:334:LEU:HD21	1.74	0.67
1:D:103:ALA:HB2	1:D:202:LEU:HD11	1.76	0.67
1:D:282:ARG:HE	1:D:283:THR:H	1.43	0.67
1:A:105:ILE:CD1	1:A:114:LEU:HD22	2.25	0.67
1:A:282:ARG:HE	1:A:282:ARG:CA	2.08	0.67
1:C:105:ILE:CD1	1:C:114:LEU:HD22	2.25	0.67
1:C:131:PRO:HG3	1:C:301:ALA:HB2	1.76	0.67
1:C:282:ARG:HE	1:C:283:THR:H	1.43	0.67
1:B:282:ARG:HE	1:B:282:ARG:C	1.97	0.66
1:A:282:ARG:HH21	1:A:283:THR:H	1.43	0.66
1:D:282:ARG:HE	1:D:282:ARG:C	1.97	0.66
1:C:282:ARG:HE	1:C:282:ARG:CA	2.08	0.66
1:B:282:ARG:HH21	1:B:283:THR:H	1.44	0.66
1:D:282:ARG:HE	1:D:282:ARG:CA	2.08	0.66
1:A:282:ARG:HE	1:A:283:THR:H	1.43	0.66
1:C:441:GLU:O	1:D:7:ALA:HB3	1.95	0.66
1:D:282:ARG:HH21	1:D:283:THR:H	1.44	0.66
1:B:282:ARG:HE	1:B:283:THR:H	1.43	0.66
1:C:72:HIS:HE1	2:C:600:FAD:HM71	1.57	0.66
1:C:105:ILE:HD13	1:C:114:LEU:HD22	1.78	0.66
1:D:105:ILE:CD1	1:D:114:LEU:HD22	2.25	0.66
1:D:105:ILE:HD13	1:D:114:LEU:HD22	1.78	0.65
1:C:282:ARG:HH21	1:C:283:THR:H	1.44	0.65
1:B:105:ILE:CD1	1:B:114:LEU:HD22	2.25	0.65
1:A:207:ARG:HH11	1:D:13:GLN:HG2	1.61	0.65
1:B:105:ILE:HD13	1:B:114:LEU:HD22	1.78	0.64
1:A:105:ILE:HD13	1:A:114:LEU:HD22	1.78	0.64
1:C:441:GLU:CG	1:D:7:ALA:HB1	2.19	0.64
1:D:373:LEU:HG	1:D:375:LEU:HD11	1.80	0.64
1:A:282:ARG:NE	1:A:282:ARG:CA	2.61	0.64
1:B:282:ARG:NE	1:B:282:ARG:CA	2.61	0.64
1:C:282:ARG:NE	1:C:282:ARG:CA	2.61	0.64
1:B:373:LEU:HG	1:B:375:LEU:HD11	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:LYS:CB	1:D:53:LYS:CE	2.74	0.63
1:A:373:LEU:HG	1:A:375:LEU:HD11	1.80	0.63
1:D:282:ARG:NE	1:D:282:ARG:CA	2.61	0.63
1:A:91:MET:HE1	1:A:196:THR:HB	1.81	0.63
1:A:120:LYS:O	1:D:53:LYS:HE2	1.98	0.63
1:B:267:LEU:HA	1:B:270:ALA:HB3	1.81	0.62
1:C:91:MET:HE1	1:C:196:THR:HB	1.81	0.62
1:B:91:MET:HE1	1:B:196:THR:HB	1.81	0.62
1:D:91:MET:HE1	1:D:196:THR:HB	1.81	0.62
1:C:373:LEU:HG	1:C:375:LEU:HD11	1.80	0.62
1:C:267:LEU:HA	1:C:270:ALA:HB3	1.81	0.61
1:D:44:ARG:NH1	1:D:87:ASP:OD2	2.34	0.61
1:C:44:ARG:NH1	1:C:87:ASP:OD2	2.34	0.61
1:A:44:ARG:NH1	1:A:87:ASP:OD2	2.34	0.61
1:C:373:LEU:HG	1:C:375:LEU:HD12	1.83	0.61
1:D:267:LEU:HA	1:D:270:ALA:HB3	1.81	0.60
1:B:44:ARG:NH1	1:B:87:ASP:OD2	2.34	0.60
1:A:90:LEU:HD22	1:C:13:GLN:OE1	2.01	0.60
1:A:267:LEU:HA	1:A:270:ALA:HB3	1.81	0.60
1:C:441:GLU:O	1:D:7:ALA:CB	2.49	0.60
1:A:340:GLU:HG3	1:A:343:SER:HB2	1.84	0.59
1:A:367:ARG:HG2	1:A:367:ARG:HH11	1.67	0.59
1:A:373:LEU:HG	1:A:375:LEU:HD12	1.83	0.59
1:B:373:LEU:HG	1:B:375:LEU:HD12	1.83	0.59
1:B:367:ARG:HG2	1:B:367:ARG:HH11	1.67	0.59
1:D:373:LEU:HG	1:D:375:LEU:HD12	1.83	0.59
1:C:340:GLU:HG3	1:C:343:SER:HB2	1.84	0.59
1:B:72:HIS:CE1	2:B:600:FAD:C7M	2.86	0.59
1:A:46:LEU:HD21	1:C:13:GLN:OE1	2.03	0.59
1:A:120:LYS:HA	1:D:53:LYS:CE	2.33	0.58
1:D:367:ARG:HH11	1:D:367:ARG:HG2	1.67	0.58
1:C:121:PHE:HD2	1:C:121:PHE:N	2.02	0.58
1:A:138:LEU:C	1:A:138:LEU:HD23	2.24	0.58
1:C:367:ARG:HG2	1:C:367:ARG:HH11	1.67	0.58
1:B:282:ARG:HE	1:B:282:ARG:HA	1.66	0.58
1:A:115:VAL:HG21	1:A:297:VAL:HG11	1.86	0.57
1:A:207:ARG:HD3	1:D:13:GLN:NE2	2.19	0.57
1:D:340:GLU:HG3	1:D:343:SER:HB2	1.84	0.57
1:A:121:PHE:HD2	1:A:121:PHE:N	2.02	0.57
1:B:115:VAL:HG21	1:B:297:VAL:HG11	1.86	0.57
1:C:138:LEU:C	1:C:138:LEU:HD23	2.24	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:340:GLU:HG3	1:B:343:SER:HB2	1.84	0.57
1:A:96:ILE:HB	1:A:121:PHE:CE1	2.39	0.57
1:B:96:ILE:HB	1:B:121:PHE:CE1	2.39	0.57
1:C:318:GLU:O	1:C:406:THR:HG23	2.05	0.57
1:D:72:HIS:CE1	2:D:600:FAD:C7M	2.86	0.57
1:B:121:PHE:N	1:B:121:PHE:CD2	2.73	0.57
1:B:272:ARG:O	1:B:275:ALA:HB3	2.05	0.57
1:D:138:LEU:HD23	1:D:138:LEU:C	2.24	0.57
1:D:272:ARG:O	1:D:275:ALA:HB3	2.05	0.57
1:A:72:HIS:CE1	2:A:600:FAD:C7M	2.86	0.57
1:B:318:GLU:O	1:B:406:THR:HG23	2.05	0.57
1:B:138:LEU:C	1:B:138:LEU:HD23	2.24	0.57
1:D:115:VAL:HG21	1:D:297:VAL:HG11	1.87	0.57
1:A:318:GLU:O	1:A:406:THR:HG23	2.05	0.56
1:C:96:ILE:HB	1:C:121:PHE:CE1	2.39	0.56
1:C:272:ARG:O	1:C:275:ALA:HB3	2.05	0.56
1:C:121:PHE:N	1:C:121:PHE:CD2	2.73	0.56
1:A:121:PHE:N	1:A:121:PHE:CD2	2.73	0.56
1:D:96:ILE:HB	1:D:121:PHE:CE1	2.39	0.56
1:D:282:ARG:HE	1:D:282:ARG:HA	1.66	0.56
1:D:318:GLU:O	1:D:406:THR:HG23	2.05	0.56
1:B:121:PHE:N	1:B:121:PHE:HD2	2.02	0.56
1:C:72:HIS:CE1	2:C:600:FAD:C7M	2.86	0.56
1:C:115:VAL:HG21	1:C:297:VAL:HG11	1.86	0.56
1:D:210:LEU:HD13	1:D:274:ILE:HG13	1.88	0.56
1:D:121:PHE:N	1:D:121:PHE:HD2	2.02	0.56
1:D:249:VAL:HG22	1:D:337:PHE:HB3	1.87	0.56
1:B:210:LEU:HD13	1:B:274:ILE:HG13	1.88	0.56
1:A:272:ARG:O	1:A:275:ALA:HB3	2.05	0.56
1:A:210:LEU:HD13	1:A:274:ILE:HG13	1.88	0.56
1:C:249:VAL:HG22	1:C:337:PHE:HB3	1.87	0.56
1:B:455:ASP:OD1	1:B:457:GLU:N	2.39	0.55
1:A:216:TRP:NE1	1:A:283:THR:HG22	2.21	0.55
1:A:120:LYS:C	1:D:53:LYS:HE2	2.27	0.55
1:B:249:VAL:HG22	1:B:337:PHE:HB3	1.88	0.55
1:C:210:LEU:HD13	1:C:274:ILE:HG13	1.88	0.55
1:D:121:PHE:N	1:D:121:PHE:CD2	2.73	0.55
1:A:249:VAL:HG22	1:A:337:PHE:HB3	1.87	0.55
1:A:282:ARG:HE	1:A:282:ARG:HA	1.66	0.55
1:C:375:LEU:HD12	1:C:375:LEU:N	2.22	0.55
1:A:375:LEU:HD12	1:A:375:LEU:N	2.22	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:318:GLU:HB3	1:C:369:ALA:HB3	1.89	0.55
1:D:455:ASP:OD1	1:D:457:GLU:N	2.39	0.55
1:A:318:GLU:HB3	1:A:369:ALA:HB3	1.89	0.55
1:B:216:TRP:NE1	1:B:283:THR:HG22	2.21	0.55
1:C:216:TRP:NE1	1:C:283:THR:HG22	2.21	0.55
1:D:375:LEU:HD12	1:D:375:LEU:N	2.22	0.55
1:B:401:ARG:HG3	1:B:401:ARG:HH11	1.72	0.55
1:A:401:ARG:HG3	1:A:401:ARG:HH11	1.72	0.54
1:B:375:LEU:HD12	1:B:375:LEU:N	2.22	0.54
1:D:216:TRP:NE1	1:D:283:THR:HG22	2.21	0.54
1:A:88:LEU:O	1:A:108:GLY:HA3	2.08	0.54
1:C:39:PRO:HB3	1:C:85:VAL:HG23	1.89	0.54
1:C:401:ARG:HG3	1:C:401:ARG:HH11	1.72	0.54
1:B:97:ASP:OD1	1:B:99:ALA:HB3	2.08	0.54
1:D:88:LEU:O	1:D:108:GLY:HA3	2.08	0.54
1:D:401:ARG:HG3	1:D:401:ARG:HH11	1.73	0.54
1:A:39:PRO:HB3	1:A:85:VAL:HG23	1.89	0.54
1:C:455:ASP:OD1	1:C:457:GLU:N	2.39	0.54
1:B:300:ASN:HA	1:B:303:VAL:HG22	1.90	0.54
1:D:300:ASN:HA	1:D:303:VAL:HG22	1.90	0.54
1:D:318:GLU:HB3	1:D:369:ALA:HB3	1.89	0.54
1:B:88:LEU:O	1:B:108:GLY:HA3	2.08	0.53
1:C:300:ASN:HA	1:C:303:VAL:HG22	1.90	0.53
1:A:60:ASP:CB	1:B:167:THR:HG22	2.38	0.53
1:B:210:LEU:HD12	1:B:270:ALA:CB	2.38	0.53
1:D:97:ASP:OD1	1:D:99:ALA:HB3	2.08	0.53
1:A:97:ASP:OD1	1:A:99:ALA:HB3	2.08	0.53
1:B:120:LYS:C	1:B:121:PHE:HD2	2.12	0.53
1:A:46:LEU:HD11	1:C:13:GLN:HE22	1.74	0.53
1:C:97:ASP:OD1	1:C:99:ALA:HB3	2.08	0.53
1:C:120:LYS:C	1:C:121:PHE:HD2	2.12	0.53
1:C:342:ALA:C	1:C:344:GLY:H	2.12	0.53
1:A:60:ASP:HB3	1:B:167:THR:HG22	1.91	0.53
1:A:300:ASN:HA	1:A:303:VAL:HG22	1.90	0.53
1:A:342:ALA:C	1:A:344:GLY:H	2.12	0.53
1:D:282:ARG:NE	1:D:283:THR:N	2.49	0.53
1:B:318:GLU:HB3	1:B:369:ALA:HB3	1.89	0.53
1:D:39:PRO:HB3	1:D:85:VAL:HG23	1.89	0.53
1:D:120:LYS:C	1:D:121:PHE:HD2	2.12	0.53
1:A:120:LYS:C	1:A:121:PHE:HD2	2.12	0.53
1:B:39:PRO:HB3	1:B:85:VAL:HG23	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:88:LEU:O	1:C:108:GLY:HA3	2.08	0.53
1:A:455:ASP:OD1	1:A:457:GLU:N	2.39	0.52
1:A:5:LYS:HZ2	1:A:6:LEU:HB2	1.75	0.52
1:A:60:ASP:CG	1:B:167:THR:HG22	2.30	0.52
1:A:210:LEU:HD12	1:A:270:ALA:CB	2.38	0.52
1:D:342:ALA:C	1:D:344:GLY:H	2.12	0.52
1:B:215:THR:HG23	1:B:258:THR:OG1	2.10	0.51
1:B:342:ALA:C	1:B:344:GLY:H	2.12	0.51
1:C:282:ARG:HE	1:C:282:ARG:HA	1.66	0.51
2:C:600:FAD:O4'	2:C:600:FAD:H51A	2.10	0.51
2:B:600:FAD:O4'	2:B:600:FAD:H51A	2.10	0.51
1:C:46:LEU:HD23	1:C:90:LEU:HB3	1.92	0.51
