



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 9, 2023 – 11:06 am GMT

PDB ID : 2J3N  
Title : X-ray structure of human thioredoxin reductase 1  
Authors : Fritz-Wolf, K.; Urig, S.; Becker, K.  
Deposited on : 2006-08-22  
Resolution : 2.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
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

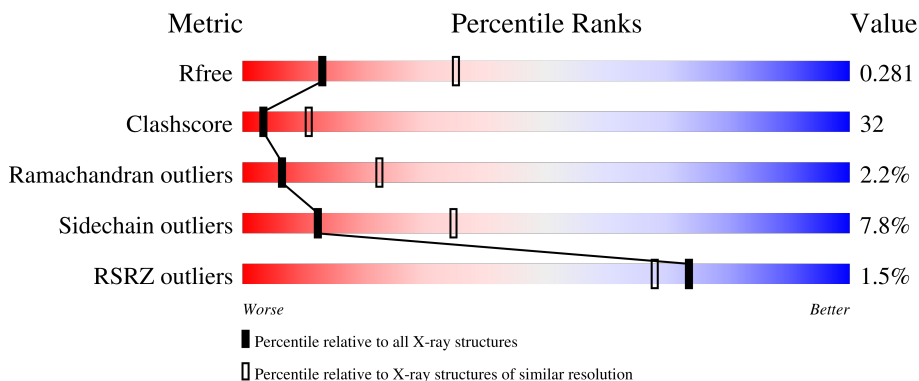
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . 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	519	
1	B	519	
1	C	519	
1	D	519	
1	E	519	

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Mol	Chain	Length	Quality of chain
1	F	519	<p>%</p> <p>48% 40% 6% 6%</p>

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	NAP	A	601	X	-	-	-
3	NAP	B	601	X	-	-	-
3	NAP	C	601	X	-	-	-

## 2 Entry composition [i](#)

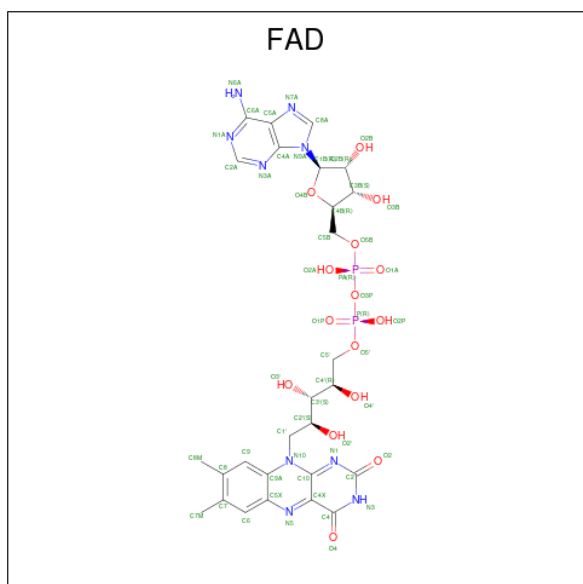
There are 5 unique types of molecules in this entry. The entry contains 23294 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 THIOREDOXIN REDUCTASE 1.

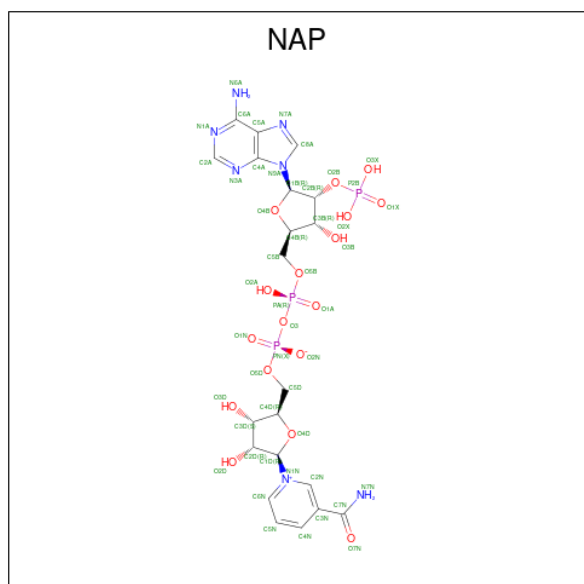
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	487	Total 3756	C 2387	N 642	O 708	S 19	0	0	1
1	B	487	Total 3760	C 2390	N 643	O 708	S 19	0	0	1
1	C	490	Total 3776	C 2397	N 645	O 713	S 21	0	0	0
1	D	491	Total 3785	C 2403	N 647	O 714	S 21	0	0	0
1	E	490	Total 3776	C 2397	N 645	O 713	S 21	0	0	0
1	F	486	Total 3751	C 2385	N 641	O 706	S 19	0	0	1

- 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	C	N	O	P	0	0
			53	27	9	15	2		
2	B	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	C	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	D	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	E	1	Total	C	N	O	P	0	0
			53	27	9	15	2		
2	F	1	Total	C	N	O	P	0	0
			53	27	9	15	2		

- Molecule 3 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula:  $C_{21}H_{28}N_7O_{17}P_3$ ).



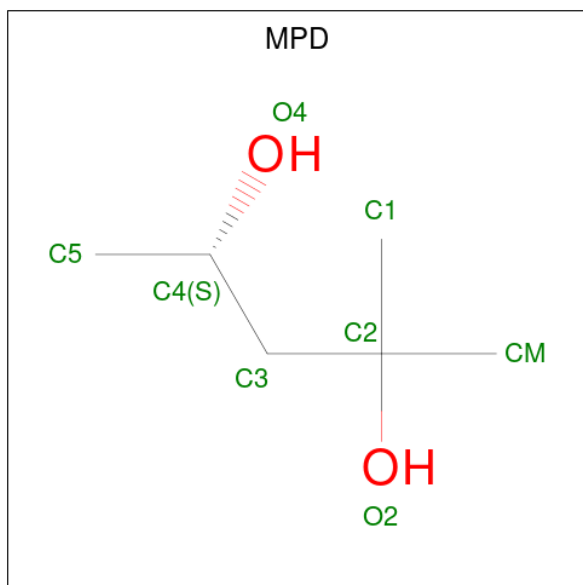
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
3	B	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
3	C	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
3	D	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
3	E	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
3	F	1	48	21	7	17	3	0	0

- Molecule 4 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: C<sub>6</sub>H<sub>14</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	A	1	8	2	0	0
4	B	1	8	2	0	0
4	B	1	8	2	0	0
4	D	1	8	2	0	0
4	F	1	8	2	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	9	9	9	0	0
5	B	9	9	9	0	0
5	C	7	7	7	0	0

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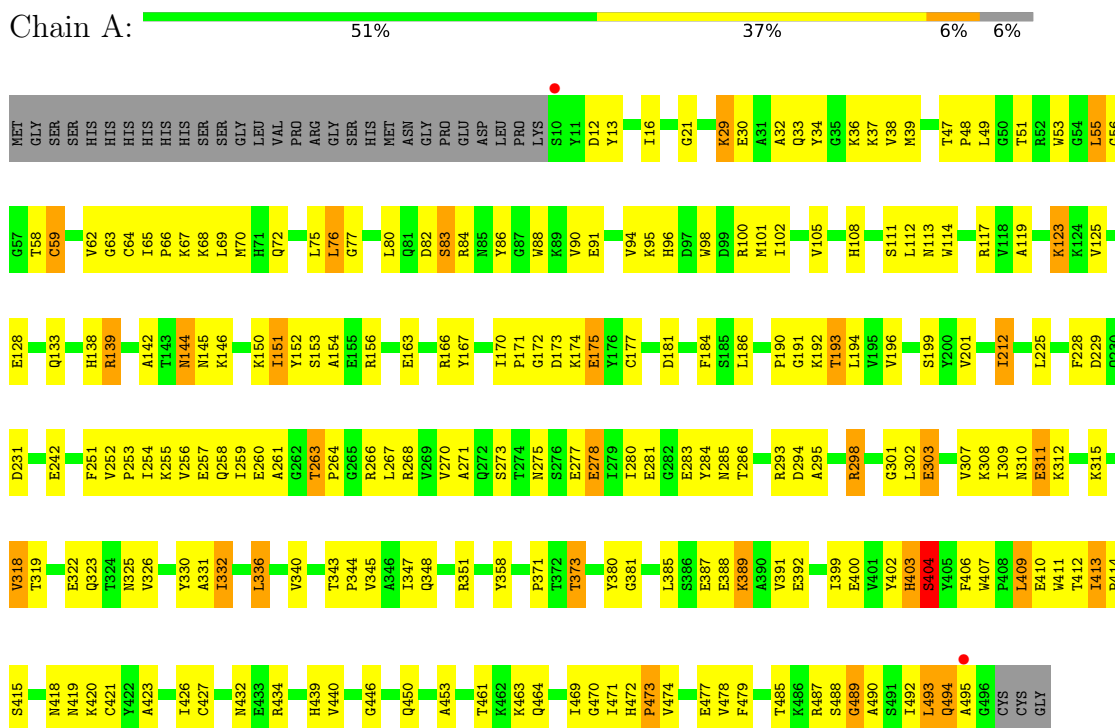
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	8	Total O 8 8	0	0
5	E	4	Total O 4 4	0	0
5	F	7	Total O 7 7	0	0

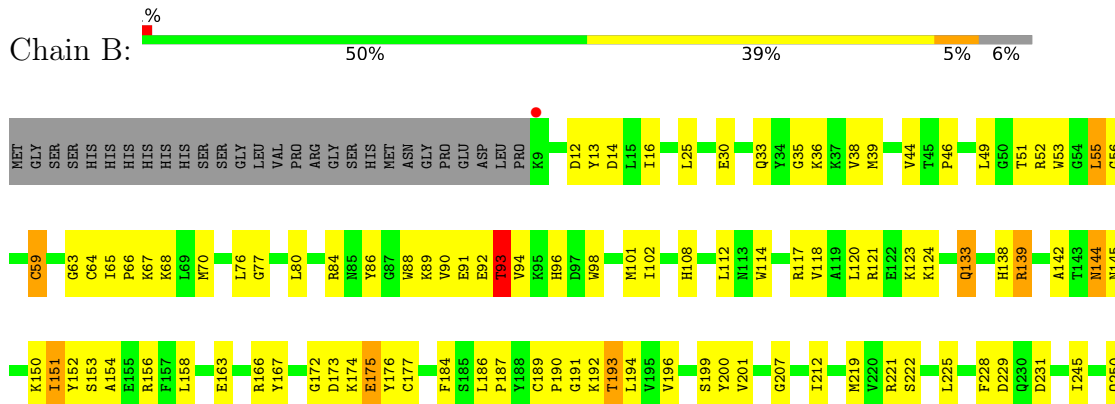
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry 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.

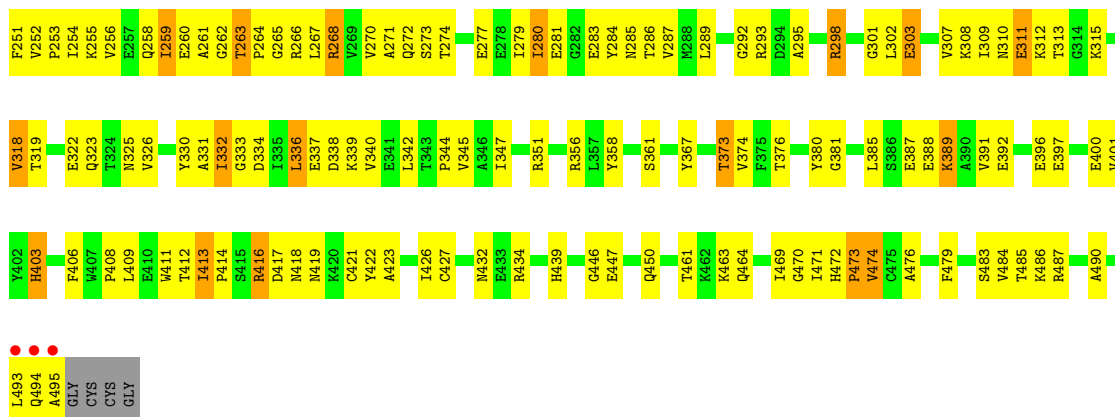
#### • Molecule 1: THIOREDOXIN REDUCTASE 1



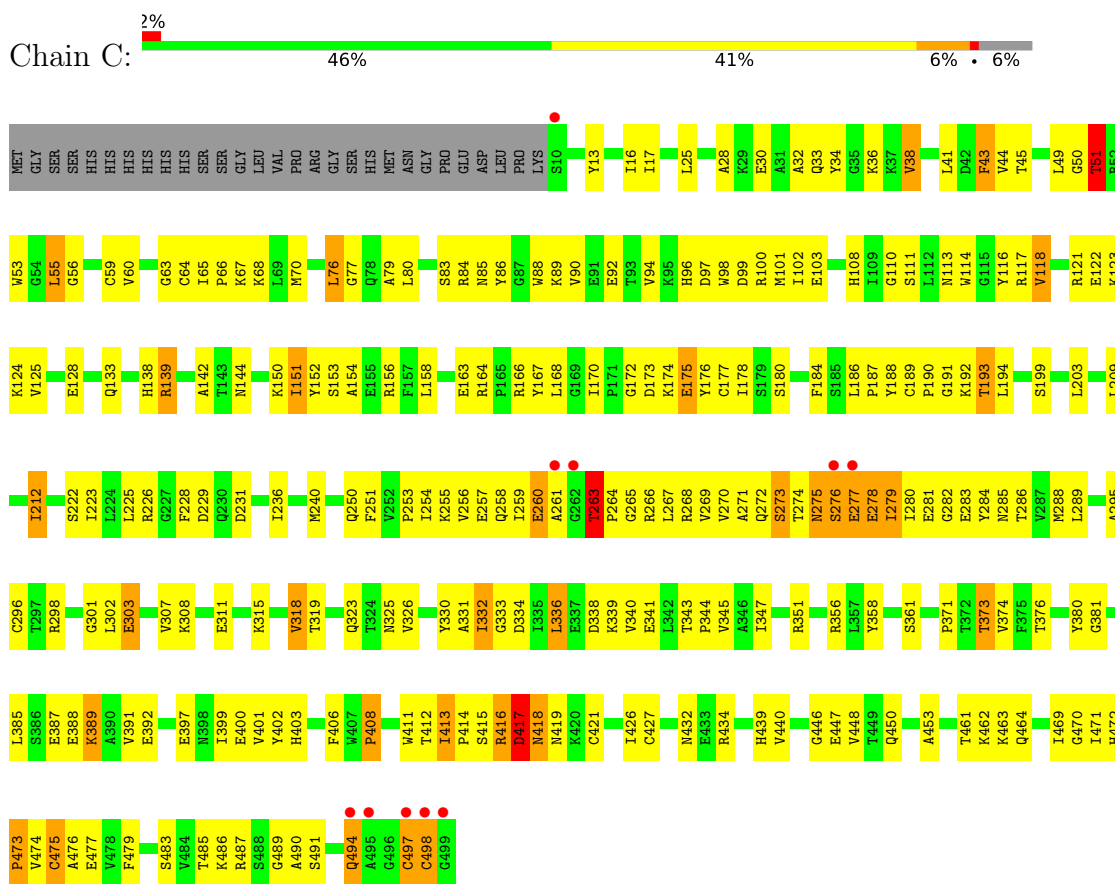
#### • Molecule 1: THIOREDOXIN REDUCTASE 1