2:D:600:FAD:H51A	2:D:600:FAD:O4'	2.10	0.51
1:A:69:SER:HB2	2:A:600:FAD:O1P	2.10	0.51
1:A:215:THR:HG23	1:A:258:THR:OG1	2.10	0.51
1:A:282:ARG:NE	1:A:283:THR:N	2.49	0.51
1:A:282:ARG:NH2	1:A:283:THR:H	2.08	0.51
1:B:282:ARG:NH2	1:B:283:THR:H	2.08	0.51
1:B:116:LYS:O	1:B:120:LYS:HG3	2.11	0.51
1:C:282:ARG:NH2	1:C:283:THR:H	2.08	0.51
1:D:282:ARG:NE	1:D:283:THR:H	2.09	0.51
1:B:69:SER:HB2	2:B:600:FAD:O1P	2.10	0.51
1:C:69:SER:HB2	2:C:600:FAD:O1P	2.10	0.51
1:A:116:LYS:O	1:A:120:LYS:HG3	2.11	0.50
1:D:282:ARG:NH2	1:D:283:THR:H	2.08	0.50
1:C:210:LEU:HD12	1:C:270:ALA:CB	2.38	0.50
1:D:116:LYS:O	1:D:120:LYS:HG3	2.11	0.50
1:D:215:THR:HG23	1:D:258:THR:OG1	2.10	0.50
1:A:98:THR:CG2	1:A:121:PHE:HD1	2.25	0.50
1:C:215:THR:HG23	1:C:258:THR:OG1	2.10	0.50
1:D:69:SER:HB2	2:D:600:FAD:O1P	2.10	0.50
1:A:46:LEU:HD23	1:A:90:LEU:HB3	1.92	0.50
1:B:451:ASN:O	1:B:453:ASN:N	2.44	0.50
1:A:451:ASN:O	1:A:453:ASN:N	2.44	0.50
1:C:451:ASN:O	1:C:453:ASN:N	2.44	0.50
2:A:600:FAD:H51A	2:A:600:FAD:O4'	2.10	0.49
1:B:46:LEU:HD23	1:B:90:LEU:HB3	1.92	0.49
1:D:148:THR:N	1:D:149:PRO:CD	2.75	0.49
1:D:451:ASN:O	1:D:453:ASN:N	2.44	0.49
1:A:143:GLY:HA2	2:A:600:FAD:O2	2.12	0.49
1:A:148:THR:N	1:A:149:PRO:CD	2.75	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:46:LEU:HD23	1:D:90:LEU:HB3	1.92	0.49
1:C:143:GLY:HA2	2:C:600:FAD:O2	2.13	0.49
1:A:445:GLU:HG3	1:B:60:ASP:O	2.12	0.49
1:D:210:LEU:HD12	1:D:270:ALA:CB	2.38	0.49
1:C:116:LYS:O	1:C:120:LYS:HG3	2.11	0.49
1:A:321:MET:HG3	1:A:404:VAL:HG12	1.94	0.49
1:B:326:PHE:O	1:B:330:ILE:HG12	2.13	0.49
1:D:326:PHE:O	1:D:330:ILE:HG12	2.13	0.49
1:A:213:PHE:CE1	1:A:260:CYS:HB2	2.48	0.49
1:A:337:PHE:O	1:A:338:VAL:HB	2.12	0.49
1:A:120:LYS:CA	1:D:53:LYS:CE	2.81	0.49
1:B:321:MET:CG	1:B:404:VAL:HA	2.43	0.49
1:C:148:THR:N	1:C:149:PRO:CD	2.75	0.49
1:D:17:ILE:HD13	1:D:27:ILE:HG13	1.95	0.49
1:A:326:PHE:O	1:A:330:ILE:HG12	2.13	0.49
1:C:5:LYS:HD2	1:C:5:LYS:C	2.33	0.49
1:C:213:PHE:CE1	1:C:260:CYS:HB2	2.48	0.49
1:D:213:PHE:CE1	1:D:260:CYS:HB2	2.48	0.49
1:D:321:MET:CG	1:D:404:VAL:HA	2.43	0.49
1:D:337:PHE:O	1:D:338:VAL:HB	2.12	0.49
1:A:17:ILE:HD13	1:A:27:ILE:HG13	1.95	0.48
1:B:148:THR:N	1:B:149:PRO:CD	2.75	0.48
1:B:321:MET:HG3	1:B:404:VAL:HG12	1.94	0.48
1:C:337:PHE:O	1:C:338:VAL:HB	2.12	0.48
1:D:143:GLY:HA2	2:D:600:FAD:O2	2.12	0.48
1:B:5:LYS:HD2	1:B:5:LYS:C	2.33	0.48
1:D:321:MET:HG3	1:D:404:VAL:HG12	1.94	0.48
1:A:336:LYS:HA	1:A:391:LEU:HD11	1.95	0.48
1:B:143:GLY:HA2	2:B:600:FAD:O2	2.13	0.48
1:C:17:ILE:HD13	1:C:27:ILE:HG13	1.95	0.48
1:C:455:ASP:C	1:C:457:GLU:H	2.17	0.48
1:B:213:PHE:CE1	1:B:260:CYS:HB2	2.48	0.48
1:A:5:LYS:C	1:A:5:LYS:HD2	2.34	0.48
1:B:455:ASP:C	1:B:457:GLU:H	2.17	0.48
1:C:321:MET:CG	1:C:404:VAL:HA	2.43	0.48
1:C:326:PHE:O	1:C:330:ILE:HG12	2.13	0.48
1:D:131:PRO:HG2	1:D:301:ALA:HB2	1.96	0.48
1:A:282:ARG:NE	1:A:283:THR:H	2.09	0.48
1:C:321:MET:HG3	1:C:404:VAL:HG12	1.94	0.48
1:A:455:ASP:C	1:A:457:GLU:H	2.17	0.48
1:B:42:ILE:HG12	1:B:85:VAL:HB	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:282:ARG:NE	1:B:283:THR:H	2.10	0.48
1:B:336:LYS:HA	1:B:391:LEU:HD11	1.95	0.48
1:B:337:PHE:O	1:B:338:VAL:HB	2.12	0.48
1:D:5:LYS:C	1:D:5:LYS:HD2	2.34	0.48
1:D:455:ASP:C	1:D:457:GLU:H	2.17	0.48
1:A:321:MET:CG	1:A:404:VAL:HA	2.43	0.48
1:C:336:LYS:HA	1:C:391:LEU:HD11	1.95	0.48
1:D:42:ILE:HG12	1:D:85:VAL:HB	1.96	0.48
1:C:282:ARG:NE	1:C:283:THR:H	2.09	0.47
1:C:72:HIS:HB2	2:C:600:FAD:O2P	2.15	0.47
1:C:310:MET:HE1	1:C:379:SER:HA	1.97	0.47
1:A:174:SER:HA	1:A:182:PHE:CD1	2.50	0.47
1:B:131:PRO:HG2	1:B:301:ALA:HB2	1.96	0.47
1:C:340:GLU:CG	1:C:343:SER:HB2	2.45	0.47
1:D:209:MET:O	1:D:290:VAL:HA	2.15	0.47
1:D:336:LYS:HA	1:D:391:LEU:HD11	1.95	0.47
1:D:340:GLU:CG	1:D:343:SER:HB2	2.45	0.47
1:C:209:MET:O	1:C:290:VAL:HA	2.15	0.47
1:A:42:ILE:HG12	1:A:85:VAL:HB	1.96	0.47
1:B:72:HIS:HB2	2:B:600:FAD:O2P	2.14	0.47
1:B:174:SER:HA	1:B:182:PHE:CD1	2.50	0.47
1:B:209:MET:O	1:B:290:VAL:HA	2.15	0.47
1:B:290:VAL:C	1:B:291:ARG:HG3	2.35	0.47
1:B:340:GLU:CG	1:B:343:SER:HB2	2.45	0.47
1:C:174:SER:HA	1:C:182:PHE:CD1	2.50	0.47
1:D:290:VAL:C	1:D:291:ARG:HG3	2.35	0.47
1:D:401:ARG:HG3	1:D:401:ARG:NH1	2.30	0.47
1:A:209:MET:O	1:A:290:VAL:HA	2.15	0.47
1:B:17:ILE:HD13	1:B:27:ILE:HG13	1.95	0.47
1:A:321:MET:HG3	1:A:404:VAL:HA	1.97	0.47
1:C:42:ILE:HG12	1:C:85:VAL:HB	1.96	0.47
1:C:172:TYR:O	1:C:178:ARG:HD2	2.15	0.47
1:D:72:HIS:HB2	2:D:600:FAD:O2P	2.15	0.47
1:D:172:TYR:O	1:D:178:ARG:HD2	2.15	0.47
1:D:174:SER:HA	1:D:182:PHE:CD1	2.50	0.47
1:C:164:VAL:HG22	1:C:170:VAL:HG22	1.97	0.46
1:C:401:ARG:HG3	1:C:401:ARG:NH1	2.30	0.46
1:B:98:THR:CG2	1:B:121:PHE:HD1	2.25	0.46
1:B:401:ARG:HG3	1:B:401:ARG:NH1	2.30	0.46
1:C:131:PRO:HG2	1:C:301:ALA:HB2	1.96	0.46
1:C:290:VAL:C	1:C:291:ARG:HG3	2.35	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:52:ALA:O	1:B:55:VAL:HG22	2.15	0.46
1:B:321:MET:HG3	1:B:404:VAL:HA	1.97	0.46
1:A:164:VAL:HG22	1:A:170:VAL:HG22	1.97	0.46
1:A:290:VAL:C	1:A:291:ARG:HG3	2.35	0.46
1:C:52:ALA:O	1:C:55:VAL:HG22	2.15	0.46
1:C:282:ARG:NE	1:C:283:THR:N	2.49	0.46
1:A:72:HIS:HB2	2:A:600:FAD:O2P	2.15	0.46
1:A:340:GLU:CG	1:A:343:SER:HB2	2.45	0.46
1:A:419:THR:O	1:A:423:VAL:HG23	2.16	0.46
1:C:98:THR:CG2	1:C:121:PHE:HD1	2.25	0.46
1:D:164:VAL:HG22	1:D:170:VAL:HG22	1.97	0.46
1:A:131:PRO:HG2	1:A:301:ALA:HB2	1.96	0.46
1:A:313:LEU:HD13	1:A:417:GLU:OE2	2.16	0.46
1:B:111:SER:O	1:B:115:VAL:HG23	2.16	0.46
1:A:7:ALA:HB1	1:B:441:GLU:HG3	1.98	0.46
1:A:111:SER:O	1:A:115:VAL:HG23	2.16	0.46
1:A:172:TYR:O	1:A:178:ARG:HD2	2.15	0.46
1:B:419:THR:O	1:B:423:VAL:HG23	2.16	0.46
1:D:52:ALA:O	1:D:55:VAL:HG22	2.15	0.46
1:B:164:VAL:HG22	1:B:170:VAL:HG22	1.97	0.46
1:B:367:ARG:HG2	1:B:367:ARG:NH1	2.30	0.46
1:C:313:LEU:HD13	1:C:417:GLU:OE2	2.16	0.46
1:C:385:SER:C	1:C:387:LYS:H	2.19	0.46
1:A:7:ALA:HB1	1:B:441:GLU:CA	2.40	0.46
1:D:114:LEU:HD12	1:D:114:LEU:O	2.16	0.46
1:B:313:LEU:HD13	1:B:417:GLU:OE2	2.16	0.45
1:C:111:SER:O	1:C:115:VAL:HG23	2.16	0.45
1:C:321:MET:HG3	1:C:404:VAL:HA	1.97	0.45
1:C:419:THR:O	1:C:423:VAL:HG23	2.16	0.45
1:A:52:ALA:O	1:A:55:VAL:HG22	2.16	0.45
1:A:114:LEU:O	1:A:114:LEU:HD12	2.16	0.45
1:A:385:SER:C	1:A:387:LYS:H	2.19	0.45
1:D:98:THR:CG2	1:D:121:PHE:HD1	2.25	0.45
1:D:439:LYS:HE2	1:D:454:ILE:O	2.16	0.45
1:A:401:ARG:HG3	1:A:401:ARG:NH1	2.30	0.45
1:B:385:SER:C	1:B:387:LYS:H	2.19	0.45
1:D:111:SER:O	1:D:115:VAL:HG23	2.16	0.45
1:D:313:LEU:HD13	1:D:417:GLU:OE2	2.16	0.45
1:A:60:ASP:OD1	1:B:167:THR:HA	2.16	0.45
1:B:46:LEU:CD2	1:B:90:LEU:HB3	2.47	0.45
1:D:146:PHE:HB2	1:D:293:TYR:HE1	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:321:MET:HG3	1:D:404:VAL:HA	1.97	0.45
1:C:114:LEU:O	1:C:114:LEU:HD12	2.16	0.45
1:C:367:ARG:HG2	1:C:367:ARG:NH1	2.30	0.45
1:C:384:GLY:O	1:C:387:LYS:HB3	2.17	0.45
1:D:46:LEU:CD2	1:D:90:LEU:HB3	2.47	0.45
1:D:419:THR:O	1:D:423:VAL:HG23	2.16	0.45
1:A:146:PHE:HB2	1:A:293:TYR:HE1	1.82	0.45
1:A:367:ARG:HG2	1:A:367:ARG:NH1	2.30	0.45
1:B:238:ALA:HB1	1:B:354:MET:HG3	1.99	0.45
1:C:146:PHE:HB2	1:C:293:TYR:HE1	1.82	0.45
1:C:439:LYS:HE2	1:C:454:ILE:O	2.17	0.45
1:D:238:ALA:HB1	1:D:354:MET:HG3	1.99	0.45
1:B:130:HIS:CE1	1:B:132:LYS:HB2	2.52	0.45
1:B:146:PHE:HB2	1:B:293:TYR:HE1	1.82	0.45
1:B:172:TYR:O	1:B:178:ARG:HD2	2.15	0.45
1:C:46:LEU:CD2	1:C:90:LEU:HB3	2.47	0.45
1:D:5:LYS:HZ2	1:D:6:LEU:HB2	1.81	0.45
1:A:384:GLY:O	1:A:387:LYS:HB3	2.17	0.45