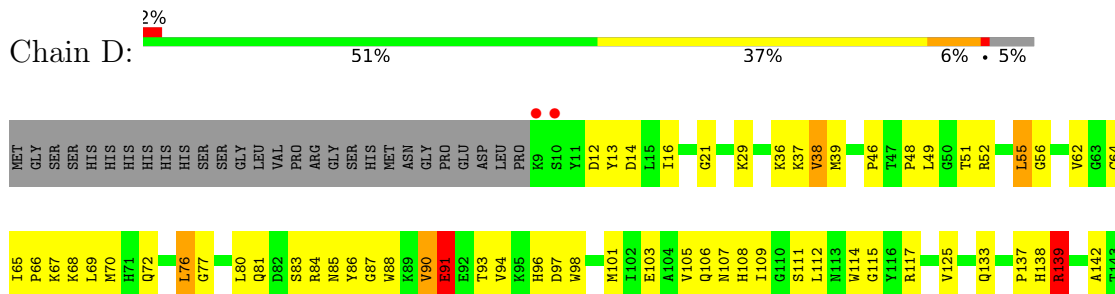


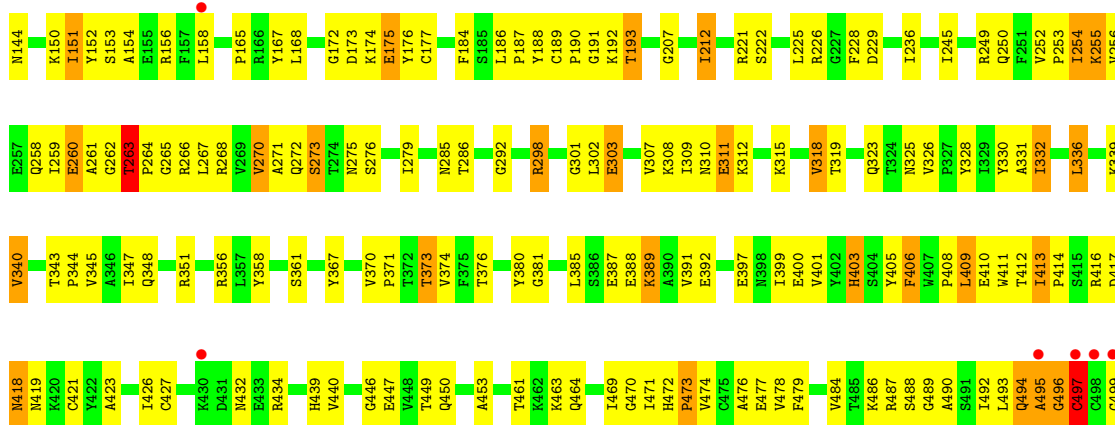


### • Molecule 1: THIOREDOXIN REDUCTASE 1

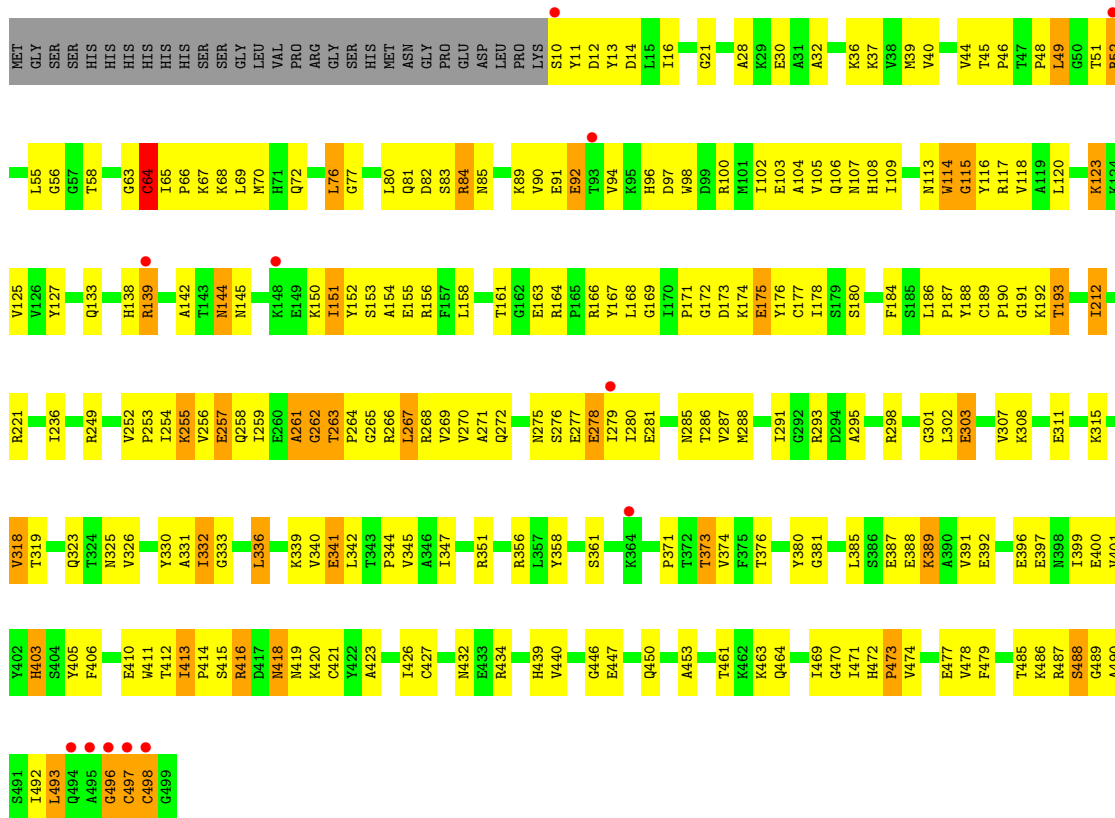


### • Molecule 1: THIOREDOXIN REDUCTASE 1

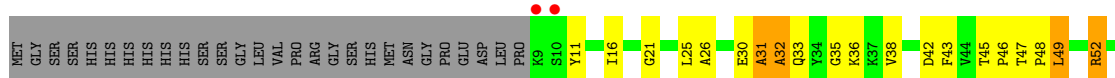


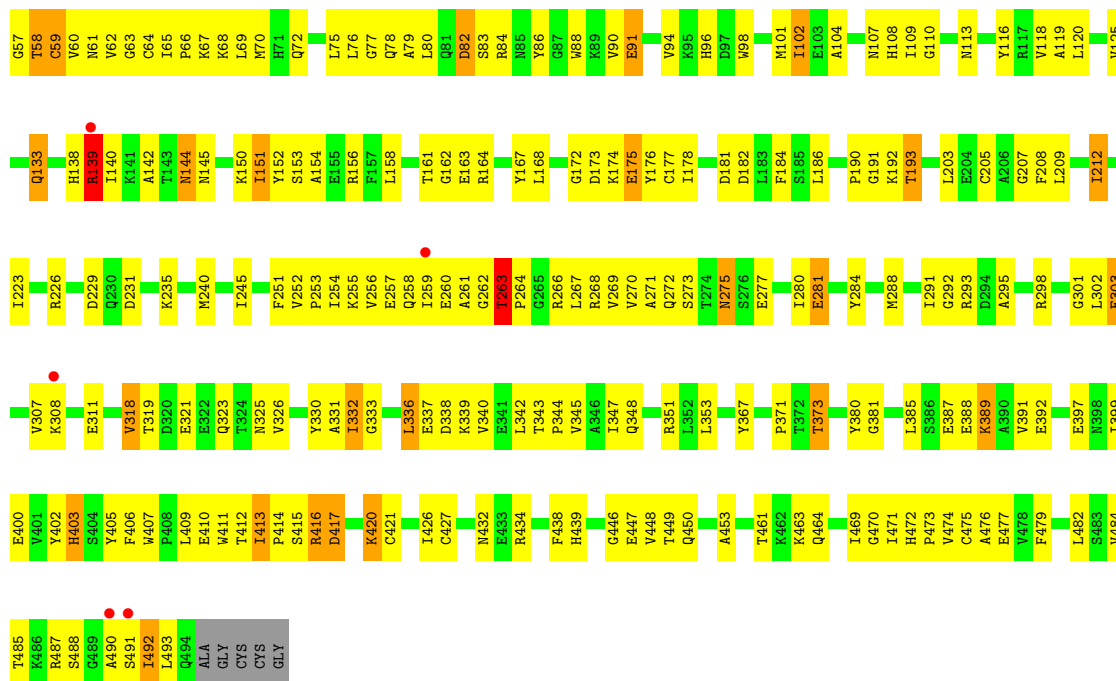


● Molecule 1: THIOREDOXIN REDUCTASE 1



● Molecule 1: THIOREDOXIN REDUCTASE 1





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	144.63Å 90.64Å 166.60Å 90.00° 112.46° 90.00°	Depositor
Resolution (Å)	15.00 – 2.80 19.99 – 2.80	Depositor EDS
% Data completeness (in resolution range)	92.8 (15.00-2.80) 99.5 (19.99-2.80)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.02 (at 2.79Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.249 , 0.287 0.246 , 0.281	Depositor DCC
$R_{free}$ test set	4885 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	57.1	Xtrriage
Anisotropy	0.259	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 65.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.28$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	23294	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	55.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.84% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: FAD, NAP, MPD

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	0.44	0/3830	0.66	1/5187 (0.0%)
1	B	0.44	0/3834	0.66	1/5191 (0.0%)
1	C	0.43	0/3850	0.66	1/5211 (0.0%)
1	D	0.44	0/3859	0.79	4/5222 (0.1%)
1	E	0.41	0/3850	0.64	1/5211 (0.0%)
1	F	0.41	0/3825	0.65	2/5179 (0.0%)
All	All	0.43	0/23048	0.68	10/31201 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	139	ARG	NE-CZ-NH2	21.20	130.90	120.30
1	D	139	ARG	NE-CZ-NH1	-20.89	109.86	120.30
1	D	139	ARG	CD-NE-CZ	10.58	138.41	123.60
1	C	263	THR	C-N-CD	6.38	141.81	128.40
1	D	263	THR	C-N-CD	6.08	141.17	128.40
1	B	59	CYS	CA-CB-SG	5.95	124.72	114.00
1	F	263	THR	C-N-CD	5.80	140.59	128.40
1	A	59	CYS	CA-CB-SG	5.50	123.89	114.00
1	E	496	GLY	N-CA-C	5.33	126.42	113.10
1	F	139	ARG	NE-CZ-NH2	-5.10	117.75	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	13	TYR	Sidechain

## 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	3756	0	3764	247	0
1	B	3760	0	3772	261	0
1	C	3776	0	3780	273	0
1	D	3785	0	3793	254	0
1	E	3776	0	3778	325	0
1	F	3751	0	3764	279	0
2	A	53	0	31	4	0
2	B	53	0	31	1	0
2	C	53	0	31	0	0
2	D	53	0	31	5	0
2	E	53	0	31	4	0
2	F	53	0	31	10	0
3	A	48	0	24	1	0
3	B	48	0	24	6	0
3	C	48	0	24	1	0
3	D	48	0	25	4	0
3	E	48	0	25	1	0
3	F	48	0	25	1	0
4	A	8	0	14	2	0
4	B	16	0	28	5	0
4	D	8	0	14	3	0
4	F	8	0	14	5	0
5	A	9	0	0	2	0
5	B	9	0	0	3	0
5	C	7	0	0	1	0
5	D	8	0	0	3	0
5	E	4	0	0	2	0
5	F	7	0	0	2	0
All	All	23294	0	23054	1495	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 32.

All (1495) 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:F:46:PRO:HG3	1:F:52:ARG:HE	1.15	1.10
1:E:80:LEU:HD23	1:F:80:LEU:HD23	1.34	1.10
1:B:199:SER:HB3	3:B:601:NAP:H52A	1.37	1.05
1:D:418:ASN:HD21	1:D:495:ALA:HB2	1.19	1.05
1:A:199:SER:HB3	3:A:601:NAP:H52A	1.39	1.04
1:E:84:ARG:HH11	1:E:84:ARG:HB2	1.20	1.01
1:E:336:LEU:HD23	1:E:339:LYS:HG3	1.41	1.00
1:E:84:ARG:HB2	1:E:84:ARG:NH1	1.77	1.00
1:B:86:TYR:CD1	1:B:413:ILE:HD11	1.97	0.99
1:E:106:GLN:HE22	1:E:109:ILE:HD12	1.28	0.99
1:A:259:ILE:HD11	1:A:268:ARG:HB2	1.44	0.99
1:F:163:GLU:HG2	1:F:295:ALA:HA	1.43	0.99
1:A:53:TRP:CZ3	1:A:62:VAL:HG11	1.98	0.98
1:E:106:GLN:NE2	1:E:109:ILE:HD12	1.78	0.97
1:C:199:SER:HB3	3:C:601:NAP:H52A	1.43	0.97
1:D:308:LYS:H	1:D:325:ASN:ND2	1.63	0.97
1:B:308:LYS:H	1:B:325:ASN:ND2	1.63	0.96
1:E:308:LYS:H	1:E:325:ASN:ND2	1.63	0.96
1:F:308:LYS:H	1:F:325:ASN:ND2	1.63	0.95
1:C:418:ASN:ND2	1:C:419:ASN:H	1.64	0.95
1:C:308:LYS:H	1:C:325:ASN:ND2	1.64	0.95
1:A:308:LYS:H	1:A:325:ASN:ND2	1.62	0.95
1:B:260:GLU:HB3	1:B:266:ARG:HG3	1.48	0.93
1:F:46:PRO:HG3	1:F:52:ARG:NE	1.82	0.93
1:D:308:LYS:H	1:D:325:ASN:HD21	0.94	0.93
1:E:418:ASN:HD22	1:E:419:ASN:H	1.16	0.93
1:A:308:LYS:N	1:A:325:ASN:HD21	1.67	0.92
1:C:271:ALA:HB3	1:C:280:ILE:HG13	1.52	0.92
1:D:418:ASN:ND2	1:D:495:ALA:HB2	1.83	0.92
1:C:308:LYS:N	1:C:325:ASN:HD21	1.68	0.92
1:E:308:LYS:N	1:E:325:ASN:HD21	1.67	0.92
1:B:308:LYS:N	1:B:325:ASN:HD21	1.68	0.92
1:C:471:ILE:HG21	1:D:373:THR:CG2	1.98	0.92
1:C:308:LYS:H	1:C:325:ASN:HD21	0.94	0.92
1:E:259:ILE:HD11	1:E:268:ARG:HB2	1.52	0.91
1:E:120:LEU:HD13	1:E:127:TYR:HB2	1.51	0.91
1:F:30:GLU:O	1:F:33:GLN:HB3	1.70	0.91

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:46:PRO:CG	1:F:52:ARG:HE	1.84	0.91
1:E:497:CYS:SG	1:E:498:CYS:N	2.44	0.91
1:F:308:LYS:N	1:F:325:ASN:HD21	1.67	0.91
1:D:308:LYS:N	1:D:325:ASN:HD21	1.67	0.90
1:F:308:LYS:H	1:F:325:ASN:HD21	0.94	0.90
1:F:340:VAL:HG13	1:F:345:VAL:HG21	1.53	0.90
1:E:308:LYS:HG2	1:E:325:ASN:HD22	1.37	0.90
1:D:255:LYS:HE2	1:D:270:VAL:HG21	1.53	0.89
1:D:418:ASN:HD22	1:D:419:ASN:H	1.20	0.89
1:B:308:LYS:H	1:B:325:ASN:HD21	0.93	0.89
1:A:308:LYS:H	1:A:325:ASN:HD21	0.92	0.88
1:C:418:ASN:HD22	1:C:419:ASN:H	1.17	0.88
1:E:308:LYS:H	1:E:325:ASN:HD21	0.91	0.88
1:F:308:LYS:HG2	1:F:325:ASN:HD22	1.36	0.88
1:C:110:GLY:HA2	1:C:113:ASN:HD22	1.38	0.88
1:A:471:ILE:HG21	1:B:373:THR:CG2	2.04	0.88
1:E:90:VAL:HG22	1:F:94:VAL:HG21	1.54	0.88
1:A:308:LYS:HG2	1:A:325:ASN:HD22	1.40	0.87
1:E:168:LEU:HD23	1:E:291:ILE:HD13	1.55	0.86
1:E:139:ARG:HG3	1:E:151:ILE:HD11	1.56	0.86
1:B:411:TRP:HZ3	1:B:421:CYS:SG	1.98	0.86
1:F:21:GLY:HA3	2:F:600:FAD:H51A	1.57	0.86
1:A:139:ARG:HG3	1:A:151:ILE:HD11	1.57	0.86
1:C:255:LYS:HE2	1:C:270:VAL:HG21	1.57	0.86
1:D:308:LYS:HG2	1:D:325:ASN:HD22	1.41	0.85
1:A:493:LEU:H	1:A:493:LEU:HD12	1.40	0.85
1:E:259:ILE:HD11	1:E:268:ARG:HH11	1.41	0.85
1:E:373:THR:CG2	1:F:471:ILE:HG21	2.05	0.85
1:F:176:TYR:HB3	1:F:267:LEU:HD21	1.58	0.85
1:B:308:LYS:HG2	1:B:325:ASN:HD22	1.41	0.84
1:C:497:CYS:SG	1:C:498:CYS:N	2.50	0.84
1:E:80:LEU:HD13	1:E:94:VAL:HG11	1.59	0.84
1:C:413:ILE:HG13	1:C:414:PRO:HD3	1.60	0.84
1:C:259:ILE:HD11	1:C:268:ARG:HB2	1.59	0.84
1:D:139:ARG:HG2	1:D:151:ILE:HD11	1.58	0.83
1:E:163:GLU:HG2	1:E:295:ALA:HA	1.60	0.83
1:E:413:ILE:HD12	1:F:104:ALA:HB1	1.61	0.83
1:F:139:ARG:HG3	1:F:151:ILE:HD11	1.59	0.83
1:B:139:ARG:HG3	1:B:151:ILE:HD11	1.59	0.82
1:C:85:ASN:HB3	1:C:413:ILE:HD12	1.62	0.82
1:C:139:ARG:HG3	1:C:151:ILE:HD11	1.59	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:411:TRP:CZ3	1:B:421:CYS:SG	2.73	0.81
1:C:268:ARG:HA	1:C:282:GLY:O	1.81	0.81
1:F:253:PRO:HA	1:F:271:ALA:HB2	1.62	0.81
1:B:484:VAL:HG13	1:B:490:ALA:HB3	1.62	0.81
1:E:259:ILE:HB	1:E:266:ARG:O	1.80	0.81
1:D:139:ARG:CG	1:D:151:ILE:HD11	2.11	0.81
1:C:497:CYS:HB2	1:D:112:LEU:HD23	1.64	0.80
1:E:485:THR:HB	5:E:2004:HOH:O	1.80	0.80
1:D:91:GLU:HG3	1:D:93:THR:H	1.47	0.80
1:C:373:THR:CG2	1:D:471:ILE:HG21	2.12	0.80
1:C:89:LYS:NZ	1:D:97:ASP:HB2	1.97	0.80
1:C:254:ILE:HD13	1:C:272:GLN:HB2	1.64	0.79
1:D:418:ASN:HD21	1:D:495:ALA:CB	1.92	0.79
1:C:450:GLN:HE22	1:D:470:GLY:HA2	1.47	0.79
1:A:80:LEU:HD23	1:B:80:LEU:HD23	1.63	0.79
1:A:254:ILE:HG23	1:A:271:ALA:HA	1.63	0.79
1:C:308:LYS:HG2	1:C:325:ASN:HD22	1.45	0.79
1:B:91:GLU:HB2	1:B:93:THR:HG22	1.65	0.79
1:E:471:ILE:HG21	1:F:373:THR:CG2	2.13	0.79
1:D:413:ILE:HG13	1:D:414:PRO:HD3	1.62	0.79
1:D:493:LEU:O	1:D:494:GLN:HG3	1.82	0.79
1:C:471:ILE:HG21	1:D:373:THR:HG23	1.65	0.78
1:D:12:ASP:O	1:D:37:LYS:HE2	1.83	0.78
1:D:254:ILE:HG12	1:D:271:ALA:HA	1.65	0.78
1:B:84:ARG:HH21	1:B:92:GLU:HG3	1.48	0.78
1:B:408:PRO:HD2	1:B:411:TRP:CE3	2.16	0.78
1:B:163:GLU:HG2	1:B:295:ALA:HA	1.66	0.78
1:B:336:LEU:HB3	1:B:339:LYS:HG3	1.65	0.78
1:B:397:GLU:HA	1:B:487:ARG:NH2	1.97	0.78
1:B:263:THR:OG1	1:B:264:PRO:HD2	1.82	0.78
1:E:84:ARG:HH11	1:E:84:ARG:CB	1.97	0.77
1:F:258:GLN:HE22	1:F:261:ALA:HB2	1.49	0.77
1:C:98:TRP:O	1:C:102:ILE:HG12	1.85	0.77
1:D:399:ILE:HD12	1:D:399:ILE:O	1.84	0.77
1:F:254:ILE:HG12	1:F:271:ALA:HA	1.65	0.77
1:E:263:THR:HB	1:E:264:PRO:HD3	1.66	0.76
1:A:488:SER:O	1:A:490:ALA:N	2.17	0.76
1:E:418:ASN:ND2	1:E:419:ASN:H	1.84	0.76
1:D:418:ASN:ND2	1:D:419:ASN:H	1.83	0.76
1:B:406:PHE:CZ	1:B:421:CYS:HB3	2.21	0.76
1:D:13:TYR:CE1	1:D:37:LYS:HE3	2.21	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:308:LYS:HG2	1:E:325:ASN:ND2	2.00	0.76
1:C:163:GLU:HG2	1:C:295:ALA:HA	1.66	0.76
1:E:418:ASN:HD22	1:E:419:ASN:N	1.83	0.76
1:F:252:VAL:O	1:F:271:ALA:HB1	1.84	0.76
1:E:253:PRO:HA	1:E:271:ALA:HB2	1.68	0.76
1:B:259:ILE:HG13	1:B:268:ARG:HB2	1.68	0.75
1:F:340:VAL:CG1	1:F:345:VAL:HG21	2.16	0.75
1:F:75:LEU:HB3	4:F:700:MPD:H51	1.69	0.75
1:A:470:GLY:HA2	1:B:450:GLN:HE22	1.52	0.75
1:C:258:GLN:HE22	1:C:261:ALA:HB2	1.51	0.75
1:F:308:LYS:HG2	1:F:325:ASN:ND2	2.00	0.75
1:A:293:ARG:HD3	5:A:2005:HOH:O	1.86	0.74
1:B:25:LEU:HD22	1:B:120:LEU:HD11	1.69	0.74
1:A:96:HIS:CD2	1:A:212:ILE:HG13	2.22	0.74
1:F:38:VAL:HG23	1:F:125:VAL:HG13	1.68	0.74
1:F:258:GLN:NE2	1:F:261:ALA:HB2	2.02	0.74
1:A:171:PRO:HB2	1:A:255:LYS:HG3	1.68	0.74
1:B:84:ARG:NH2	1:B:92:GLU:HG3	2.01	0.74
1:E:259:ILE:HD11	1:E:268:ARG:NH1	2.02	0.74
1:C:110:GLY:HA2	1:C:113:ASN:ND2	2.03	0.74
1:E:470:GLY:HA2	1:F:450:GLN:HE22	1.51	0.74
1:A:308:LYS:HG2	1:A:325:ASN:ND2	2.03	0.74
1:C:278:GLU:HG2	1:C:279:ILE:H	1.51	0.74
1:D:255:LYS:CE	1:D:270:VAL:HG21	2.18	0.74
1:F:340:VAL:HG11	1:F:345:VAL:HG11	1.68	0.74
1:A:258:GLN:HG3	1:A:260:GLU:O	1.88	0.74
1:C:38:VAL:HG22	1:C:125:VAL:HG13	1.70	0.74
1:F:163:GLU:HG2	1:F:295:ALA:CA	2.18	0.74
1:B:262:GLY:O	1:B:263:THR:C	2.25	0.73
1:D:418:ASN:HD22	1:D:419:ASN:N	1.86	0.73
1:E:150:LYS:HD3	1:E:152:TYR:OH	1.88	0.73
1:A:13:TYR:HD1	1:A:37:LYS:HG2	1.52	0.73
1:C:164:ARG:HG2	1:C:296:CYS:SG	2.28	0.73
1:E:98:TRP:CZ2	1:E:102:ILE:HD11	2.23	0.73
1:A:450:GLN:HE22	1:B:470:GLY:HA2	1.53	0.73
1:B:380:TYR:OH	1:B:439:HIS:HD2	1.72	0.73
1:E:102:ILE:O	1:E:105:VAL:HG12	1.89	0.73
1:A:88:TRP:CZ2	1:B:77:GLY:HA3	2.24	0.72
1:B:86:TYR:CD1	1:B:413:ILE:CD1	2.71	0.72
1:E:84:ARG:NH2	1:E:92:GLU:HA	2.03	0.72
1:E:440:VAL:HB	1:E:479:PHE:HZ	1.53	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:255:LYS:HB3	1:D:270:VAL:CG2	2.18	0.72
1:A:373:THR:CG2	1:B:471:ILE:HG21	2.20	0.72
1:C:418:ASN:HD22	1:C:419:ASN:N	1.86	0.72
1:A:47:THR:HG23	1:A:51:THR:O	1.89	0.72
1:B:418:ASN:HB2	4:B:701:MPD:HM2	1.70	0.72
1:E:493:LEU:N	1:E:493:LEU:HD12	2.04	0.72
1:F:255:LYS:HE2	1:F:257:GLU:HB3	1.70	0.72
1:B:86:TYR:CG	1:B:413:ILE:HD11	2.24	0.72
1:D:308:LYS:HG2	1:D:325:ASN:ND2	2.04	0.72
1:C:402:TYR:CD2	1:C:462:LYS:HE3	2.25	0.71
1:F:273:SER:OG	1:F:275:ASN:HB2	1.91	0.71
1:C:80:LEU:HD23	1:D:80:LEU:HD23	1.70	0.71
1:A:86:TYR:HE2	1:A:414:PRO:HG3	1.55	0.71
1:B:416:ARG:HG2	1:B:416:ARG:HH11	1.55	0.71
1:B:259:ILE:HD11	1:B:268:ARG:HG3	1.72	0.71
1:B:313:THR:OG1	1:B:315:LYS:HG2	1.90	0.71
1:E:106:GLN:HA	1:E:106:GLN:HE21	1.56	0.70
1:E:49:LEU:N	1:E:49:LEU:HD22	2.06	0.70
1:E:399:ILE:HD12	1:E:399:ILE:O	1.90	0.70
1:F:344:PRO:O	1:F:347:ILE:HG12	1.90	0.70
1:B:268:ARG:HH21	1:B:281:GLU:CD	1.94	0.70
1:E:344:PRO:O	1:E:347:ILE:HG12	1.91	0.70
1:B:308:LYS:HG2	1:B:325:ASN:ND2	2.06	0.70
1:B:344:PRO:O	1:B:347:ILE:HG12	1.92	0.70
1:D:46:PRO:HG3	1:D:52:ARG:CZ	2.22	0.70
1:C:418:ASN:ND2	1:C:419:ASN:N	2.39	0.70
1:A:29:LYS:HB2	1:A:29:LYS:NZ	2.07	0.70
1:A:478:VAL:HG23	4:A:701:MPD:H51	1.72	0.70
1:B:260:GLU:HB3	1:B:266:ARG:CG	2.22	0.70
1:C:469:ILE:HG21	1:D:345:VAL:HG12	1.73	0.70
1:E:485:THR:O	1:E:488:SER:HB3	1.91	0.70
1:D:315:LYS:HD2	1:D:336:LEU:O	1.92	0.69
1:E:193:THR:HB	1:E:286:THR:HB	1.73	0.69
1:E:254:ILE:HD11	1:E:270:VAL:HG12	1.75	0.69
1:E:164:ARG:O	1:E:293:ARG:HB3	1.92	0.69
1:F:49:LEU:HD22	1:F:49:LEU:N	2.07	0.69
1:B:133:GLN:NE2	5:B:2003:HOH:O	2.24	0.69
1:B:419:ASN:HD21	1:B:494:GLN:C	1.96	0.69
1:E:36:LYS:HE3	1:E:358:TYR:CD1	2.28	0.69
1:A:399:ILE:HD12	1:A:399:ILE:O	1.93	0.69
1:C:373:THR:HG23	1:D:471:ILE:HG21	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:470:GLY:HA2	1:D:450:GLN:HE22	1.56	0.69
1:D:260:GLU:OE2	1:D:266:ARG:HD3	1.92	0.69
1:A:150:LYS:HD3	1:A:152:TYR:OH	1.93	0.69
1:E:106:GLN:NE2	1:E:106:GLN:HA	2.07	0.69
1:C:308:LYS:HG2	1:C:325:ASN:ND2	2.07	0.69
1:A:267:LEU:N	1:A:267:LEU:HD12	2.07	0.68
1:D:292:GLY:HA2	3:D:601:NAP:O1A	1.92	0.68
1:E:450:GLN:HE22	1:F:470:GLY:HA2	1.58	0.68
1:A:258:GLN:NE2	1:A:261:ALA:HB2	2.07	0.68
1:A:432:ASN:HD22	1:A:463:LYS:NZ	1.92	0.68
1:C:413:ILE:HG13	1:C:414:PRO:CD	2.23	0.68
1:D:36:LYS:HE3	1:D:358:TYR:CD1	2.28	0.68
1:D:418:ASN:ND2	1:D:419:ASN:N	2.42	0.68
1:D:193:THR:HB	1:D:286:THR:HB	1.76	0.68
1:A:344:PRO:HG3	1:B:472:HIS:HB2	1.74	0.68
1:F:336:LEU:HD23	1:F:339:LYS:HG3	1.75	0.68
1:A:344:PRO:O	1:A:347:ILE:HG12	1.94	0.67
1:A:492:ILE:H	1:A:493:LEU:HD12	1.59	0.67
1:B:315:LYS:HE3	1:B:336:LEU:O	1.94	0.67
1:E:380:TYR:OH	1:E:439:HIS:HD2	1.76	0.67
1:F:339:LYS:HD2	1:F:367:TYR:CD2	2.30	0.67
1:A:471:ILE:HG21	1:B:373:THR:HG23	1.75	0.67
1:C:223:ILE:HG12	1:C:226:ARG:NH2	2.10	0.67
1:F:380:TYR:OH	1:F:439:HIS:HD2	1.77	0.67
1:C:89:LYS:HZ2	1:D:97:ASP:HB2	1.60	0.67