1:B:114:LEU:HD12	1:B:114:LEU:O	2.16	0.45
1:B:351:ILE:HA	1:B:371:GLY:O	2.17	0.45
1:C:351:ILE:HA	1:C:371:GLY:O	2.17	0.45
1:D:384:GLY:O	1:D:387:LYS:HB3	2.17	0.45
1:A:439:LYS:HE2	1:A:454:ILE:O	2.16	0.45
1:B:97:ASP:O	1:B:97:ASP:CG	2.55	0.45
1:A:120:LYS:HB3	1:D:53:LYS:HE3	1.96	0.45
1:C:97:ASP:CG	1:C:97:ASP:O	2.55	0.45
1:A:46:LEU:CD2	1:A:90:LEU:HB3	2.47	0.44
1:A:130:HIS:CE1	1:A:132:LYS:HB2	2.52	0.44
1:C:130:HIS:CE1	1:C:132:LYS:HB2	2.52	0.44
1:B:175:ASP:OD1	1:B:175:ASP:N	2.48	0.44
1:C:175:ASP:OD1	1:C:175:ASP:N	2.48	0.44
1:D:351:ILE:HA	1:D:371:GLY:O	2.17	0.44
1:A:175:ASP:OD1	1:A:175:ASP:N	2.48	0.44
1:B:310:MET:HE1	1:B:379:SER:HA	1.99	0.44
1:B:439:LYS:HE2	1:B:454:ILE:O	2.16	0.44
1:A:238:ALA:HB1	1:A:354:MET:HG3	1.99	0.44
1:A:310:MET:HE1	1:A:379:SER:HA	1.99	0.44
1:B:105:ILE:HG13	1:B:198:VAL:HG12	2.00	0.44
1:D:130:HIS:CE1	1:D:132:LYS:HB2	2.52	0.44
1:D:367:ARG:HG2	1:D:367:ARG:NH1	2.30	0.44
1:D:385:SER:C	1:D:387:LYS:H	2.19	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:351:ILE:HA	1:A:371:GLY:O	2.17	0.44
1:A:447:ARG:HA	1:A:447:ARG:HD3	1.86	0.44
1:B:384:GLY:O	1:B:387:LYS:HB3	2.17	0.43
1:C:181:LEU:HD12	1:C:185:VAL:HG23	1.99	0.43
1:C:238:ALA:HB1	1:C:354:MET:HG3	1.99	0.43
1:D:338:VAL:HG22	1:D:339:SER:N	2.33	0.43
1:B:318:GLU:HA	1:B:370:MET:O	2.19	0.43
1:C:5:LYS:HZ2	1:C:6:LEU:HB2	1.83	0.43
1:A:342:ALA:C	1:A:344:GLY:N	2.72	0.43
1:B:181:LEU:HD12	1:B:185:VAL:HG23	1.99	0.43
1:B:338:VAL:HG22	1:B:339:SER:N	2.33	0.43
1:C:105:ILE:HG13	1:C:198:VAL:HG12	2.00	0.43
1:D:175:ASP:OD1	1:D:175:ASP:N	2.48	0.43
1:B:5:LYS:HZ2	1:B:6:LEU:HB2	1.84	0.43
1:B:5:LYS:NZ	1:B:6:LEU:HB2	2.34	0.43
1:B:282:ARG:NE	1:B:283:THR:N	2.49	0.43
1:A:181:LEU:HD12	1:A:185:VAL:HG23	1.99	0.43
1:A:338:VAL:HG22	1:A:339:SER:N	2.33	0.43
1:D:181:LEU:HD12	1:D:185:VAL:HG23	1.99	0.43
1:C:193:GLY:HA2	1:C:448:PHE:CE2	2.54	0.43
1:C:213:PHE:CE1	1:C:260:CYS:SG	3.12	0.43
1:A:193:GLY:HA2	1:A:448:PHE:CE2	2.54	0.43
1:B:193:GLY:HA2	1:B:448:PHE:CE2	2.54	0.43
1:B:213:PHE:CE1	1:B:260:CYS:SG	3.12	0.43
1:C:249:VAL:HG23	1:C:249:VAL:O	2.19	0.43
1:D:97:ASP:O	1:D:97:ASP:CG	2.55	0.43
1:C:342:ALA:C	1:C:344:GLY:N	2.72	0.43
1:D:5:LYS:NZ	1:D:6:LEU:HB2	2.34	0.43
1:D:105:ILE:HG13	1:D:198:VAL:HG12	2.00	0.42
1:D:310:MET:HE1	1:D:379:SER:HA	2.01	0.42
1:D:310:MET:HE3	1:D:379:SER:HB2	2.00	0.42
1:A:213:PHE:CE1	1:A:260:CYS:SG	3.12	0.42
1:A:239:ASP:C	1:A:240:HIS:CD2	2.93	0.42
1:D:193:GLY:HA2	1:D:448:PHE:CE2	2.54	0.42
1:D:249:VAL:HG23	1:D:249:VAL:O	2.19	0.42
1:A:36:LEU:O	1:A:38:ARG:HG2	2.19	0.42
1:A:97:ASP:O	1:A:97:ASP:CG	2.55	0.42
1:C:210:LEU:HD23	1:C:210:LEU:HA	1.89	0.42
1:D:334:LEU:HA	1:D:337:PHE:CD2	2.54	0.42
1:A:334:LEU:HA	1:A:337:PHE:CD2	2.54	0.42
1:B:36:LEU:O	1:B:38:ARG:HG2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:239:ASP:C	1:B:240:HIS:CD2	2.93	0.42
1:C:239:ASP:C	1:C:240:HIS:CD2	2.93	0.42
1:D:330:ILE:HD12	1:D:349:LEU:CD2	2.50	0.42
1:A:105:ILE:HG13	1:A:198:VAL:HG12	2.00	0.42
1:A:318:GLU:HA	1:A:370:MET:O	2.19	0.42
1:C:243:PRO:HD2	1:C:353:GLY:HA2	2.01	0.42
1:C:318:GLU:HA	1:C:370:MET:O	2.19	0.42
1:C:338:VAL:HG22	1:C:339:SER:N	2.33	0.42
1:D:36:LEU:O	1:D:38:ARG:HG2	2.19	0.42
1:A:330:ILE:HD12	1:A:349:LEU:CD2	2.50	0.42
1:B:243:PRO:HD2	1:B:353:GLY:HA2	2.01	0.42
1:C:94:ILE:HA	1:C:105:ILE:HG22	2.02	0.42
1:C:110:ILE:O	1:C:111:SER:C	2.58	0.42
1:C:340:GLU:HB2	1:C:343:SER:HB2	2.02	0.42
1:C:362:THR:HB	1:C:363:PRO:HD2	2.02	0.42
1:D:12:ILE:HB	1:D:50:ASP:CG	2.40	0.42
1:D:206:PRO:HD2	1:D:293:TYR:HB2	2.02	0.42
1:A:340:GLU:HB2	1:A:343:SER:HB2	2.02	0.42
1:C:5:LYS:NZ	1:C:6:LEU:HB2	2.34	0.42
1:C:334:LEU:HA	1:C:337:PHE:CD2	2.54	0.42
1:D:318:GLU:HA	1:D:370:MET:O	2.19	0.42
1:A:12:ILE:HB	1:A:50:ASP:CG	2.40	0.42
1:A:362:THR:HB	1:A:363:PRO:HD2	2.02	0.42
1:B:206:PRO:HD2	1:B:293:TYR:HB2	2.02	0.42
1:B:447:ARG:HA	1:B:447:ARG:HD3	1.86	0.42
1:A:139:ALA:O	1:A:155:SER:HB3	2.20	0.42
1:B:249:VAL:O	1:B:249:VAL:HG23	2.19	0.42
1:C:139:ALA:O	1:C:155:SER:HB3	2.20	0.42
1:D:340:GLU:HB2	1:D:343:SER:HB2	2.02	0.42
1:A:7:ALA:HB3	1:B:441:GLU:HA	1.92	0.42
1:B:334:LEU:HA	1:B:337:PHE:CD2	2.54	0.42
1:C:123:LEU:HD23	1:C:123:LEU:HA	1.75	0.42
1:C:330:ILE:HD12	1:C:349:LEU:CD2	2.50	0.42
1:D:77:TYR:HB3	1:D:450:HIS:O	2.20	0.42
1:D:213:PHE:CE1	1:D:260:CYS:SG	3.12	0.42
1:D:239:ASP:C	1:D:240:HIS:CD2	2.93	0.42
1:D:243:PRO:HD2	1:D:353:GLY:HA2	2.01	0.42
1:D:362:THR:HB	1:D:363:PRO:HD2	2.02	0.42
1:B:6:LEU:HG	1:B:7:ALA:N	2.35	0.41
1:B:321:MET:HE2	1:B:321:MET:HA	2.01	0.41
1:B:362:THR:HB	1:B:363:PRO:HD2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:12:ILE:HB	1:C:50:ASP:CG	2.40	0.41
1:C:36:LEU:O	1:C:38:ARG:HG2	2.19	0.41
1:C:206:PRO:HD2	1:C:293:TYR:HB2	2.02	0.41
1:A:5:LYS:NZ	1:A:6:LEU:HB2	2.34	0.41
1:A:206:PRO:HD2	1:A:293:TYR:HB2	2.02	0.41
1:B:94:ILE:HA	1:B:105:ILE:HG22	2.02	0.41
1:B:120:LYS:C	1:B:121:PHE:CD2	2.93	0.41
1:B:330:ILE:HD12	1:B:349:LEU:CD2	2.50	0.41
1:B:340:GLU:HB2	1:B:343:SER:HB2	2.02	0.41
1:B:342:ALA:C	1:B:344:GLY:N	2.72	0.41
1:B:428:LYS:HA	1:B:429:PRO:HD3	1.93	0.41
1:D:6:LEU:HG	1:D:7:ALA:N	2.35	0.41
1:D:110:ILE:O	1:D:111:SER:C	2.58	0.41
1:A:77:TYR:HB3	1:A:450:HIS:O	2.20	0.41
1:A:94:ILE:HA	1:A:105:ILE:HG22	2.02	0.41
1:A:110:ILE:O	1:A:111:SER:C	2.58	0.41
1:B:310:MET:HE3	1:B:379:SER:HB2	2.02	0.41
1:B:375:LEU:CD1	1:B:375:LEU:N	2.84	0.41
1:D:94:ILE:HA	1:D:105:ILE:HG22	2.02	0.41
1:D:342:ALA:C	1:D:344:GLY:N	2.72	0.41
1:A:6:LEU:HG	1:A:7:ALA:N	2.35	0.41
1:B:12:ILE:HB	1:B:50:ASP:CG	2.40	0.41
1:B:325:ARG:HA	1:B:325:ARG:HD2	1.91	0.41
1:C:6:LEU:HG	1:C:7:ALA:N	2.35	0.41
1:C:447:ARG:HA	1:C:447:ARG:HD3	1.86	0.41
1:D:428:LYS:HA	1:D:429:PRO:HD3	1.93	0.41
1:A:243:PRO:HD2	1:A:353:GLY:HA2	2.01	0.41
1:A:249:VAL:O	1:A:249:VAL:HG23	2.19	0.41
1:B:24:PHE:O	1:B:27:ILE:N	2.54	0.41
1:B:139:ALA:O	1:B:155:SER:HB3	2.20	0.41
1:C:24:PHE:O	1:C:27:ILE:N	2.54	0.41
1:C:77:TYR:HB3	1:C:450:HIS:O	2.20	0.41
1:D:139:ALA:O	1:D:155:SER:HB3	2.20	0.41
1:D:375:LEU:CD1	1:D:375:LEU:N	2.84	0.41
1:D:377:GLU:O	1:D:378:TRP:HB3	2.21	0.41
1:D:387:LYS:CG	1:D:388:TYR:N	2.84	0.41
1:A:24:PHE:O	1:A:27:ILE:N	2.54	0.41
1:A:128:GLY:HA3	1:A:138:LEU:HD11	2.02	0.41
1:B:77:TYR:HB3	1:B:450:HIS:O	2.20	0.41
1:B:110:ILE:O	1:B:111:SER:C	2.58	0.41
1:B:387:LYS:CG	1:B:388:TYR:N	2.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:120:LYS:C	1:D:121:PHE:CD2	2.93	0.41
1:D:227:LEU:HD12	1:D:227:LEU:HA	1.92	0.41
1:A:330:ILE:HD12	1:A:349:LEU:HD22	2.03	0.41
1:A:375:LEU:CD1	1:A:375:LEU:N	2.84	0.41
1:B:37:GLN:OE1	1:B:37:GLN:N	2.50	0.41
1:A:387:LYS:CG	1:A:388:TYR:N	2.84	0.40
1:C:340:GLU:HA	1:C:341:PRO:HD2	1.95	0.40
1:D:330:ILE:HD12	1:D:349:LEU:HD22	2.03	0.40
1:B:210:LEU:HD23	1:B:210:LEU:HA	1.89	0.40
1:C:186:ARG:O	1:C:363:PRO:HD2	2.22	0.40
1:D:208:LYS:O	1:D:267:LEU:HD21	2.21	0.40
1:A:37:GLN:OE1	1:A:37:GLN:N	2.50	0.40
1:A:208:LYS:O	1:A:267:LEU:HD21	2.21	0.40
1:D:186:ARG:O	1:D:363:PRO:HD2	2.22	0.40
1:A:186:ARG:O	1:A:363:PRO:HD2	2.22	0.40
1:A:350:GLU:OE2	1:A:375:LEU:HD21	2.22	0.40
1:B:208:LYS:O	1:B:267:LEU:HD21	2.21	0.40
1:B:350:GLU:OE2	1:B:375:LEU:HD21	2.22	0.40
1:D:127:THR:HG22	1:D:135:PHE:CD1	2.57	0.40
1:B:128:GLY:HA3	1:B:138:LEU:HD11	2.02	0.40
1:C:128:GLY:HA3	1:C:138:LEU:HD11	2.02	0.40
1:C:330:ILE:HD12	1:C:349:LEU:HD22	2.03	0.40
1:C:350:GLU:OE2	1:C:375:LEU:HD21	2.22	0.40
1:D:123:LEU:HD23	1:D:123:LEU:HA	1.75	0.40
1:D:128:GLY:HA3	1:D:138:LEU:HD11	2.02	0.40