1:E:80:LEU:HD23	1:F:80:LEU:CD2	2.21	0.67
1:C:258:GLN:NE2	1:C:261:ALA:HB2	2.08	0.67
1:E:259:ILE:CD1	1:E:268:ARG:HB2	2.25	0.67
1:B:293:ARG:HD3	5:B:2007:HOH:O	1.95	0.66
1:B:411:TRP:HZ3	1:B:421:CYS:HG	1.43	0.66
1:E:55:LEU:HD13	1:E:56:GLY:N	2.10	0.66
1:F:150:LYS:HD3	1:F:152:TYR:OH	1.95	0.66
1:F:96:HIS:CD2	1:F:212:ILE:HG13	2.30	0.66
1:E:450:GLN:HE22	1:F:471:ILE:H	1.43	0.66
1:F:251:PHE:CE2	1:F:273:SER:HB2	2.30	0.66
1:B:397:GLU:HA	1:B:487:ARG:HH21	1.61	0.66
1:B:416:ARG:HD2	1:B:417:ASP:OD2	1.95	0.66
1:C:406:PHE:CZ	1:C:421:CYS:HB3	2.30	0.66
1:E:96:HIS:CD2	1:E:212:ILE:HG13	2.30	0.66
1:C:170:ILE:HB	1:C:254:ILE:O	1.95	0.66
1:D:150:LYS:HD3	1:D:152:TYR:OH	1.95	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:315:LYS:HE3	1:A:336:LEU:O	1.95	0.66
1:D:400:GLU:OE2	1:D:400:GLU:HA	1.94	0.66
1:E:103:GLU:HG2	1:E:107:ASN:HD21	1.61	0.66
1:E:315:LYS:HD2	1:E:336:LEU:O	1.96	0.66
1:A:194:LEU:HD22	1:A:284:TYR:CE1	2.30	0.66
1:B:339:LYS:HA	1:B:339:LYS:HE2	1.78	0.66
1:A:252:VAL:O	1:A:271:ALA:HB1	1.96	0.66
1:E:418:ASN:ND2	1:E:419:ASN:N	2.44	0.65
1:C:399:ILE:O	1:C:399:ILE:HD12	1.96	0.65
1:A:29:LYS:HE3	1:A:119:ALA:HB1	1.78	0.65
1:C:344:PRO:O	1:C:347:ILE:HG12	1.96	0.65
1:E:272:GLN:CB	1:E:279:ILE:HG12	2.27	0.65
1:E:405:TYR:HE1	1:E:493:LEU:HG	1.61	0.65
1:D:117:ARG:HA	1:D:117:ARG:HH11	1.61	0.65
1:C:432:ASN:HD22	1:C:463:LYS:NZ	1.93	0.65
1:E:373:THR:HB	1:E:381:GLY:HA2	1.79	0.65
1:E:401:VAL:HG11	1:E:486:LYS:HE3	1.78	0.65
1:F:417:ASP:OD1	1:F:420:LYS:HE3	1.96	0.65
1:A:13:TYR:CD1	1:A:37:LYS:HG2	2.32	0.65
1:A:139:ARG:CG	1:A:151:ILE:HD11	2.27	0.65
1:D:96:HIS:CD2	1:D:212:ILE:HG13	2.31	0.65
1:A:469:ILE:HG21	1:B:345:VAL:HG12	1.79	0.65
1:C:334:ASP:HA	1:C:341:GLU:HG3	1.78	0.65
1:D:344:PRO:O	1:D:347:ILE:HG12	1.96	0.65
1:A:487:ARG:C	1:A:489:GLY:H	2.01	0.64
1:C:259:ILE:HD11	1:C:268:ARG:CB	2.27	0.64
1:C:85:ASN:CB	1:C:413:ILE:HD12	2.27	0.64
1:C:150:LYS:HD3	1:C:152:TYR:OH	1.97	0.64
1:C:380:TYR:OH	1:C:439:HIS:HD2	1.81	0.64
1:D:172:GLY:HA2	1:D:175:GLU:CG	2.27	0.64
3:E:601:NAP:H6N	3:E:601:NAP:O2N	1.96	0.64
1:E:139:ARG:CG	1:E:151:ILE:HD11	2.26	0.64
1:F:84:ARG:HG2	1:F:90:VAL:HG12	1.78	0.64
1:C:474:VAL:HG21	1:D:446:GLY:HA3	1.78	0.64
1:D:432:ASN:HD22	1:D:463:LYS:NZ	1.96	0.64
1:B:260:GLU:CB	1:B:266:ARG:HG3	2.26	0.64
1:C:373:THR:HB	1:C:381:GLY:HA2	1.80	0.64
1:E:120:LEU:CD1	1:E:127:TYR:HB2	2.27	0.64
1:B:432:ASN:HD22	1:B:463:LYS:NZ	1.95	0.64
1:D:254:ILE:O	1:D:255:LYS:HB2	1.96	0.64
1:E:108:HIS:CD2	1:F:412:THR:HB	2.33	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:163:GLU:O	1:E:164:ARG:HG2	1.98	0.64
1:F:31:ALA:O	1:F:33:GLN:N	2.31	0.64
1:A:95:LYS:HB2	1:B:89:LYS:HD2	1.80	0.64
1:E:104:ALA:HB1	1:F:413:ILE:HD12	1.78	0.64
1:A:472:HIS:HB2	1:B:344:PRO:HG3	1.79	0.64
1:B:373:THR:HB	1:B:381:GLY:HA2	1.80	0.64
1:C:123:LYS:O	1:C:124:LYS:HB2	1.96	0.64
1:A:76:LEU:HD23	1:B:86:TYR:CD2	2.32	0.64
1:A:173:ASP:OD1	1:A:174:LYS:N	2.31	0.64
1:F:302:LEU:HD22	1:F:307:VAL:HB	1.80	0.63
1:A:493:LEU:HD12	1:A:493:LEU:N	2.12	0.63
1:C:172:GLY:HA2	1:C:175:GLU:CG	2.29	0.63
1:C:263:THR:OG1	1:C:264:PRO:CD	2.47	0.63
1:E:336:LEU:HD23	1:E:339:LYS:CG	2.22	0.63
1:E:13:TYR:HD1	1:E:37:LYS:HG2	1.64	0.63
1:D:172:GLY:HA2	1:D:175:GLU:HG2	1.80	0.63
1:F:172:GLY:HA2	1:F:175:GLU:CG	2.29	0.63
1:F:252:VAL:C	1:F:271:ALA:HB1	2.19	0.63
1:F:484:VAL:HG13	1:F:490:ALA:HB3	1.80	0.63
1:E:52:ARG:HH11	1:E:52:ARG:HB2	1.64	0.63
1:E:336:LEU:HB3	1:E:339:LYS:HG2	1.79	0.63
1:F:173:ASP:OD1	1:F:174:LYS:N	2.32	0.63
1:B:86:TYR:CE1	1:B:413:ILE:CD1	2.82	0.63
1:B:172:GLY:HA2	1:B:175:GLU:CG	2.28	0.63
1:E:172:GLY:HA2	1:E:175:GLU:CG	2.29	0.63
1:F:269:VAL:O	1:F:281:GLU:HA	1.99	0.63
1:A:191:GLY:O	1:A:193:THR:HG22	1.98	0.63
1:E:172:GLY:HA2	1:E:175:GLU:HG2	1.81	0.63
1:A:461:THR:OG1	1:A:464:GLN:HG3	1.98	0.62
1:B:96:HIS:CD2	1:B:212:ILE:HG13	2.35	0.62
1:B:150:LYS:HD3	1:B:152:TYR:OH	1.99	0.62
1:E:397:GLU:HA	1:E:487:ARG:HH22	1.64	0.62
1:C:163:GLU:O	1:C:164:ARG:HD2	1.99	0.62
1:E:262:GLY:O	1:E:263:THR:C	2.38	0.62
1:F:25:LEU:HD22	1:F:120:LEU:HD11	1.81	0.62
1:F:406:PHE:O	1:F:421:CYS:HB2	1.98	0.62
1:D:38:VAL:HG22	1:D:125:VAL:HG13	1.80	0.62
1:E:261:ALA:O	1:E:262:GLY:O	2.17	0.62
1:F:403:HIS:CE1	1:F:492:ILE:HD13	2.35	0.62
1:F:427:CYS:HA	1:F:434:ARG:O	1.99	0.62
1:A:193:THR:HB	1:A:286:THR:HB	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:493:LEU:H	1:A:493:LEU:CD1	2.11	0.62
1:D:496:GLY:O	1:D:499:GLY:N	2.30	0.62
1:E:391:VAL:HG12	1:E:399:ILE:HD11	1.79	0.62
1:C:450:GLN:HE22	1:D:470:GLY:CA	2.12	0.62
1:D:380:TYR:OH	1:D:439:HIS:HD2	1.81	0.62
1:F:172:GLY:HA2	1:F:175:GLU:HG2	1.82	0.62
1:D:373:THR:HB	1:D:381:GLY:HA2	1.82	0.62
1:B:272:GLN:HB2	1:B:279:ILE:HG12	1.81	0.62
1:E:373:THR:HG22	1:F:471:ILE:HG21	1.80	0.62
1:C:263:THR:OG1	1:C:264:PRO:HD3	2.00	0.62
1:D:13:TYR:CD1	1:D:37:LYS:HE3	2.35	0.62
1:D:336:LEU:HD23	1:D:339:LYS:HG3	1.81	0.62
1:E:401:VAL:HG22	1:E:426:ILE:HG12	1.81	0.62
1:A:172:GLY:HA2	1:A:175:GLU:HG2	1.82	0.61
1:B:196:VAL:HB	1:B:289:LEU:HD23	1.81	0.61
1:E:168:LEU:CD2	1:E:291:ILE:HD13	2.30	0.61
1:C:167:TYR:CD2	1:C:289:LEU:HD12	2.34	0.61
1:E:267:LEU:N	1:E:267:LEU:HD12	2.15	0.61
1:A:450:GLN:HE22	1:B:471:ILE:H	1.47	0.61
1:E:470:GLY:CA	1:F:450:GLN:HE22	2.12	0.61
1:C:477:GLU:HA	1:D:450:GLN:HE21	1.65	0.61
1:D:302:LEU:HD22	1:D:307:VAL:HB	1.82	0.61
1:E:474:VAL:HG12	1:F:447:GLU:OE1	2.00	0.61
1:C:447:GLU:CD	1:D:474:VAL:HG13	2.21	0.61
1:A:419:ASN:OD1	1:A:495:ALA:HB3	2.00	0.61
1:D:13:TYR:O	1:D:154:ALA:HA	1.99	0.61
1:B:461:THR:OG1	1:B:464:GLN:HG3	2.01	0.61
1:D:250:GLN:HG2	1:D:275:ASN:ND2	2.15	0.61
1:E:471:ILE:H	1:F:450:GLN:HE22	1.48	0.61
1:F:256:VAL:O	1:F:256:VAL:HG13	2.01	0.61
1:A:380:TYR:OH	1:A:439:HIS:HD2	1.82	0.61
1:B:172:GLY:HA2	1:B:175:GLU:HG2	1.81	0.61
1:E:432:ASN:HD22	1:E:463:LYS:NZ	1.98	0.61
1:F:263:THR:OG1	1:F:264:PRO:CD	2.48	0.61
1:F:432:ASN:HD22	1:F:463:LYS:NZ	1.98	0.61
1:C:277:GLU:O	1:C:277:GLU:OE1	2.19	0.60
1:F:139:ARG:CG	1:F:151:ILE:HD11	2.30	0.60
1:F:373:THR:HB	1:F:381:GLY:HA2	1.82	0.60
1:F:471:ILE:HA	5:F:2006:HOH:O	2.01	0.60
1:C:173:ASP:OD1	1:C:174:LYS:N	2.33	0.60
1:C:251:PHE:CD2	1:C:273:SER:HA	2.36	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:173:ASP:OD1	1:D:174:LYS:N	2.35	0.60
1:E:13:TYR:HB3	1:E:37:LYS:O	2.01	0.60
1:B:92:GLU:C	1:B:94:VAL:H	2.04	0.60
1:B:139:ARG:CG	1:B:151:ILE:HD11	2.27	0.60
1:C:172:GLY:HA2	1:C:175:GLU:HG2	1.82	0.60
1:D:259:ILE:HD11	1:D:268:ARG:HB2	1.82	0.60
1:F:226:ARG:HG3	1:F:226:ARG:HH11	1.66	0.60
1:C:139:ARG:CG	1:C:151:ILE:HD11	2.29	0.60
1:E:89:LYS:O	1:F:94:VAL:HG13	2.01	0.60
1:C:278:GLU:CG	1:C:279:ILE:H	2.14	0.60
1:E:344:PRO:HG3	1:F:472:HIS:HB2	1.82	0.60
1:A:88:TRP:CZ2	1:B:77:GLY:CA	2.84	0.60
1:B:302:LEU:HD22	1:B:307:VAL:HB	1.83	0.60
1:C:250:GLN:HB3	1:C:274:THR:HB	1.84	0.60
1:D:411:TRP:C	1:D:414:PRO:HD2	2.22	0.60
1:A:21:GLY:HA3	2:A:600:FAD:H52A	1.83	0.60
1:A:166:ARG:HB2	1:A:294:ASP:OD2	2.01	0.60
1:B:427:CYS:HA	1:B:434:ARG:O	2.02	0.60
1:C:498:CYS:SG	1:D:29:LYS:NZ	2.75	0.60
1:C:86:TYR:CE1	1:C:413:ILE:HG12	2.36	0.60
1:F:340:VAL:CG1	1:F:345:VAL:HG11	2.32	0.60
1:A:242:GLU:OE2	1:A:420:LYS:NZ	2.35	0.60
1:C:13:TYR:O	1:C:154:ALA:HA	2.02	0.60
1:E:397:GLU:HA	1:E:487:ARG:NH2	2.17	0.60
1:A:76:LEU:HD13	4:B:700:MPD:H51	1.82	0.60
1:A:114:TRP:O	1:A:117:ARG:HB2	2.02	0.60
1:E:472:HIS:ND1	1:E:473:PRO:HA	2.17	0.60
1:A:186:LEU:HD12	1:A:190:PRO:HG3	1.84	0.59
1:A:470:GLY:CA	1:B:450:GLN:HE22	2.14	0.59
1:B:91:GLU:HB2	1:B:93:THR:CG2	2.32	0.59
1:B:173:ASP:OD1	1:B:174:LYS:N	2.35	0.59
1:D:259:ILE:O	1:D:260:GLU:HB2	2.01	0.59
1:D:401:VAL:HG11	1:D:486:LYS:HD2	1.84	0.59
1:E:16:ILE:HG13	1:E:154:ALA:HB2	1.83	0.59
1:E:80:LEU:CD2	1:F:80:LEU:HD23	2.21	0.59
1:E:173:ASP:OD1	1:E:174:LYS:N	2.35	0.59
1:C:432:ASN:HD22	1:C:463:LYS:HZ1	1.50	0.59
1:E:259:ILE:HD11	1:E:268:ARG:CB	2.31	0.59
1:A:201:VAL:HG22	2:A:600:FAD:HM73	1.84	0.59
1:D:16:ILE:HG12	1:D:39:MET:HE2	1.83	0.59
1:E:411:TRP:C	1:E:414:PRO:HD2	2.23	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:172:GLY:HA2	1:A:175:GLU:CG	2.32	0.59
1:C:401:VAL:HG11	1:C:486:LYS:HD2	1.84	0.59
1:F:403:HIS:NE2	1:F:492:ILE:HD13	2.17	0.59
1:C:302:LEU:HD22	1:C:307:VAL:HB	1.85	0.59
1:D:16:ILE:HG13	1:D:154:ALA:HB2	1.84	0.59
1:E:474:VAL:HG13	1:F:447:GLU:CD	2.23	0.59
1:F:58:THR:HG22	1:F:59:CYS:N	2.17	0.59
1:B:49:LEU:N	1:B:49:LEU:HD22	2.16	0.59
1:E:191:GLY:O	1:E:193:THR:HG22	2.02	0.59
1:A:263:THR:OG1	1:A:264:PRO:HD3	2.03	0.59