All (3) 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:D:22:SER:OG	1:D:428:LYS:NZ[2_656]	2.07	0.13
1:A:282:ARG:CD	1:C:286:ASP:OD2[1_455]	2.13	0.07
1:A:282:ARG:CD	1:C:286:ASP:CG[1_455]	2.15	0.05

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	451/459 (98%)	404 (90%)	42 (9%)	5 (1%)	12	37
1	B	451/459 (98%)	404 (90%)	42 (9%)	5 (1%)	12	37
1	C	451/459 (98%)	404 (90%)	42 (9%)	5 (1%)	12	37
1	D	451/459 (98%)	404 (90%)	42 (9%)	5 (1%)	12	37
All	All	1804/1836 (98%)	1616 (90%)	168 (9%)	20 (1%)	12	37

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	24	PHE
1	A	338	VAL
1	B	24	PHE
1	B	338	VAL
1	C	24	PHE
1	C	338	VAL
1	D	24	PHE
1	D	338	VAL
1	A	25	ASP
1	B	25	ASP
1	C	25	ASP
1	D	25	ASP
1	A	428	LYS
1	B	428	LYS
1	C	428	LYS
1	D	428	LYS
1	A	9	PRO
1	B	9	PRO
1	C	9	PRO
1	D	9	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	353/358 (99%)	347 (98%)	6 (2%)	56	83
1	B	353/358 (99%)	347 (98%)	6 (2%)	56	83
1	C	353/358 (99%)	347 (98%)	6 (2%)	56	83
1	D	353/358 (99%)	347 (98%)	6 (2%)	56	83
All	All	1412/1432 (99%)	1388 (98%)	24 (2%)	56	83

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	68	ARG
1	A	72	HIS
1	A	111	SER
1	A	121	PHE
1	A	354	MET
1	A	378	TRP
1	B	68	ARG
1	B	72	HIS
1	B	111	SER
1	B	121	PHE
1	B	354	MET
1	B	378	TRP
1	C	68	ARG
1	C	72	HIS
1	C	111	SER
1	C	121	PHE
1	C	354	MET
1	C	378	TRP
1	D	68	ARG
1	D	72	HIS
1	D	111	SER
1	D	121	PHE
1	D	354	MET
1	D	378	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	13	GLN
1	A	450	HIS
1	B	13	GLN

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Mol	Chain	Res	Type
1	B	450	HIS
1	C	450	HIS
1	D	13	GLN
1	D	450	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

4 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	FAD	D	600	1	53,58,58	1.10	4 (7%)	68,89,89	1.37	10 (14%)
2	FAD	A	600	1	53,58,58	1.10	4 (7%)	68,89,89	1.37	10 (14%)
2	FAD	C	600	1	53,58,58	1.11	4 (7%)	68,89,89	1.37	10 (14%)
2	FAD	B	600	1	53,58,58	1.10	4 (7%)	68,89,89	1.37	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	FAD	D	600	1	-	1/30/50/50	0/6/6/6
2	FAD	A	600	1	-	1/30/50/50	0/6/6/6
2	FAD	C	600	1	-	1/30/50/50	0/6/6/6
2	FAD	B	600	1	-	1/30/50/50	0/6/6/6

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	600	FAD	C10-N1	3.54	1.40	1.33
2	B	600	FAD	C10-N1	3.54	1.40	1.33
2	D	600	FAD	C10-N1	3.52	1.40	1.33
2	A	600	FAD	C10-N1	3.51	1.40	1.33
2	C	600	FAD	PA-O1A	2.95	1.61	1.50
2	A	600	FAD	PA-O1A	2.94	1.61	1.50
2	D	600	FAD	PA-O1A	2.93	1.61	1.50
2	B	600	FAD	PA-O1A	2.93	1.61	1.50
2	D	600	FAD	C5X-N5	-2.50	1.34	1.39
2	A	600	FAD	C5X-N5	-2.47	1.34	1.39
2	B	600	FAD	C5X-N5	-2.47	1.34	1.39
2	C	600	FAD	C5X-N5	-2.46	1.34	1.39
2	C	600	FAD	O4B-C1B	2.37	1.44	1.41
2	B	600	FAD	O4B-C1B	2.35	1.44	1.41
2	A	600	FAD	O4B-C1B	2.32	1.44	1.41
2	D	600	FAD	O4B-C1B	2.32	1.44	1.41

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	600	FAD	N3A-C2A-N1A	-4.70	121.33	128.68
2	B	600	FAD	N3A-C2A-N1A	-4.68	121.36	128.68
2	A	600	FAD	N3A-C2A-N1A	-4.67	121.37	128.68
2	C	600	FAD	N3A-C2A-N1A	-4.66	121.40	128.68
2	A	600	FAD	O5'-P-O1P	3.03	120.92	109.07
2	C	600	FAD	O5'-P-O1P	3.03	120.91	109.07
2	B	600	FAD	O5'-P-O1P	3.03	120.91	109.07
2	D	600	FAD	O5'-P-O1P	3.02	120.88	109.07
2	C	600	FAD	C4-N3-C2	-2.93	120.22	125.64
2	D	600	FAD	C4-N3-C2	-2.92	120.25	125.64
2	A	600	FAD	C4-N3-C2	-2.92	120.25	125.64
2	B	600	FAD	C4-N3-C2	-2.90	120.29	125.64
2	C	600	FAD	C4X-C4-N3	2.81	120.34	113.19
2	D	600	FAD	C4X-C4-N3	2.81	120.32	113.19
2	A	600	FAD	C4X-C4-N3	2.80	120.31	113.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	600	FAD	C4X-C4-N3	2.80	120.29	113.19
2	D	600	FAD	C5X-N5-C4X	2.61	122.41	118.07
2	B	600	FAD	C5X-N5-C4X	2.60	122.40	118.07
2	C	600	FAD	P-O3P-PA	-2.59	123.92	132.83
2	A	600	FAD	P-O3P-PA	-2.59	123.94	132.83
2	A	600	FAD	C5X-N5-C4X	2.58	122.37	118.07
2	D	600	FAD	P-O3P-PA	-2.58	123.97	132.83
2	B	600	FAD	P-O3P-PA	-2.57	124.01	132.83
2	C	600	FAD	C5X-N5-C4X	2.56	122.33	118.07
2	D	600	FAD	O4-C4-C4X	-2.42	120.18	126.60
2	B	600	FAD	O4-C4-C4X	-2.40	120.22	126.60
2	C	600	FAD	O4-C4-C4X	-2.40	120.22	126.60
2	A	600	FAD	O4-C4-C4X	-2.40	120.23	126.60
2	D	600	FAD	C10-C4X-N5	-2.34	119.88	124.86
2	B	600	FAD	C10-C4X-N5	-2.33	119.91	124.86
2	A	600	FAD	C10-C4X-N5	-2.32	119.92	124.86
2	C	600	FAD	C10-C4X-N5	-2.31	119.95	124.86
2	A	600	FAD	O4B-C1B-C2B	-2.24	103.66	106.93
2	B	600	FAD	O4B-C1B-C2B	-2.24	103.66	106.93
2	C	600	FAD	O4B-C1B-C2B	-2.23	103.67	106.93
2	D	600	FAD	O4B-C1B-C2B	-2.21	103.70	106.93
2	C	600	FAD	C3B-C2B-C1B	-2.08	97.85	100.98
2	B	600	FAD	C3B-C2B-C1B	-2.06	97.88	100.98
2	A	600	FAD	C3B-C2B-C1B	-2.06	97.88	100.98
2	D	600	FAD	C3B-C2B-C1B	-2.05	97.89	100.98

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	600	FAD	C5'-O5'-P-O2P
2	B	600	FAD	C5'-O5'-P-O2P
2	C	600	FAD	C5'-O5'-P-O2P
2	D	600	FAD	C5'-O5'-P-O2P

There are no ring outliers.