1:A:267:LEU:N	1:A:267:LEU:CD1	2.65	0.59
1:B:292:GLY:HA3	3:B:601:NAP:O2N	2.02	0.59
1:C:472:HIS:ND1	1:C:473:PRO:HA	2.18	0.59
1:A:77:GLY:HA3	1:B:88:TRP:CZ2	2.37	0.59
3:B:601:NAP:O1A	3:B:601:NAP:H52N	2.02	0.59
1:F:16:ILE:HG13	1:F:154:ALA:HB2	1.84	0.59
1:A:192:LYS:HE2	1:A:284:TYR:CD2	2.38	0.59
1:D:344:PRO:HD3	2:D:600:FAD:O2	2.03	0.59
1:F:402:TYR:HB3	1:F:482:LEU:HB3	1.83	0.59
1:E:280:ILE:HD12	1:E:281:GLU:H	1.65	0.59
1:C:256:VAL:HG13	1:C:269:VAL:HG22	1.83	0.58
1:A:450:GLN:NE2	1:B:471:ILE:H	2.01	0.58
1:E:180:SER:HA	1:E:288:MET:CE	2.33	0.58
1:F:48:PRO:HG2	1:F:167:TYR:CE1	2.38	0.58
1:C:345:VAL:HG12	1:D:469:ILE:HG21	1.85	0.58
1:E:272:GLN:HB2	1:E:279:ILE:HG12	1.85	0.58
1:E:302:LEU:HD22	1:E:307:VAL:HB	1.84	0.58
1:F:397:GLU:HA	1:F:487:ARG:HH22	1.67	0.58
1:B:319:THR:HG23	1:B:323:GLN:O	2.04	0.58
1:E:76:LEU:HD23	1:F:86:TYR:CD2	2.38	0.58
1:F:407:TRP:CZ2	1:F:412:THR:HA	2.38	0.58
1:A:270:VAL:HG22	1:A:281:GLU:HB3	1.84	0.58
1:A:373:THR:HB	1:A:381:GLY:HA2	1.84	0.58
1:C:191:GLY:O	1:C:193:THR:HG22	2.04	0.58
1:E:123:LYS:HB2	1:E:123:LYS:NZ	2.17	0.58
1:E:450:GLN:NE2	1:F:471:ILE:H	2.00	0.58
1:E:471:ILE:H	1:F:450:GLN:NE2	2.01	0.58
1:F:484:VAL:HG13	1:F:490:ALA:CB	2.34	0.58
1:C:259:ILE:CD1	1:C:268:ARG:HB2	2.30	0.58
1:D:12:ASP:HB2	1:D:153:SER:H	1.68	0.58
1:E:70:MET:HE1	1:E:184:PHE:HA	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:338:ASP:O	1:B:339:LYS:HE3	2.04	0.58
1:D:255:LYS:HB3	1:D:270:VAL:HG23	1.84	0.58
1:E:186:LEU:HD12	1:E:190:PRO:HG3	1.86	0.58
1:D:70:MET:HE1	1:D:184:PHE:HA	1.84	0.58
1:D:385:LEU:HD22	1:D:389:LYS:HG3	1.86	0.58
1:E:102:ILE:O	1:E:106:GLN:HG2	2.03	0.58
1:F:319:THR:HG23	1:F:323:GLN:O	2.03	0.58
1:A:302:LEU:HD22	1:A:307:VAL:HB	1.86	0.58
1:A:450:GLN:HE22	1:B:470:GLY:CA	2.15	0.58
1:B:91:GLU:CB	1:B:93:THR:HG22	2.32	0.58
1:B:254:ILE:HD11	1:B:270:VAL:HG12	1.85	0.58
1:D:427:CYS:HA	1:D:434:ARG:O	2.04	0.58
1:E:263:THR:CB	1:E:264:PRO:HD3	2.32	0.58
1:E:275:ASN:OD1	1:E:276:SER:N	2.37	0.58
1:E:440:VAL:HB	1:E:479:PHE:CZ	2.37	0.58
1:B:266:ARG:NH2	1:B:283:GLU:OE2	2.37	0.57
1:E:450:GLN:HE22	1:F:470:GLY:CA	2.16	0.57
1:A:70:MET:HE3	1:A:184:PHE:HD1	1.69	0.57
1:C:194:LEU:HD22	1:C:284:TYR:CE1	2.38	0.57
1:A:171:PRO:HB2	1:A:255:LYS:CG	2.34	0.57
1:A:446:GLY:HA3	1:B:474:VAL:HG21	1.86	0.57
1:B:411:TRP:C	1:B:414:PRO:HD2	2.24	0.57
1:C:44:VAL:HG11	1:C:53:TRP:CE2	2.39	0.57
1:C:259:ILE:HG22	1:C:259:ILE:O	2.02	0.57
1:C:417:ASP:OD2	1:C:417:ASP:N	2.35	0.57
1:D:117:ARG:HH11	1:D:117:ARG:CA	2.17	0.57
1:D:339:LYS:HD2	1:D:367:TYR:CE2	2.39	0.57
1:F:186:LEU:HD12	1:F:190:PRO:HG3	1.86	0.57
1:A:194:LEU:HD22	1:A:284:TYR:HE1	1.68	0.57
1:B:401:VAL:HB	1:B:486:LYS:HG3	1.87	0.57
1:D:262:GLY:O	1:D:263:THR:C	2.42	0.57
1:D:418:ASN:CG	1:D:495:ALA:HB2	2.24	0.57
1:D:81:GLN:OE1	1:D:84:ARG:NH2	2.32	0.57
1:F:413:ILE:HG23	1:F:414:PRO:HD3	1.84	0.57
1:B:396:GLU:OE2	1:B:487:ARG:NH2	2.37	0.57
1:C:461:THR:OG1	1:C:464:GLN:HG3	2.05	0.57
1:D:319:THR:HG23	1:D:323:GLN:O	2.05	0.57
1:B:46:PRO:HA	1:B:51:THR:O	2.04	0.57
1:E:97:ASP:OD2	1:E:100:ARG:HB2	2.04	0.57
1:E:345:VAL:HG12	1:F:469:ILE:HG21	1.87	0.57
1:E:413:ILE:HD12	1:F:104:ALA:CB	2.33	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:166:ARG:HG3	5:B:2006:HOH:O	2.05	0.57
1:B:418:ASN:CB	4:B:701:MPD:HM2	2.34	0.57
1:C:427:CYS:HA	1:C:434:ARG:O	2.04	0.57
1:E:49:LEU:N	1:E:49:LEU:CD2	2.68	0.57
1:E:49:LEU:CD2	1:E:49:LEU:H	2.18	0.57
1:E:178:ILE:O	1:E:288:MET:HA	2.05	0.57
1:F:38:VAL:CG2	1:F:125:VAL:HG13	2.33	0.57
1:B:191:GLY:O	1:B:193:THR:HG22	2.05	0.56
1:E:413:ILE:HG23	1:E:414:PRO:HD3	1.87	0.56
1:E:478:VAL:HG13	1:E:479:PHE:N	2.20	0.56
1:A:432:ASN:HD22	1:A:463:LYS:HZ1	1.52	0.56
1:C:186:LEU:HD12	1:C:190:PRO:HG3	1.87	0.56
1:C:278:GLU:O	1:C:279:ILE:HG13	2.05	0.56
1:D:339:LYS:HD2	1:D:367:TYR:CD2	2.40	0.56
1:E:163:GLU:HG2	1:E:295:ALA:CA	2.34	0.56
1:E:474:VAL:CG1	1:F:447:GLU:CD	2.74	0.56
1:F:48:PRO:C	1:F:49:LEU:HD13	2.26	0.56
1:F:448:VAL:HG22	1:F:476:ALA:HB2	1.88	0.56
1:C:76:LEU:HD23	1:D:86:TYR:CD2	2.41	0.56
1:F:403:HIS:CD2	1:F:492:ILE:HG21	2.40	0.56
1:D:432:ASN:HD22	1:D:463:LYS:HZ1	1.54	0.56
1:B:272:GLN:HG2	1:B:273:SER:O	2.05	0.56
1:A:450:GLN:NE2	1:B:470:GLY:HA2	2.20	0.56
1:B:267:LEU:HD23	1:B:287:VAL:HG23	1.87	0.56
1:D:259:ILE:CD1	1:D:268:ARG:HB2	2.36	0.56
1:E:259:ILE:HG22	1:E:259:ILE:O	2.05	0.56
1:E:416:ARG:HH11	1:E:416:ARG:HG2	1.71	0.56
1:A:192:LYS:HE2	1:A:284:TYR:HD2	1.71	0.56
1:C:70:MET:HE1	1:C:184:PHE:HA	1.88	0.56
1:E:123:LYS:HB2	1:E:123:LYS:HZ3	1.71	0.56
1:F:82:ASP:CG	1:F:416:ARG:HH12	2.09	0.55
1:B:416:ARG:CD	1:B:417:ASP:OD2	2.54	0.55
1:C:255:LYS:HB3	1:C:270:VAL:CG2	2.36	0.55
1:E:171:PRO:HB2	1:E:255:LYS:HG3	1.89	0.55
1:E:254:ILE:O	1:E:255:LYS:HB2	2.06	0.55
1:E:470:GLY:HA2	1:F:450:GLN:NE2	2.21	0.55
1:C:16:ILE:HG13	1:C:154:ALA:HB2	1.89	0.55
1:C:475:CYS:HB2	1:D:447:GLU:OE2	2.07	0.55
1:D:250:GLN:HG2	1:D:275:ASN:HD21	1.71	0.55
1:E:252:VAL:O	1:E:271:ALA:HB1	2.06	0.55
1:E:262:GLY:O	1:E:263:THR:O	2.24	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:266:ARG:C	1:F:267:LEU:HD12	2.26	0.55
1:B:93:THR:O	1:B:93:THR:OG1	2.25	0.55
1:B:259:ILE:CG1	1:B:268:ARG:HB2	2.36	0.55
1:B:406:PHE:CE1	1:B:421:CYS:HB3	2.41	0.55
1:B:416:ARG:HG2	1:B:416:ARG:NH1	2.20	0.55
1:C:192:LYS:H	1:C:285:ASN:HD22	1.54	0.55
1:C:319:THR:HG23	1:C:323:GLN:O	2.06	0.55
1:C:450:GLN:NE2	1:D:470:GLY:HA2	2.19	0.55
1:E:410:GLU:OE2	1:F:68:LYS:HE2	2.06	0.55
1:E:319:THR:HG23	1:E:323:GLN:O	2.06	0.55
1:E:427:CYS:HA	1:E:434:ARG:O	2.07	0.55
1:C:273:SER:HB2	1:C:278:GLU:HB3	1.89	0.55
1:C:278:GLU:HG2	1:C:279:ILE:N	2.20	0.55
1:E:55:LEU:O	1:E:113:ASN:ND2	2.40	0.55
1:F:263:THR:OG1	1:F:264:PRO:HD3	2.07	0.55
1:A:427:CYS:HA	1:A:434:ARG:O	2.06	0.55
1:C:50:GLY:O	1:C:51:THR:C	2.45	0.55
1:F:235:LYS:NZ	1:F:405:TYR:OH	2.40	0.55
1:F:411:TRP:CZ3	1:F:421:CYS:SG	2.99	0.55
1:A:123:LYS:HB2	1:A:123:LYS:NZ	2.21	0.55
1:E:49:LEU:HD22	1:E:49:LEU:H	1.72	0.55
1:E:272:GLN:HB3	1:E:279:ILE:HG12	1.89	0.55
1:F:461:THR:OG1	1:F:464:GLN:HG3	2.06	0.55
1:A:477:GLU:HA	1:B:450:GLN:HE21	1.71	0.55
1:C:388:GLU:O	1:C:391:VAL:HG22	2.07	0.55
1:D:343:THR:OG1	2:D:600:FAD:H2'	2.07	0.55
1:E:279:ILE:HG22	1:E:280:ILE:N	2.21	0.55
1:E:472:HIS:HB2	1:F:344:PRO:HG3	1.87	0.55
1:F:57:GLY:HA2	2:F:600:FAD:H3B	1.89	0.55
1:F:151:ILE:HD13	1:F:152:TYR:N	2.22	0.55
1:B:186:LEU:HD12	1:B:190:PRO:HG3	1.87	0.55
1:F:191:GLY:O	1:F:193:THR:HG22	2.07	0.55
1:A:112:LEU:O	1:A:113:ASN:C	2.45	0.54
1:B:30:GLU:O	1:B:33:GLN:HB3	2.07	0.54
1:C:408:PRO:HG3	1:C:475:CYS:SG	2.48	0.54
1:C:497:CYS:HB3	1:D:115:GLY:HA3	1.88	0.54
1:D:48:PRO:HG2	1:D:167:TYR:CE1	2.42	0.54
1:F:226:ARG:HG3	1:F:226:ARG:NH1	2.21	0.54
1:F:266:ARG:O	1:F:267:LEU:HD12	2.07	0.54
1:A:16:ILE:HG13	1:A:154:ALA:HB2	1.89	0.54
1:B:12:ASP:HB2	1:B:153:SER:O	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:263:THR:OG1	1:B:264:PRO:CD	2.55	0.54
1:C:470:GLY:CA	1:D:450:GLN:HE22	2.20	0.54
1:C:450:GLN:HE22	1:D:471:ILE:H	1.56	0.54
1:F:167:TYR:CE2	1:F:174:LYS:HA	2.43	0.54
1:A:319:THR:HG23	1:A:323:GLN:O	2.08	0.54
1:B:487:ARG:O	1:B:487:ARG:HG2	2.08	0.54
1:C:448:VAL:HG22	1:C:476:ALA:HB2	1.89	0.54
1:C:472:HIS:HB2	1:D:344:PRO:HG3	1.88	0.54
1:D:259:ILE:O	1:D:259:ILE:HG22	2.08	0.54
1:E:192:LYS:H	1:E:285:ASN:HD22	1.53	0.54
1:E:461:THR:OG1	1:E:464:GLN:HG3	2.07	0.54
1:A:450:GLN:HE22	1:B:471:ILE:N	2.05	0.54
1:D:191:GLY:O	1:D:193:THR:HG22	2.08	0.54
1:D:400:GLU:OE1	1:D:487:ARG:HD2	2.08	0.54
1:E:151:ILE:HD13	1:E:152:TYR:N	2.23	0.54
1:F:25:LEU:HD13	1:F:116:TYR:CD1	2.43	0.54
1:A:254:ILE:HG12	1:A:270:VAL:O	2.07	0.54
1:C:86:TYR:CD2	1:C:413:ILE:HD11	2.43	0.54
1:C:259:ILE:HD12	1:C:283:GLU:OE1	2.08	0.54
1:C:447:GLU:CD	1:D:474:VAL:CG1	2.75	0.54
1:F:262:GLY:O	1:F:263:THR:O	2.26	0.54
1:A:170:ILE:HD12	1:A:255:LYS:HA	1.89	0.54
1:D:156:ARG:HG3	1:D:156:ARG:HH11	1.72	0.54
1:D:273:SER:OG	1:D:276:SER:HB3	2.08	0.54
1:E:32:ALA:HB2	1:E:125:VAL:HG22	1.90	0.54
1:A:36:LYS:HE3	1:A:358:TYR:CD1	2.43	0.54
1:D:472:HIS:ND1	1:D:473:PRO:HA	2.23	0.54
1:E:105:VAL:HG13	1:E:106:GLN:N	2.23	0.54
1:E:403:HIS:CD2	1:E:492:ILE:HG21	2.43	0.54
1:B:70:MET:HE3	1:B:184:PHE:HD1	1.73	0.53
1:C:450:GLN:NE2	1:D:471:ILE:H	2.07	0.53
1:A:260:GLU:HB2	1:A:266:ARG:HB2	1.91	0.53
1:A:263:THR:OG1	1:A:264:PRO:CD	2.57	0.53
1:A:388:GLU:O	1:A:391:VAL:HG22	2.08	0.53
1:E:387:GLU:OE2	1:E:486:LYS:NZ	2.41	0.53
1:F:42:ASP:OD1	2:F:600:FAD:H1B	2.08	0.53
1:B:156:ARG:HG3	1:B:156:ARG:HH11	1.73	0.53