4 monomers are involved in 28 short contacts:

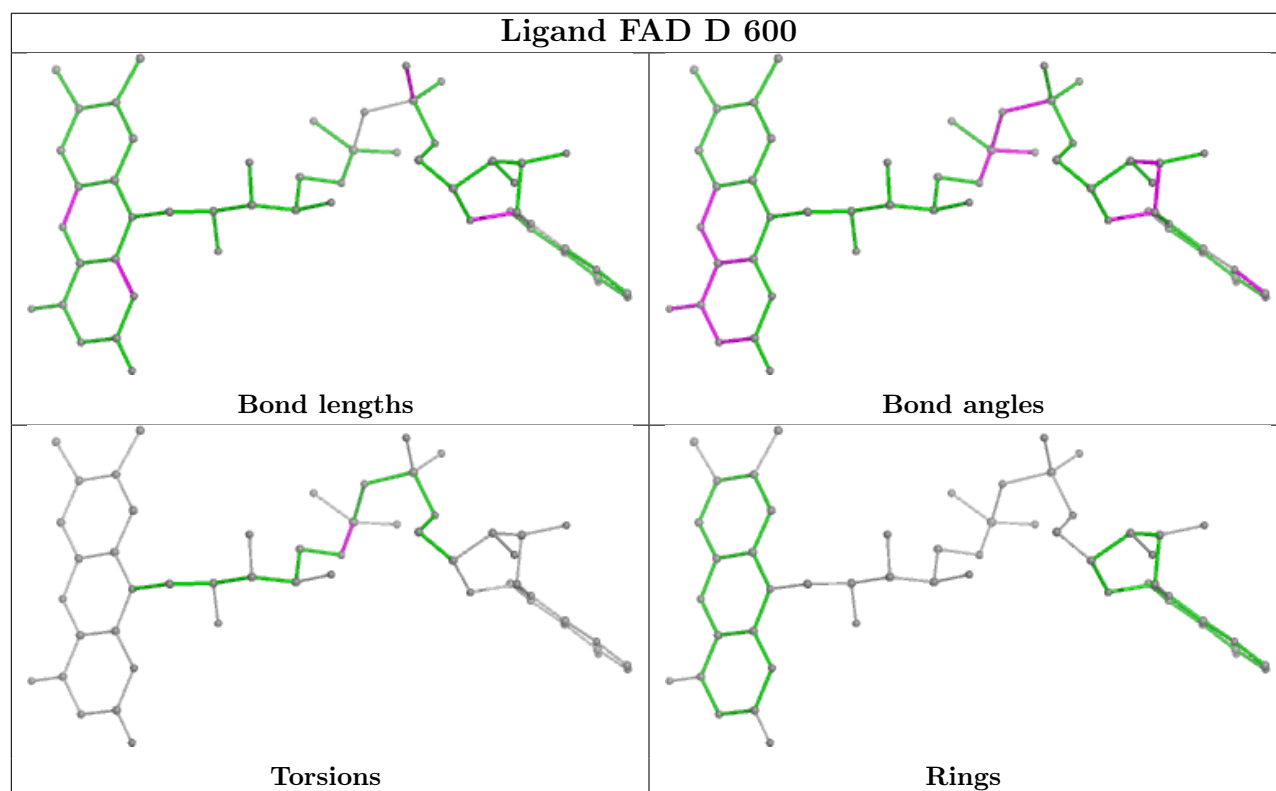
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	600	FAD	7	0
2	A	600	FAD	7	0

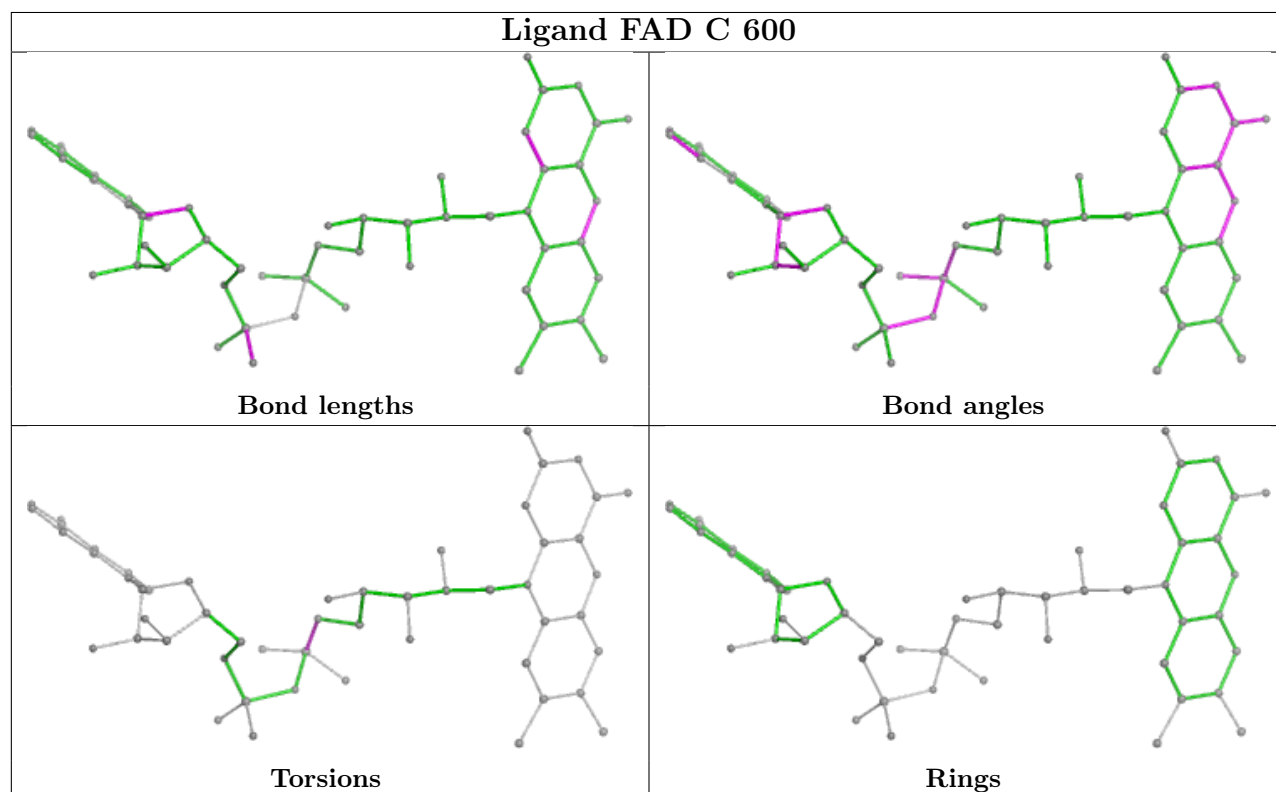
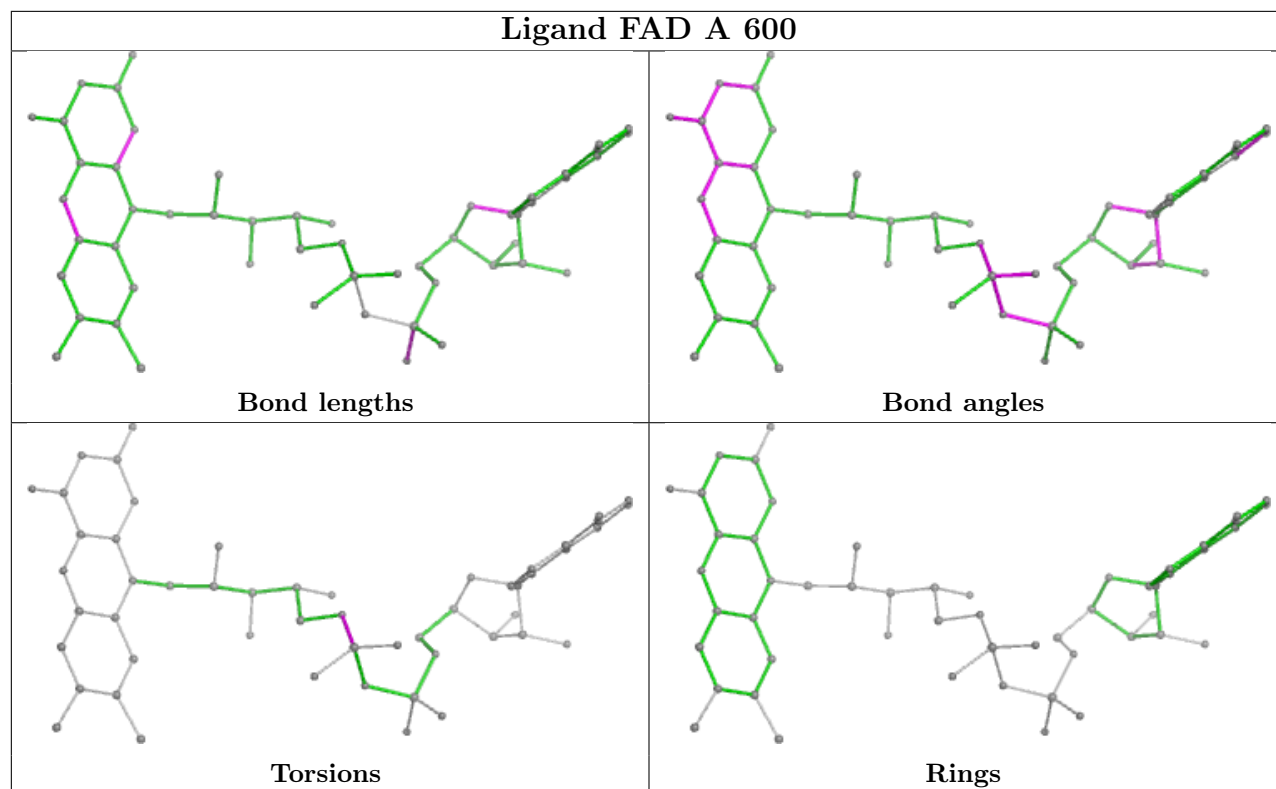
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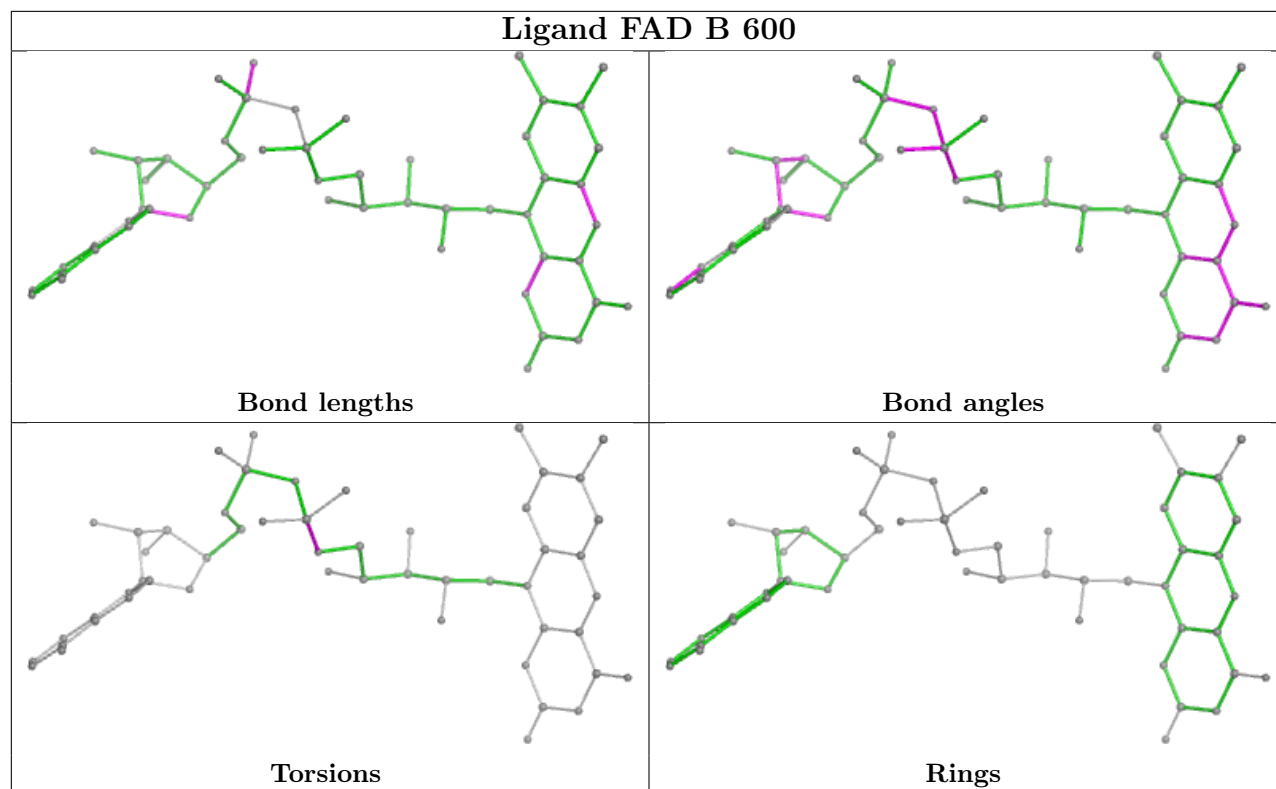
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	600	FAD	7	0
2	B	600	FAD	7	0