1:B:336:LEU:HD23	1:B:339:LYS:HG3	1.91	0.53
1:C:259:ILE:O	1:C:260:GLU:HB2	2.07	0.53
1:C:263:THR:O	1:C:265:GLY:N	2.41	0.53
1:C:387:GLU:OE2	1:C:486:LYS:NZ	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:11:TYR:CZ	1:E:155:GLU:HA	2.43	0.53
1:E:493:LEU:N	1:E:493:LEU:CD1	2.70	0.53
1:F:253:PRO:HA	1:F:271:ALA:CB	2.36	0.53
1:E:85:ASN:C	1:E:413:ILE:HD11	2.29	0.53
1:F:49:LEU:HD22	1:F:49:LEU:H	1.74	0.53
1:F:84:ARG:CG	1:F:90:VAL:HG12	2.37	0.53
1:B:86:TYR:CE1	1:B:413:ILE:HD13	2.44	0.53
1:C:139:ARG:NH1	5:C:2003:HOH:O	2.41	0.53
1:E:12:ASP:HB2	1:E:153:SER:O	2.08	0.53
1:E:55:LEU:HD13	1:E:56:GLY:H	1.73	0.53
1:F:49:LEU:HD11	1:F:174:LYS:O	2.08	0.53
1:A:400:GLU:OE1	1:A:487:ARG:NH1	2.42	0.53
1:C:86:TYR:CD2	1:D:76:LEU:HD23	2.42	0.53
1:C:412:THR:HG21	1:D:108:HIS:CE1	2.43	0.53
1:F:151:ILE:HD13	1:F:151:ILE:C	2.29	0.53
1:A:254:ILE:HG12	1:A:270:VAL:HG12	1.89	0.53
1:D:488:SER:O	1:D:490:ALA:N	2.41	0.53
1:E:278:GLU:HG2	1:E:279:ILE:N	2.24	0.53
1:D:413:ILE:HG13	1:D:414:PRO:CD	2.35	0.53
1:E:450:GLN:HE22	1:F:471:ILE:N	2.07	0.53
1:A:347:ILE:O	1:A:351:ARG:HG3	2.09	0.53
1:A:318:VAL:HG13	1:A:319:THR:O	2.09	0.52
1:A:400:GLU:OE2	1:A:400:GLU:HA	2.08	0.52
1:B:325:ASN:OD1	1:B:326:VAL:HG23	2.09	0.52
1:D:186:LEU:HD12	1:D:190:PRO:HG3	1.90	0.52
1:E:450:GLN:HE21	1:F:477:GLU:HA	1.74	0.52
1:F:162:GLY:HA3	2:F:600:FAD:O1A	2.08	0.52
1:B:388:GLU:O	1:B:391:VAL:HG22	2.09	0.52
1:D:423:ALA:HB1	1:D:479:PHE:CZ	2.44	0.52
1:A:76:LEU:CD2	1:B:86:TYR:CD2	2.92	0.52
1:A:263:THR:CB	1:A:264:PRO:HD3	2.39	0.52
1:B:35:GLY:O	1:B:36:LYS:C	2.47	0.52
1:B:373:THR:HG21	1:B:446:GLY:HA2	1.89	0.52
1:C:86:TYR:CZ	1:C:413:ILE:HG12	2.45	0.52
1:C:347:ILE:O	1:C:351:ARG:HG3	2.10	0.52
1:D:388:GLU:O	1:D:391:VAL:HG22	2.08	0.52
1:D:496:GLY:O	1:D:497:CYS:C	2.46	0.52
1:E:280:ILE:HG13	1:E:281:GLU:N	2.25	0.52
1:A:53:TRP:HH2	1:A:181:ASP:CG	2.13	0.52
1:D:91:GLU:HG3	1:D:93:THR:N	2.21	0.52
1:D:139:ARG:HG3	1:D:151:ILE:HD11	1.88	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:373:THR:HG23	1:F:471:ILE:HG21	1.86	0.52
1:F:110:GLY:HA2	1:F:113:ASN:HD22	1.75	0.52
1:F:272:GLN:HE21	1:F:277:GLU:HA	1.75	0.52
1:A:404:SER:HA	1:A:492:ILE:HD12	1.92	0.52
1:C:258:GLN:HE21	1:C:260:GLU:C	2.12	0.52
1:C:373:THR:HG21	1:C:446:GLY:HA2	1.91	0.52
1:C:471:ILE:CG2	1:D:373:THR:HG23	2.36	0.52
1:D:106:GLN:HA	1:D:109:ILE:HD12	1.92	0.52
1:B:251:PHE:CE2	1:B:280:ILE:HD12	2.44	0.52
1:B:262:GLY:O	1:B:263:THR:O	2.27	0.52
1:D:292:GLY:HA3	3:D:601:NAP:O2A	2.10	0.52
1:E:356:ARG:HG2	1:E:361:SER:O	2.08	0.52
1:A:385:LEU:HD22	1:A:389:LYS:HG3	1.91	0.52
1:C:151:ILE:C	1:C:151:ILE:HD13	2.30	0.52
1:D:461:THR:OG1	1:D:464:GLN:HG3	2.09	0.52
1:F:325:ASN:OD1	1:F:326:VAL:HG23	2.10	0.52
1:C:192:LYS:N	1:C:285:ASN:HD22	2.08	0.52
1:D:340:VAL:HG11	1:D:370:VAL:HG21	1.92	0.52
1:D:348:GLN:NE2	1:D:351:ARG:HH12	2.08	0.52
1:A:32:ALA:O	1:A:34:TYR:N	2.43	0.52
1:A:472:HIS:ND1	1:A:473:PRO:HA	2.25	0.52
1:B:493:LEU:N	1:B:493:LEU:HD12	2.25	0.52
1:C:194:LEU:HB2	1:C:284:TYR:CE1	2.45	0.52
1:D:221:ARG:HH21	3:D:601:NAP:P2B	2.33	0.52
1:E:388:GLU:O	1:E:391:VAL:HG22	2.10	0.52
1:F:21:GLY:CA	2:F:600:FAD:H51A	2.36	0.52
1:D:408:PRO:O	1:D:409:LEU:C	2.49	0.51
1:E:263:THR:CB	1:E:264:PRO:CD	2.87	0.51
1:C:255:LYS:HE3	1:C:257:GLU:HG3	1.91	0.51
1:E:98:TRP:CE2	1:E:102:ILE:HD11	2.45	0.51
1:A:123:LYS:HB2	1:A:123:LYS:HZ2	1.75	0.51
1:A:348:GLN:HG3	1:B:469:ILE:HD12	1.92	0.51
1:C:255:LYS:HB3	1:C:270:VAL:HG21	1.92	0.51
1:E:30:GLU:HG3	1:E:351:ARG:HA	1.92	0.51
1:E:85:ASN:O	1:E:413:ILE:HD11	2.09	0.51
1:E:114:TRP:O	1:E:117:ARG:N	2.43	0.51
1:F:25:LEU:CD2	1:F:120:LEU:HD11	2.41	0.51
1:B:114:TRP:CE2	1:B:117:ARG:NH2	2.74	0.51
1:C:254:ILE:CD1	1:C:272:GLN:HB2	2.35	0.51
1:E:115:GLY:O	1:E:118:VAL:HB	2.10	0.51
1:E:291:ILE:O	1:E:291:ILE:HG13	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:340:VAL:HG13	1:E:345:VAL:HG21	1.92	0.51
1:F:343:THR:OG1	2:F:600:FAD:H2'	2.10	0.51
1:A:29:LYS:HD2	1:A:123:LYS:HZ2	1.75	0.51
1:A:411:TRP:CZ3	1:A:421:CYS:SG	3.03	0.51
1:A:470:GLY:HA2	1:B:450:GLN:NE2	2.23	0.51
1:C:344:PRO:HG3	1:D:472:HIS:HB2	1.92	0.51
1:E:104:ALA:CB	1:F:413:ILE:HD12	2.41	0.51
1:E:169:GLY:N	1:E:173:ASP:OD2	2.44	0.51
1:C:318:VAL:HG13	1:C:319:THR:O	2.11	0.51
1:E:256:VAL:HG23	1:E:269:VAL:HG22	1.91	0.51
1:A:273:SER:OG	1:A:275:ASN:N	2.44	0.51
1:F:271:ALA:O	1:F:280:ILE:HG12	2.11	0.51
1:F:474:VAL:HG12	1:F:475:CYS:N	2.26	0.51
1:A:146:LYS:HE2	1:C:187:PRO:O	2.11	0.51
1:C:151:ILE:HD13	1:C:152:TYR:N	2.25	0.51
1:C:173:ASP:O	1:C:177:CYS:HB2	2.10	0.51
1:D:85:ASN:HB2	1:D:413:ILE:CD1	2.41	0.51
1:E:84:ARG:HH21	1:E:92:GLU:HA	1.74	0.51
1:A:487:ARG:C	1:A:489:GLY:N	2.65	0.51
1:C:222:SER:OG	1:C:226:ARG:NH2	2.43	0.51
1:C:258:GLN:HE21	1:C:261:ALA:N	2.09	0.51
1:A:151:ILE:HD13	1:A:151:ILE:C	2.31	0.50
1:A:156:ARG:HD3	1:A:330:TYR:HE2	1.76	0.50
1:B:416:ARG:HD2	1:B:417:ASP:CG	2.31	0.50
1:C:98:TRP:NE1	1:C:102:ILE:HG13	2.25	0.50
1:D:318:VAL:HG13	1:D:319:THR:O	2.11	0.50
1:C:325:ASN:OD1	1:C:326:VAL:HG23	2.12	0.50
1:D:325:ASN:OD1	1:D:326:VAL:HG23	2.10	0.50
1:E:474:VAL:CG1	1:F:447:GLU:OE1	2.59	0.50
1:A:201:VAL:HG13	2:A:600:FAD:HM73	1.92	0.50
1:A:471:ILE:H	1:B:450:GLN:HE22	1.58	0.50
1:E:46:PRO:HG3	1:E:52:ARG:CZ	2.41	0.50
1:E:151:ILE:HD13	1:E:151:ILE:C	2.32	0.50
1:E:385:LEU:HD22	1:E:389:LYS:HG3	1.93	0.50
1:D:348:GLN:NE2	1:D:351:ARG:NH1	2.58	0.50
4:D:700:MPD:O4	4:D:700:MPD:H11	2.12	0.50
1:E:48:PRO:HB2	1:E:49:LEU:HD22	1.93	0.50
1:E:164:ARG:NH1	1:E:164:ARG:HG3	2.27	0.50
1:F:156:ARG:HG3	1:F:156:ARG:HH11	1.77	0.50
1:C:447:GLU:OE1	1:D:474:VAL:HG12	2.12	0.50
1:D:13:TYR:HA	1:D:37:LYS:HD3	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:28:ALA:HB2	1:E:40:VAL:CG2	2.42	0.50
1:E:168:LEU:HD21	1:E:291:ILE:HG21	1.93	0.50
1:E:318:VAL:HG13	1:E:319:THR:O	2.12	0.50
1:A:128:GLU:CD	1:C:100:ARG:HH12	2.15	0.50
1:B:418:ASN:ND2	1:B:419:ASN:H	2.09	0.50
1:B:432:ASN:HD22	1:B:463:LYS:HZ1	1.58	0.50
1:D:168:LEU:HD13	1:D:253:PRO:HB2	1.93	0.50
1:D:418:ASN:OD1	1:D:495:ALA:HB2	2.12	0.50
1:E:471:ILE:N	1:F:450:GLN:HE22	2.09	0.50
1:A:94:VAL:HG11	1:B:90:VAL:HG22	1.94	0.50
1:A:325:ASN:OD1	1:A:326:VAL:HG23	2.11	0.50
1:B:340:VAL:HG13	1:B:345:VAL:HG21	1.94	0.50
1:A:266:ARG:C	1:A:267:LEU:HD12	2.32	0.50
1:B:55:LEU:HD23	1:B:56:GLY:H	1.76	0.50
1:C:259:ILE:HD11	1:C:268:ARG:HD2	1.93	0.50
1:C:259:ILE:O	1:C:260:GLU:CB	2.59	0.50
1:D:151:ILE:HD13	1:D:152:TYR:N	2.26	0.50
1:D:387:GLU:HA	1:D:426:ILE:HD13	1.93	0.50
1:E:266:ARG:HH11	1:E:266:ARG:HB2	1.76	0.50
1:A:53:TRP:CH2	1:A:62:VAL:HG11	2.45	0.49
4:A:701:MPD:O4	4:A:701:MPD:HM1	2.12	0.49
1:B:176:TYR:CE1	1:B:258:GLN:HB2	2.47	0.49
1:B:387:GLU:HA	1:B:426:ILE:HD13	1.93	0.49
1:E:114:TRP:O	1:E:116:TYR:N	2.44	0.49
1:D:374:VAL:HG12	1:D:376:THR:HG23	1.94	0.49
1:A:32:ALA:C	1:A:34:TYR:H	2.16	0.49
1:D:373:THR:HG21	1:D:446:GLY:HA2	1.93	0.49
1:E:387:GLU:HA	1:E:426:ILE:HD13	1.93	0.49
1:F:251:PHE:CZ	1:F:273:SER:HB2	2.46	0.49
1:B:46:PRO:HG3	1:B:52:ARG:HB3	1.95	0.49
1:B:151:ILE:HD13	1:B:152:TYR:N	2.27	0.49
1:C:331:ALA:O	1:C:332:ILE:HD12	2.13	0.49
1:C:400:GLU:OE1	1:C:487:ARG:NH1	2.45	0.49
1:D:356:ARG:HG2	1:D:361:SER:O	2.13	0.49
1:D:406:PHE:CZ	1:D:421:CYS:HB3	2.47	0.49
1:E:167:TYR:CE2	1:E:174:LYS:HA	2.47	0.49
1:E:400:GLU:OE1	1:E:487:ARG:HD2	2.13	0.49
1:E:487:ARG:O	1:E:489:GLY:N	2.46	0.49
1:F:318:VAL:HG13	1:F:319:THR:O	2.13	0.49
1:F:331:ALA:O	1:F:332:ILE:HD12	2.13	0.49
1:B:167:TYR:CE2	1:B:174:LYS:HG2	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:194:LEU:HB2	1:B:284:TYR:CE2	2.47	0.49
1:B:200:TYR:CD2	1:B:201:VAL:N	2.80	0.49
1:C:259:ILE:HG22	1:C:266:ARG:HH21	1.77	0.49
1:C:402:TYR:CE2	1:C:462:LYS:HE3	2.47	0.49
1:E:96:HIS:HB2	1:F:88:TRP:CZ3	2.48	0.49
1:E:254:ILE:HG12	1:E:271:ALA:HA	1.95	0.49
1:E:432:ASN:HD22	1:E:463:LYS:HZ1	1.60	0.49
1:F:263:THR:CB	1:F:264:PRO:HD3	2.43	0.49
1:B:16:ILE:HG13	1:B:154:ALA:HB2	1.94	0.49
1:B:258:GLN:CG	1:B:258:GLN:O	2.60	0.49
1:E:389:LYS:O	1:E:389:LYS:HD3	2.12	0.49
1:B:193:THR:HB	1:B:286:THR:HB	1.95	0.49
1:D:173:ASP:O	1:D:177:CYS:HB2	2.12	0.49
1:E:301:GLY:HA2	1:E:303:GLU:OE2	2.13	0.49
1:E:373:THR:HG21	1:E:446:GLY:HA2	1.95	0.49
1:A:32:ALA:C	1:A:34:TYR:N	2.67	0.49
1:A:253:PRO:HA	1:A:271:ALA:HB2	1.95	0.49
1:D:85:ASN:HB2	1:D:413:ILE:HD12	1.94	0.49
1:E:82:ASP:O	1:E:83:SER:C	2.51	0.49
1:E:123:LYS:O	1:E:123:LYS:HG3	2.13	0.49
1:E:396:GLU:OE2	1:E:487:ARG:NH2	2.46	0.49
1:F:388:GLU:O	1:F:391:VAL:HG22	2.12	0.49
1:B:55:LEU:CD2	1:B:56:GLY:N	2.76	0.49
1:B:408:PRO:O	1:B:411:TRP:N	2.37	0.49
1:C:84:ARG:HE	1:C:90:VAL:HG23	1.78	0.49
1:D:255:LYS:HB3	1:D:270:VAL:HG21	1.95	0.49
1:E:410:GLU:OE2	1:F:68:LYS:NZ	2.46	0.49
1:F:110:GLY:HA2	1:F:113:ASN:ND2	2.27	0.49
1:F:178:ILE:O	1:F:288:MET:HA	2.12	0.49
1:A:29:LYS:HB2	1:A:29:LYS:HZ3	1.75	0.48
1:C:76:LEU:CD2	1:D:86:TYR:CD2	2.95	0.48
1:F:98:TRP:CZ2	1:F:102:ILE:HD11	2.48	0.48
4:F:700:MPD:O4	4:F:700:MPD:H11	2.13	0.48
1:B:30:GLU:HG2	1:B:351:ARG:HG2	1.94	0.48
1:B:63:GLY:O	1:B:66:PRO:HG2	2.13	0.48
1:B:114:TRP:O	1:B:118:VAL:HG23	2.13	0.48
1:C:188:TYR:CB	1:C:263:THR:HB	2.43	0.48
1:C:194:LEU:HB2	1:C:284:TYR:CD1	2.49	0.48
1:E:280:ILE:CD1	1:E:281:GLU:H	2.26	0.48
1:E:447:GLU:OE1	1:F:474:VAL:HG12	2.13	0.48
1:E:469:ILE:HG21	1:F:345:VAL:HG12	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:491:SER:OG	1:F:492:ILE:N	2.46	0.48
1:A:163:GLU:HG2	1:A:295:ALA:HA	1.95	0.48
1:A:171:PRO:HB2	1:A:255:LYS:HD2	1.95	0.48
1:B:253:PRO:HA	1:B:271:ALA:HB2	1.94	0.48
1:C:88:TRP:CZ3	1:D:96:HIS:HB2	2.49	0.48
1:C:283:GLU:O	1:C:283:GLU:HG3	2.12	0.48
1:D:188:TYR:HB2	1:D:264:PRO:HD3	1.95	0.48
1:F:173:ASP:O	1:F:177:CYS:HB2	2.13	0.48
1:A:471:ILE:HB	1:A:474:VAL:HG21	1.94	0.48
1:B:391:VAL:CG2	1:B:392:GLU:N	2.76	0.48
1:C:108:HIS:CE1	1:D:412:THR:HG21	2.48	0.48
1:C:259:ILE:CG1	1:C:268:ARG:HB2	2.44	0.48
1:D:86:TYR:CE1	1:D:413:ILE:HG12	2.49	0.48
1:E:266:ARG:NH1	1:E:266:ARG:CB	2.76	0.48
1:E:471:ILE:HG21	1:F:373:THR:HG23	1.90	0.48
1:F:339:LYS:HD2	1:F:367:TYR:CE2	2.48	0.48
1:A:65:ILE:HB	1:A:66:PRO:CD	2.44	0.48
1:A:251:PHE:CD2	1:A:280:ILE:HD11	2.49	0.48
1:B:44:VAL:HG21	1:B:53:TRP:CD1	2.48	0.48
1:D:212:ILE:HD12	1:D:212:ILE:HA	1.70	0.48
1:D:403:HIS:CE1	1:D:492:ILE:HD13	2.48	0.48
1:D:476:ALA:O	1:D:478:VAL:N	2.47	0.48
1:B:403:HIS:CD2	1:B:403:HIS:H	2.32	0.48
1:C:70:MET:HE3	1:C:184:PHE:HD1	1.78	0.48
1:D:64:CYS:SG	2:D:600:FAD:C10	3.02	0.48
1:D:65:ILE:HB	1:D:66:PRO:CD	2.43	0.48
1:B:200:TYR:CE2	1:B:201:VAL:HG23	2.48	0.48
1:C:391:VAL:CG2	1:C:392:GLU:N	2.77	0.48
1:E:114:TRP:O	1:E:115:GLY:C	2.51	0.48
1:E:156:ARG:HH11	1:E:156:ARG:HG3	1.78	0.48
1:E:192:LYS:N	1:E:285:ASN:HD22	2.11	0.48
1:F:78:GLN:NE2	1:F:82:ASP:OD1	2.42	0.48
1:F:389:LYS:O	1:F:389:LYS:HD3	2.14	0.48
1:F:477:GLU:O	1:F:477:GLU:HG3	2.14	0.48
1:A:150:LYS:HD3	1:A:152:TYR:CZ	2.48	0.48
1:B:385:LEU:HD22	1:B:389:LYS:HG3	1.95	0.48
1:C:49:LEU:N	1:C:49:LEU:HD22	2.28	0.48
1:D:151:ILE:HD13	1:D:151:ILE:C	2.34	0.48
1:D:156:ARG:HG3	1:D:156:ARG:NH1	2.29	0.48
1:D:263:THR:OG1	1:D:264:PRO:CD	2.62	0.48
1:E:150:LYS:HD3	1:E:152:TYR:CZ	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:58:THR:O	1:F:59:CYS:C	2.52	0.48
1:F:176:TYR:HB3	1:F:267:LEU:CD2	2.35	0.48
1:F:203:LEU:HD22	1:F:240:MET:SD	2.54	0.48
1:A:471:ILE:H	1:B:450:GLN:NE2	2.11	0.48
1:B:400:GLU:OE1	1:B:487:ARG:HD2	2.14	0.48
1:B:423:ALA:HB1	1:B:479:PHE:CZ	2.49	0.48
1:E:52:ARG:HB2	1:E:52:ARG:NH1	2.29	0.48
1:F:257:GLU:OE2	1:F:268:ARG:NH1	2.47	0.48
1:A:98:TRP:CZ2	1:A:102:ILE:HD11	2.49	0.48
1:B:151:ILE:HD13	1:B:151:ILE:C	2.34	0.48
1:D:340:VAL:O	1:D:340:VAL:HG22	2.13	0.48
1:D:385:LEU:HD22	1:D:389:LYS:CG	2.44	0.48
1:E:98:TRP:O	1:E:102:ILE:HG12	2.14	0.48
1:F:385:LEU:HD22	1:F:389:LYS:HG3	1.95	0.48
1:A:108:HIS:CD2	1:B:412:THR:HB	2.49	0.47
1:C:101:MET:HG3	1:D:86:TYR:O	2.14	0.47
1:C:272:GLN:HA	1:C:279:ILE:HG12	1.95	0.47
1:C:412:THR:O	1:C:415:SER:N	2.47	0.47
1:C:471:ILE:HD13	1:D:373:THR:HG22	1.96	0.47
1:E:69:LEU:CD1	1:E:105:VAL:HG23	2.44	0.47
1:E:106:GLN:HE21	1:E:106:GLN:CA	2.19	0.47
1:E:138:HIS:O	1:E:153:SER:HA	2.14	0.47
1:E:478:VAL:CG1	1:E:479:PHE:N	2.77	0.47
1:F:58:THR:O	1:F:60:VAL:N	2.47	0.47
1:F:156:ARG:HD3	1:F:330:TYR:HE2	1.79	0.47
1:B:192:LYS:H	1:B:285:ASN:HD22	1.61	0.47
1:B:401:VAL:O	1:B:485:THR:HA	2.13	0.47
1:C:263:THR:CB	1:C:264:PRO:HD3	2.44	0.47
1:D:222:SER:OG	1:D:226:ARG:NH2	2.47	0.47
1:E:469:ILE:HD12	1:F:348:GLN:HG3	1.95	0.47
1:F:403:HIS:CD2	1:F:492:ILE:HD13	2.49	0.47
1:A:55:LEU:CD2	1:A:56:GLY:H	2.26	0.47
1:B:389:LYS:O	1:B:389:LYS:HD3	2.15	0.47
1:F:270:VAL:HG13	1:F:280:ILE:O	2.15	0.47
1:F:411:TRP:C	1:F:414:PRO:HD2	2.35	0.47
1:F:484:VAL:HG11	1:F:491:SER:O	2.13	0.47
1:A:151:ILE:HD13	1:A:152:TYR:N	2.29	0.47
1:C:70:MET:HG2	1:C:101:MET:CE	2.45	0.47
1:E:325:ASN:OD1	1:E:326:VAL:HG23	2.14	0.47
1:F:70:MET:HG2	1:F:101:MET:HE3	1.95	0.47
1:F:351:ARG:HD3	5:F:2005:HOH:O	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:391:VAL:CG2	1:A:392:GLU:N	2.78	0.47
1:B:86:TYR:CE1	1:B:413:ILE:HD11	2.41	0.47
1:C:258:GLN:C	1:C:260:GLU:H	2.18	0.47
1:E:166:ARG:HG2	1:E:291:ILE:HD11	1.97	0.47
1:E:265:GLY:O	1:E:285:ASN:HA	2.14	0.47
1:A:259:ILE:HB	1:A:266:ARG:O	2.14	0.47
1:B:318:VAL:HG13	1:B:319:THR:O	2.13	0.47
1:B:403:HIS:HB2	1:B:422:TYR:CE1	2.49	0.47
1:C:450:GLN:HE21	1:D:477:GLU:HA	1.79	0.47
1:E:58:THR:O	1:E:63:GLY:N	2.48	0.47
1:F:79:ALA:HB2	4:F:700:MPD:HM2	1.97	0.47
1:F:474:VAL:HG12	1:F:475:CYS:H	1.79	0.47
1:B:258:GLN:O	1:B:259:ILE:C	2.52	0.47
1:B:262:GLY:O	1:B:265:GLY:N	2.47	0.47
1:C:96:HIS:HA	1:D:87:GLY:O	2.15	0.47
1:C:100:ARG:O	1:C:103:GLU:HB3	2.14	0.47
1:C:168:LEU:HD13	1:C:253:PRO:HB2	1.96	0.47
1:D:55:LEU:HD22	1:D:56:GLY:N	2.29	0.47
1:D:90:VAL:CG2	1:D:91:GLU:N	2.77	0.47
1:D:150:LYS:HD3	1:D:152:TYR:CZ	2.50	0.47
1:E:256:VAL:C	1:E:257:GLU:HG2	2.34	0.47
1:E:287:VAL:O	1:E:287:VAL:HG12	2.14	0.47
1:F:70:MET:HE3	1:F:184:PHE:HD1	1.79	0.47
1:A:29:LYS:CE	1:A:119:ALA:HB1	2.44	0.47
1:A:170:ILE:HB	1:A:254:ILE:O	2.14	0.47
1:B:30:GLU:HG3	1:B:351:ARG:HA	1.96	0.47
1:D:21:GLY:HA3	2:D:600:FAD:H52A	1.96	0.47
1:E:90:VAL:HG21	1:F:80:LEU:CD2	2.45	0.47
1:E:396:GLU:O	1:E:487:ARG:NH2	2.48	0.47
1:B:123:LYS:O	1:B:124:LYS:HB2	2.13	0.47
1:B:301:GLY:HA2	1:B:303:GLU:OE2	2.15	0.47
1:C:79:ALA:HB2	4:D:700:MPD:HM2	1.96	0.47
1:C:97:ASP:OD1	1:C:99:ASP:HB2	2.15	0.47
1:C:389:LYS:HB2	1:C:389:LYS:NZ	2.30	0.47
1:E:336:LEU:HB3	1:E:339:LYS:CG	2.44	0.47
1:B:55:LEU:CD2	1:B:56:GLY:H	2.28	0.47
1:C:70:MET:SD	1:C:101:MET:HE1	2.55	0.47
1:C:225:LEU:HB3	1:C:228:PHE:CD2	2.50	0.47
1:C:485:THR:C	1:C:487:ARG:H	2.17	0.47
1:F:31:ALA:O	1:F:32:ALA:C	2.54	0.47
1:C:254:ILE:HD11	1:C:270:VAL:HG12	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:262:GLY:O	1:D:263:THR:O	2.32	0.46
1:E:70:MET:HE3	1:E:184:PHE:HD1	1.80	0.46
1:E:254:ILE:H	1:E:271:ALA:HA	1.78	0.46
1:E:279:ILE:CG2	1:E:280:ILE:N	2.78	0.46
1:F:67:LYS:HD2	1:F:68:LYS:N	2.30	0.46
1:F:223:ILE:HG12	1:F:226:ARG:NH2	2.30	0.46
1:F:387:GLU:HA	1:F:426:ILE:HD13	1.97	0.46
1:F:399:ILE:C	1:F:399:ILE:HD12	2.35	0.46
1:F:412:THR:O	1:F:415:SER:N	2.48	0.46
1:A:173:ASP:O	1:A:177:CYS:HB2	2.15	0.46
1:A:389:LYS:O	1:A:389:LYS:HD3	2.15	0.46
1:B:292:GLY:CA	3:B:601:NAP:O2N	2.63	0.46
1:C:32:ALA:O	1:C:34:TYR:N	2.48	0.46
1:C:259:ILE:HD11	1:C:268:ARG:CG	2.44	0.46
1:D:212:ILE:HG23	1:D:212:ILE:O	2.15	0.46
1:E:400:GLU:HA	1:E:400:GLU:OE2	2.16	0.46
1:B:419:ASN:HD21	1:B:495:ALA:N	2.12	0.46
1:C:401:VAL:HB	1:C:486:LYS:HB2	1.98	0.46
1:C:440:VAL:HB	1:C:479:PHE:HZ	1.80	0.46
1:D:62:VAL:HG23	1:D:62:VAL:O	2.16	0.46
1:E:106:GLN:NE2	1:E:106:GLN:CA	2.73	0.46
1:F:57:GLY:HA3	2:F:600:FAD:H52A	1.96	0.46
1:F:82:ASP:OD2	1:F:416:ARG:NH1	2.47	0.46
1:F:168:LEU:HD23	1:F:291:ILE:HD13	1.97	0.46
1:A:30:GLU:OE1	1:A:34:TYR:HE2	1.99	0.46
1:A:101:MET:HB2	1:B:86:TYR:O	2.16	0.46
1:A:474:VAL:HG12	1:B:447:GLU:CD	2.36	0.46
1:C:77:GLY:HA2	1:C:80:LEU:HD12	1.97	0.46
1:C:477:GLU:HA	1:D:450:GLN:NE2	2.30	0.46
1:E:105:VAL:CG1	1:E:106:GLN:N	2.79	0.46
1:B:25:LEU:CD2	1:B:120:LEU:HD11	2.43	0.46
1:B:55:LEU:HD22	1:B:56:GLY:N	2.31	0.46
1:B:156:ARG:HG3	1:B:156:ARG:NH1	2.30	0.46
1:C:92:GLU:OE2	1:E:150:LYS:CE	2.63	0.46
1:E:12:ASP:O	1:E:37:LYS:CE	2.64	0.46
1:E:46:PRO:HG3	1:E:52:ARG:NH2	2.30	0.46
1:E:98:TRP:NE1	1:E:102:ILE:HG13	2.30	0.46
1:F:66:PRO:HB3	1:F:109:ILE:HD11	1.96	0.46
1:A:138:HIS:O	1:A:153:SER:HA	2.15	0.46
1:A:212:ILE:HD12	1:A:212:ILE:HA	1.66	0.46
1:B:92:GLU:C	1:B:94:VAL:N	2.68	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:471:ILE:HG21	1:D:373:THR:HG22	1.90	0.46
1:D:83:SER:O	1:D:86:TYR:N	2.48	0.46
1:D:440:VAL:HB	1:D:479:PHE:CZ	2.51	0.46
1:E:164:ARG:HG3	1:E:164:ARG:HH11	1.80	0.46
1:A:77:GLY:HA2	1:A:80:LEU:HD12	1.97	0.46
1:A:108:HIS:NE2	1:B:412:THR:HB	2.31	0.46
1:A:156:ARG:HG3	1:A:156:ARG:HH11	1.81	0.46
1:A:387:GLU:HA	1:A:426:ILE:HD13	1.96	0.46
1:A:423:ALA:HB1	1:A:479:PHE:CZ	2.51	0.46
1:C:260:GLU:HG2	1:C:261:ALA:O	2.16	0.46
1:D:331:ALA:O	1:D:332:ILE:HD12	2.16	0.46
1:D:406:PHE:CE1	1:D:421:CYS:HB3	2.51	0.46