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 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

6.1 Protein, DNA and RNA chains

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, 95th 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 ²)	Q<0.9
1	A	453/459 (98%)	0.61	51 (11%) 11 10	8, 32, 83, 154	0
1	B	453/459 (98%)	0.97	55 (12%) 10 9	22, 46, 97, 168	0
1	C	453/459 (98%)	1.03	77 (16%) 5 4	18, 42, 92, 164	0
1	D	453/459 (98%)	1.03	62 (13%) 8 7	23, 47, 98, 169	0
All	All	1812/1836 (98%)	0.91	245 (13%) 8 7	8, 42, 95, 169	0

All (245) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	285	SER	6.3
1	C	279	GLY	5.9
1	A	279	GLY	5.8
1	A	5	LYS	5.5
1	A	383	PRO	5.4
1	D	121	PHE	5.3
1	C	282	ARG	5.3
1	B	5	LYS	5.2
1	A	266	GLY	5.1
1	A	56	ARG	5.0
1	A	212	GLY	4.9
1	C	266	GLY	4.8
1	D	5	LYS	4.8
1	B	6	LEU	4.7
1	C	289	ALA	4.7
1	A	278	ARG	4.6
1	C	272	ARG	4.6
1	D	303	VAL	4.6
1	B	279	GLY	4.5
1	A	306	PHE	4.4
1	B	7	ALA	4.3

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Mol	Chain	Res	Type	RSRZ
1	C	7	ALA	4.3
1	C	386	GLU	4.3
1	A	236	GLU	4.2
1	A	289	ALA	4.2
1	B	23	GLY	4.2
1	B	303	VAL	4.1
1	A	303	VAL	4.1
1	C	278	ARG	4.1
1	C	303	VAL	4.1
1	D	344	GLY	4.0
1	A	305	SER	4.0
1	A	9	PRO	4.0
1	B	306	PHE	4.0
1	D	306	PHE	4.0
1	C	236	GLU	3.9
1	C	5	LYS	3.9
1	D	8	THR	3.8
1	C	177	GLU	3.8
1	D	304	GLY	3.8
1	A	275	ALA	3.7
1	A	386	GLU	3.7
1	D	302	GLU	3.7
1	C	239	ASP	3.6
1	C	305	SER	3.5
1	C	302	GLU	3.5
1	C	307	GLU	3.5
1	A	239	ASP	3.4
1	B	390	GLU	3.5
1	B	251	GLU	3.4
1	C	275	ALA	3.4
1	D	325	ARG	3.4
1	D	16	VAL	3.4
1	C	433	SER	3.4
1	D	251	GLU	3.3
1	D	279	GLY	3.3
1	A	265	GLY	3.3
1	C	100	GLY	3.3
1	B	302	GLU	3.3
1	B	207	ARG	3.3
1	B	169	ASP	3.3
1	D	122	GLY	3.3
1	C	306	PHE	3.2

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Mol	Chain	Res	Type	RSRZ
1	B	278	ARG	3.2
1	B	239	ASP	3.2
1	A	210	LEU	3.2
1	A	308	ASP	3.2
1	C	238	ALA	3.2
1	D	96	ILE	3.2
1	A	272	ARG	3.2
1	C	383	PRO	3.2
1	B	240	HIS	3.2
1	D	296	VAL	3.2
1	B	10	LEU	3.2
1	D	6	LEU	3.2
1	D	383	PRO	3.2
1	D	361	ARG	3.1
1	D	7	ALA	3.1
1	C	212	GLY	3.1
1	C	390	GLU	3.1
1	D	377	GLU	3.1
1	D	119	ALA	3.1
1	C	373	LEU	3.1
1	B	305	SER	3.1
1	A	268	ASP	3.1
1	D	123	LEU	3.0
1	B	249	VAL	3.0
1	B	8	THR	3.0
1	C	267	LEU	3.0
1	D	252	ASN	3.0
1	C	299	LEU	3.0
1	C	414	ASN	3.0
1	D	217	ALA	2.9
1	C	121	PHE	2.9
1	C	449	ARG	2.9
1	A	176	ASP	2.9
1	A	280	LEU	2.9
1	B	377	GLU	2.9
1	C	271	GLU	2.9
1	C	268	ASP	2.9
1	A	8	THR	2.9
1	A	299	LEU	2.8
1	C	6	LEU	2.8
1	C	22	SER	2.8
1	D	95	HIS	2.8

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Mol	Chain	Res	Type	RSRZ
1	C	269	ILE	2.8
1	B	341	PRO	2.8
1	B	271	GLU	2.8
1	C	377	GLU	2.8
1	A	304	GLY	2.8
1	D	266	GLY	2.8
1	A	269	ILE	2.8
1	B	262	GLY	2.8
1	C	284	VAL	2.7
1	A	213	PHE	2.7
1	A	283	THR	2.7
1	D	213	PHE	2.7
1	B	9	PRO	2.7
1	C	13	GLN	2.7
1	D	305	SER	2.7
1	B	266	GLY	2.7
1	B	344	GLY	2.7
1	C	16	VAL	2.7
1	D	299	LEU	2.7
1	C	288	ILE	2.7
1	A	390	GLU	2.7
1	A	240	HIS	2.7
1	C	240	HIS	2.7
1	C	304	GLY	2.7
1	C	344	GLY	2.7
1	B	56	ARG	2.6
1	B	361	ARG	2.6
1	C	285	SER	2.6
1	D	208	LYS	2.6
1	B	282	ARG	2.6
1	D	21	ASP	2.6
1	C	342	ALA	2.6
1	D	13	GLN	2.6
1	A	341	PRO	2.6
1	A	282	ARG	2.6
1	B	176	ASP	2.6
1	A	238	ALA	2.6
1	B	208	LYS	2.6
1	C	341	PRO	2.6
1	A	16	VAL	2.6
1	B	120	LYS	2.5
1	D	239	ASP	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	15	GLU	2.5
1	D	384	GLY	2.5
1	A	7	ALA	2.5
1	D	289	ALA	2.5
1	D	201	GLN	2.5
1	C	280	LEU	2.5
1	C	247	VAL	2.4
1	D	200	VAL	2.4
1	B	289	ALA	2.4
1	C	315	ILE	2.4
1	B	285	SER	2.4
1	A	267	LEU	2.4
1	D	124	ALA	2.4
1	B	236	GLU	2.4
1	A	270	ALA	2.4
1	B	238	ALA	2.4
1	D	207	ARG	2.4
1	D	71	GLY	2.3
1	C	208	LYS	2.3
1	C	308	ASP	2.3
1	D	93	SER	2.3
1	C	217	ALA	2.3
1	D	56	ARG	2.3
1	C	19	PRO	2.3
1	D	210	LEU	2.3
1	C	220	VAL	2.3
1	C	347	VAL	2.3
1	D	390	GLU	2.3
1	D	103	ALA	2.3
1	C	61	ASN	2.3
1	A	288	ILE	2.3
1	A	328	GLU	2.3
1	C	421	GLU	2.3
1	B	26	ALA	2.3
1	C	211	ALA	2.3
1	D	20	ASP	2.3
1	D	285	SER	2.3
1	D	449	ARG	2.3
1	B	383	PRO	2.3
1	A	281	GLY	2.3
1	B	272	ARG	2.3
1	D	272	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	93	SER	2.3
1	D	321	MET	2.3
1	C	210	LEU	2.3
1	D	267	LEU	2.3
1	B	283	THR	2.3
1	A	15	GLU	2.2
1	C	328	GLU	2.2
1	D	430	GLU	2.2
1	D	120	LYS	2.2
1	D	308	ASP	2.2
1	A	101	SER	2.2
1	B	22	SER	2.2
1	B	196	THR	2.2
1	C	281	GLY	2.2
1	C	56	ARG	2.2
1	D	238	ALA	2.2
1	C	227	LEU	2.2
1	C	120	LYS	2.2
1	C	273	ASP	2.2
1	B	431	VAL	2.2
1	A	309	GLY	2.2
1	B	82	GLY	2.2
1	B	427	TYR	2.2
1	B	58	ALA	2.2
1	B	217	ALA	2.2
1	D	342	ALA	2.2
1	C	9	PRO	2.2
1	D	387	LYS	2.1
1	B	11	SER	2.1
1	A	201	GLN	2.1
1	B	354	MET	2.1
1	C	381	ALA	2.1
1	D	376	ALA	2.1
1	D	307	GLU	2.1
1	C	101	SER	2.1
1	C	251	GLU	2.1
1	D	271	GLU	2.1
1	C	55	VAL	2.1
1	A	208	LYS	2.1
1	C	176	ASP	2.1
1	D	346	SER	2.1
1	B	445	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	384	GLY	2.1
1	B	273	ASP	2.0
1	C	58	ALA	2.0
1	C	69	SER	2.0
1	C	216	TRP	2.0
1	A	401	ARG	2.0
1	D	260	CYS	2.0
1	C	334	LEU	2.0
1	A	273	ASP	2.0
1	C	57	TYR	2.0
1	B	213	PHE	2.0
1	B	227	LEU	2.0
1	B	281	GLY	2.0
1	B	299	LEU	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](#)

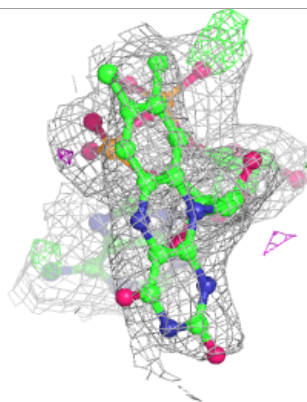
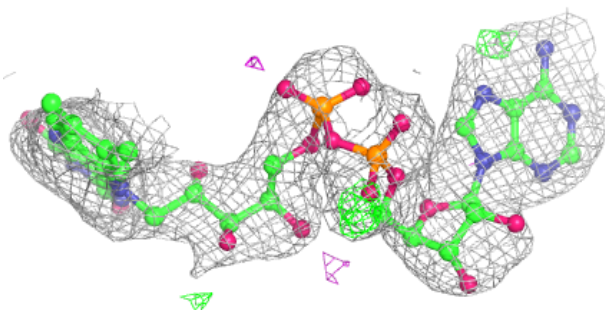
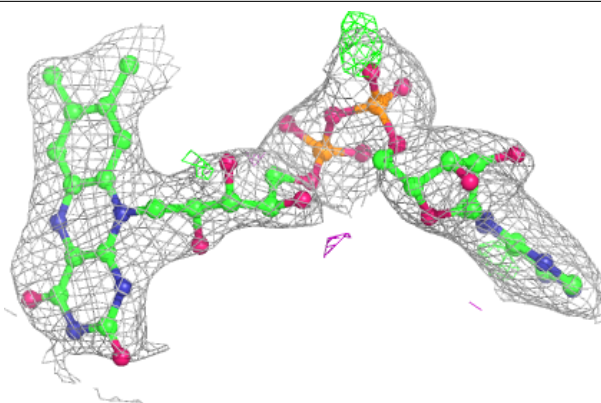
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	FAD	B	600	53/53	0.90	0.14	41,45,54,54	0
2	FAD	C	600	53/53	0.93	0.12	37,40,49,50	0
2	FAD	D	600	53/53	0.93	0.13	42,46,55,55	0
2	FAD	A	600	53/53	0.95	0.12	27,30,39,40	0

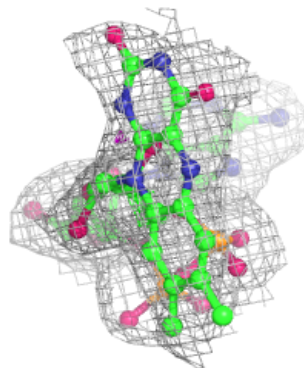
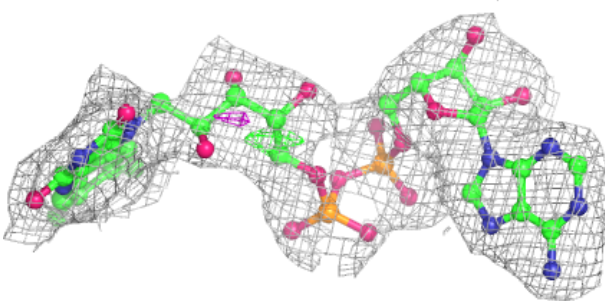
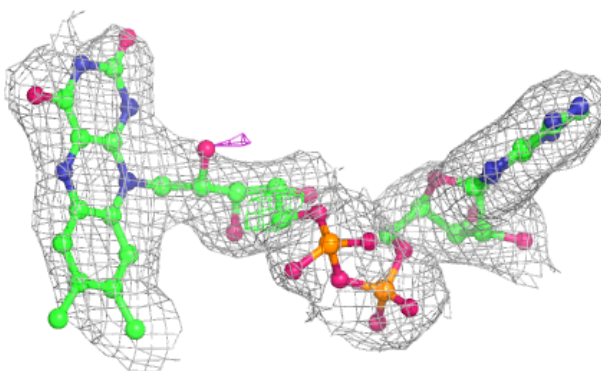
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around FAD B 600:

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

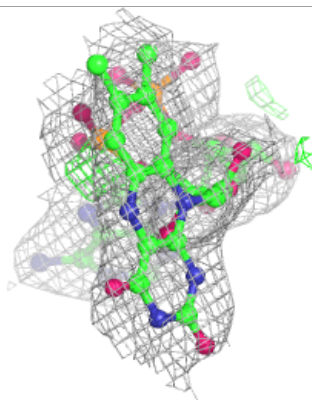
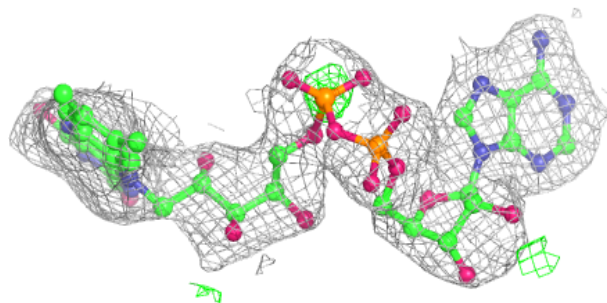
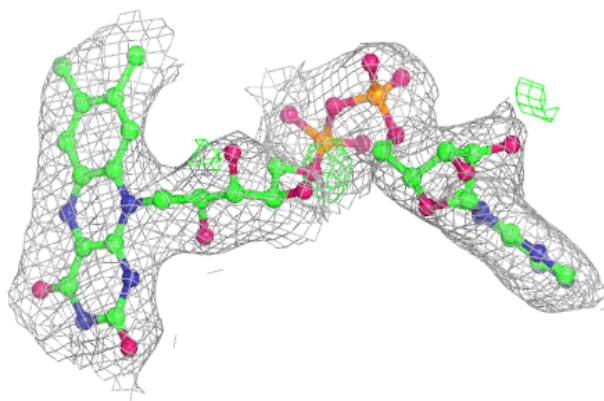
**Electron density around FAD C 600:**

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

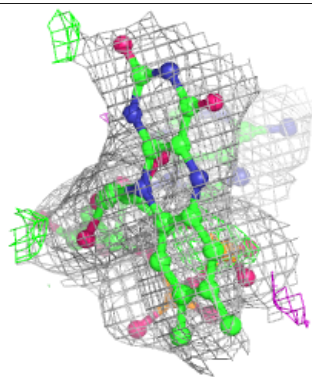
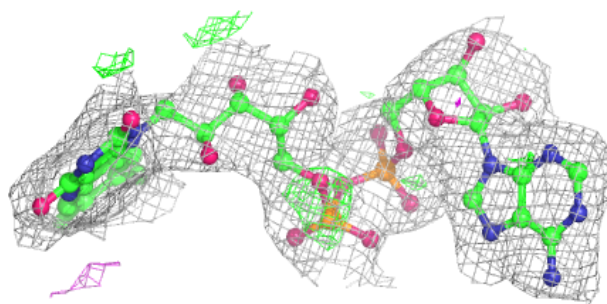
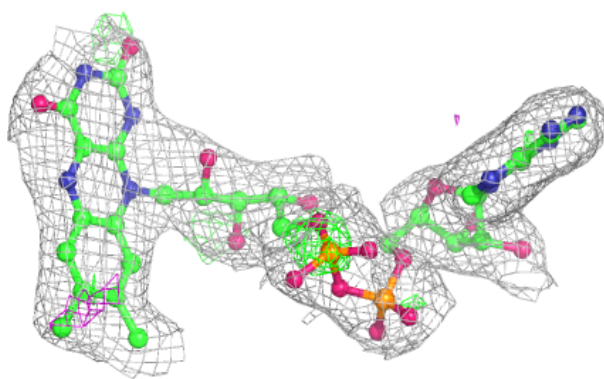


Electron density around FAD D 600:

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

**Electron density around FAD A 600:**

$2mF_o-DF_c$ (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.