1:E:256:VAL:HG22	1:E:257:GLU:N	2.30	0.46
1:E:477:GLU:HA	1:F:450:GLN:HE21	1.81	0.46
1:A:53:TRP:CZ3	1:A:62:VAL:CG1	2.86	0.46
1:A:69:LEU:HD12	1:A:105:VAL:HG13	1.97	0.46
1:A:70:MET:HE1	1:A:184:PHE:HA	1.98	0.46
1:E:77:GLY:HA2	1:E:80:LEU:HD12	1.97	0.46
1:E:176:TYR:CE1	1:E:258:GLN:HB2	2.50	0.46
1:F:62:VAL:HG23	1:F:62:VAL:O	2.16	0.46
1:A:471:ILE:CG2	1:B:373:THR:HG23	2.44	0.46
1:B:98:TRP:CE2	1:B:190:PRO:HD3	2.50	0.46
1:C:101:MET:HE2	1:C:102:ILE:HD13	1.98	0.46
1:C:385:LEU:HD22	1:C:389:LYS:HG3	1.97	0.46
1:E:280:ILE:CG1	1:E:281:GLU:N	2.79	0.46
1:E:331:ALA:O	1:E:332:ILE:HD12	2.16	0.46
1:F:70:MET:HG2	1:F:101:MET:CE	2.45	0.46
1:B:36:LYS:HD2	1:B:358:TYR:CD1	2.51	0.46
1:B:221:ARG:HD3	3:B:601:NAP:C2A	2.46	0.46
1:B:222:SER:OG	3:B:601:NAP:O3X	2.26	0.46
1:B:266:ARG:NE	1:B:283:GLU:OE2	2.49	0.46
1:D:416:ARG:HG2	1:D:416:ARG:HH11	1.81	0.46
1:F:26:ALA:O	1:F:30:GLU:HB2	2.16	0.46
1:F:138:HIS:O	1:F:153:SER:HA	2.16	0.46
1:C:180:SER:HA	1:C:288:MET:CE	2.46	0.45
1:C:387:GLU:HA	1:C:426:ILE:HD13	1.98	0.45
1:D:98:TRP:CE2	1:D:190:PRO:HD3	2.52	0.45
1:E:44:VAL:HG22	2:E:600:FAD:O2B	2.16	0.45
1:A:345:VAL:HG12	1:B:469:ILE:HG21	1.98	0.45
1:B:263:THR:CB	1:B:264:PRO:CD	2.94	0.45
1:E:186:LEU:HA	1:E:187:PRO:HD3	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:253:PRO:HA	1:E:271:ALA:CB	2.40	0.45
1:F:78:GLN:NE2	1:F:416:ARG:NH1	2.64	0.45
1:F:340:VAL:HG13	1:F:345:VAL:CG2	2.37	0.45
1:A:82:ASP:O	1:A:84:ARG:N	2.50	0.45
1:A:344:PRO:HD3	2:A:600:FAD:O2	2.17	0.45
1:B:408:PRO:O	1:B:409:LEU:C	2.53	0.45
4:B:701:MPD:HM1	4:B:701:MPD:O4	2.17	0.45
1:D:138:HIS:O	1:D:153:SER:HA	2.16	0.45
1:D:411:TRP:CZ3	1:D:421:CYS:SG	3.10	0.45
1:E:65:ILE:HB	1:E:66:PRO:CD	2.46	0.45
1:E:72:GLN:CD	1:F:410:GLU:HG3	2.37	0.45
1:E:106:GLN:C	1:E:108:HIS:H	2.19	0.45
1:A:29:LYS:HD2	1:A:123:LYS:NZ	2.31	0.45
1:A:277:GLU:O	1:A:278:GLU:C	2.54	0.45
1:B:166:ARG:HG2	1:B:167:TYR:N	2.31	0.45
1:C:65:ILE:HB	1:C:66:PRO:CD	2.47	0.45
1:C:176:TYR:CE1	1:C:258:GLN:OE1	2.70	0.45
1:C:450:GLN:HE22	1:D:471:ILE:N	2.15	0.45
1:D:484:VAL:HG12	1:D:484:VAL:O	2.16	0.45
1:E:267:LEU:HD12	1:E:267:LEU:H	1.81	0.45
1:A:283:GLU:O	1:A:284:TYR:CD2	2.69	0.45
1:C:32:ALA:C	1:C:34:TYR:H	2.20	0.45
1:E:21:GLY:HA3	2:E:600:FAD:O2A	2.16	0.45
1:E:120:LEU:HD22	1:E:125:VAL:CG1	2.46	0.45
1:A:38:VAL:HG13	1:A:125:VAL:HG22	1.97	0.45
1:B:65:ILE:HB	1:B:66:PRO:CD	2.46	0.45
1:B:138:HIS:O	1:B:153:SER:HA	2.17	0.45
1:C:142:ALA:HB3	1:C:152:TYR:HE1	1.81	0.45
1:C:277:GLU:O	1:C:278:GLU:O	2.35	0.45
1:E:90:VAL:HG21	1:F:80:LEU:HD21	1.97	0.45
1:E:161:THR:O	2:E:600:FAD:H8A	2.17	0.45
1:E:450:GLN:NE2	1:F:470:GLY:HA2	2.26	0.45
1:F:158:LEU:HD11	1:F:332:ILE:HB	1.98	0.45
1:F:192:LYS:HE2	1:F:284:TYR:CD2	2.52	0.45
1:F:373:THR:HG21	1:F:446:GLY:HA2	1.97	0.45
1:F:488:SER:C	1:F:490:ALA:H	2.20	0.45
1:B:389:LYS:HB2	1:B:389:LYS:NZ	2.32	0.45
1:C:86:TYR:O	1:D:101:MET:HG3	2.17	0.45
1:C:340:VAL:HG22	1:C:340:VAL:O	2.17	0.45
1:C:389:LYS:HD3	1:C:389:LYS:O	2.16	0.45
1:D:301:GLY:HA2	1:D:303:GLU:OE2	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:403:HIS:ND1	1:D:486:LYS:HE3	2.32	0.45
1:E:81:GLN:O	1:E:84:ARG:HB3	2.16	0.45
1:E:340:VAL:HG13	1:E:345:VAL:HG11	1.98	0.45
1:E:412:THR:HG21	1:F:108:HIS:CE1	2.51	0.45
1:F:156:ARG:HG3	1:F:156:ARG:NH1	2.32	0.45
1:F:292:GLY:HA3	3:F:601:NAP:O1A	2.16	0.45
1:F:412:THR:OG1	1:F:413:ILE:N	2.50	0.45
1:A:373:THR:HG23	1:B:471:ILE:HG21	1.96	0.45
1:A:403:HIS:CE1	1:A:492:ILE:CD1	3.00	0.45
1:B:374:VAL:HG12	1:B:376:THR:HG23	1.97	0.45
1:C:94:VAL:HG12	1:D:88:TRP:HE3	1.80	0.45
1:C:121:ARG:HG2	1:C:122:GLU:N	2.30	0.45
1:C:166:ARG:HG2	1:C:167:TYR:N	2.32	0.45
1:E:252:VAL:C	1:E:271:ALA:HB1	2.37	0.45
1:A:301:GLY:HA2	1:A:303:GLU:OE2	2.16	0.45
1:C:114:TRP:O	1:C:117:ARG:N	2.49	0.45
1:D:192:LYS:H	1:D:285:ASN:HD22	1.64	0.45
1:E:156:ARG:HD3	1:E:330:TYR:HE2	1.81	0.45
1:E:173:ASP:O	1:E:177:CYS:HB2	2.17	0.45
1:F:65:ILE:HB	1:F:66:PRO:CD	2.47	0.45
1:F:150:LYS:HD3	1:F:152:TYR:CZ	2.51	0.45
1:A:53:TRP:CE3	1:A:62:VAL:HG11	2.48	0.45
1:B:207:GLY:HA2	1:B:245:ILE:HD11	1.98	0.45
1:B:391:VAL:HG23	1:B:392:GLU:N	2.32	0.45
1:D:46:PRO:CG	1:D:52:ARG:CZ	2.93	0.45
1:E:191:GLY:O	1:E:193:THR:CG2	2.65	0.45
1:E:371:PRO:HB3	1:E:453:ALA:HB2	1.99	0.45
1:F:33:GLN:O	1:F:33:GLN:NE2	2.50	0.45
1:F:212:ILE:HD12	1:F:212:ILE:HA	1.64	0.45
1:D:265:GLY:O	1:D:285:ASN:OD1	2.35	0.44
1:E:391:VAL:CG2	1:E:392:GLU:N	2.80	0.44
1:F:31:ALA:C	1:F:33:GLN:N	2.71	0.44
1:F:57:GLY:HA2	2:F:600:FAD:C3B	2.47	0.44
1:F:303:GLU:CD	1:F:303:GLU:H	2.20	0.44
1:F:308:LYS:N	1:F:325:ASN:ND2	2.44	0.44
1:A:139:ARG:NH1	5:A:2002:HOH:O	2.50	0.44
1:E:266:ARG:HH11	1:E:266:ARG:CB	2.30	0.44
1:E:485:THR:OG1	1:E:488:SER:CB	2.65	0.44
1:B:67:LYS:HD2	1:B:68:LYS:N	2.32	0.44
1:B:310:ASN:O	1:B:312:LYS:N	2.50	0.44
1:B:356:ARG:HG2	1:B:361:SER:O	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:408:PRO:O	1:D:410:GLU:N	2.51	0.44
1:E:106:GLN:C	1:E:108:HIS:N	2.70	0.44
1:E:392:GLU:O	1:E:392:GLU:HG2	2.17	0.44
1:F:90:VAL:O	1:F:91:GLU:C	2.55	0.44
1:A:343:THR:HB	1:A:344:PRO:HD3	2.00	0.44
1:A:413:ILE:C	1:A:415:SER:N	2.71	0.44
1:B:59:CYS:HA	1:B:63:GLY:HA3	1.99	0.44
1:B:403:HIS:H	1:B:403:HIS:HD2	1.64	0.44
1:C:25:LEU:HD13	1:C:116:TYR:CD1	2.51	0.44
1:C:92:GLU:OE2	1:E:150:LYS:HE2	2.17	0.44
1:C:138:HIS:O	1:C:153:SER:HA	2.17	0.44
1:D:413:ILE:HD12	1:D:413:ILE:C	2.38	0.44
1:E:106:GLN:HE22	1:E:109:ILE:CD1	2.13	0.44
1:F:58:THR:HG23	1:F:62:VAL:HG23	1.99	0.44
1:A:86:TYR:CE2	1:A:414:PRO:HG3	2.44	0.44
1:C:163:GLU:OE1	1:C:334:ASP:HB3	2.18	0.44
1:C:178:ILE:O	1:C:288:MET:HA	2.17	0.44
1:C:258:GLN:HE21	1:C:261:ALA:CA	2.31	0.44
1:C:477:GLU:CA	1:D:450:GLN:HE21	2.30	0.44
1:D:476:ALA:C	1:D:478:VAL:N	2.71	0.44
1:E:69:LEU:HD22	1:F:413:ILE:CG2	2.47	0.44
1:F:47:THR:HG21	1:F:181:ASP:HB3	1.99	0.44
1:A:191:GLY:O	1:A:193:THR:CG2	2.66	0.44
1:A:310:ASN:O	1:A:312:LYS:N	2.50	0.44
1:A:373:THR:HG21	1:A:446:GLY:HA2	1.99	0.44
1:A:391:VAL:HG23	1:A:392:GLU:N	2.33	0.44
1:B:186:LEU:HA	1:B:187:PRO:HD3	1.83	0.44
1:C:114:TRP:O	1:C:118:VAL:HG23	2.18	0.44
1:D:252:VAL:O	1:D:271:ALA:HB1	2.18	0.44
1:D:391:VAL:CG2	1:D:392:GLU:N	2.80	0.44
1:E:221:ARG:HG3	1:E:252:VAL:CG2	2.48	0.44
1:F:57:GLY:O	1:F:58:THR:O	2.35	0.44
1:F:432:ASN:HD22	1:F:463:LYS:HZ3	1.63	0.44
1:A:100:ARG:HG3	1:A:100:ARG:HH11	1.83	0.44
1:A:471:ILE:HG21	1:B:373:THR:HG22	1.94	0.44
1:B:94:VAL:O	1:B:94:VAL:HG23	2.16	0.44
1:B:144:ASN:CG	1:B:145:ASN:N	2.71	0.44
1:C:373:THR:HG21	1:C:446:GLY:CA	2.47	0.44
1:D:105:VAL:HG12	1:D:106:GLN:N	2.32	0.44
1:D:228:PHE:O	1:D:229:ASP:C	2.55	0.44
1:F:49:LEU:N	1:F:49:LEU:CD2	2.78	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:389:LYS:HB2	1:B:389:LYS:HZ3	1.82	0.44
1:C:193:THR:HB	1:C:286:THR:HB	1.99	0.44
1:E:51:THR:HG22	1:E:52:ARG:N	2.32	0.44
1:C:259:ILE:HG22	1:C:266:ARG:NH2	2.33	0.44
1:D:249:ARG:NH1	5:D:2004:HOH:O	2.51	0.44
1:D:262:GLY:O	1:D:265:GLY:N	2.51	0.44
1:D:389:LYS:HB2	1:D:389:LYS:NZ	2.32	0.44
1:E:16:ILE:HG12	1:E:39:MET:HE2	2.00	0.44
1:E:277:GLU:O	1:E:278:GLU:C	2.56	0.44
1:E:340:VAL:CG1	1:E:345:VAL:HG11	2.48	0.44
1:F:205:CYS:HA	1:F:208:PHE:CE2	2.53	0.44
1:F:391:VAL:CG2	1:F:392:GLU:N	2.80	0.44
1:A:49:LEU:HD22	1:A:49:LEU:N	2.33	0.43
1:A:196:VAL:HG21	1:A:253:PRO:HG2	2.00	0.43
1:B:156:ARG:HD3	1:B:330:TYR:HE2	1.82	0.43
1:C:36:LYS:HE3	1:C:358:TYR:CD1	2.53	0.43
1:C:43:PHE:C	1:C:43:PHE:CD2	2.91	0.43
1:C:150:LYS:HD3	1:C:152:TYR:CZ	2.52	0.43
1:C:255:LYS:HE3	1:C:257:GLU:CG	2.48	0.43
1:D:117:ARG:NH1	1:D:117:ARG:HB3	2.33	0.43
1:F:58:THR:O	1:F:61:ASN:N	2.51	0.43
1:B:36:LYS:HG3	1:B:358:TYR:CG	2.53	0.43
1:B:333:GLY:O	1:B:336:LEU:HB2	2.18	0.43
1:C:32:ALA:C	1:C:34:TYR:N	2.72	0.43
1:C:278:GLU:CG	1:C:279:ILE:N	2.78	0.43
1:C:494:GLN:HE21	1:C:494:GLN:HB3	1.60	0.43
1:E:405:TYR:CE1	1:E:493:LEU:HG	2.48	0.43
1:F:86:TYR:CE2	1:F:414:PRO:HG3	2.53	0.43
1:F:167:TYR:CD2	1:F:174:LYS:HG2	2.53	0.43
1:F:293:ARG:CZ	2:F:600:FAD:HM81	2.48	0.43
1:F:301:GLY:HA2	1:F:303:GLU:OE2	2.18	0.43
1:F:371:PRO:HB3	1:F:453:ALA:HB2	2.00	0.43
1:A:407:TRP:CD1	1:A:418:ASN:HA	2.53	0.43
1:B:339:LYS:HA	1:B:339:LYS:CE	2.46	0.43
1:B:408:PRO:HG2	1:B:411:TRP:CZ3	2.53	0.43
1:C:275:ASN:CG	1:C:276:SER:H	2.21	0.43
1:C:392:GLU:O	1:C:392:GLU:HG2	2.18	0.43
1:D:51:THR:HA	5:D:2001:HOH:O	2.17	0.43
1:D:225:LEU:HB3	1:D:228:PHE:CD2	2.53	0.43
1:F:116:TYR:C	1:F:118:VAL:N	2.70	0.43
1:A:144:ASN:CG	1:A:145:ASN:N	2.72	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:91:GLU:HB3	1:B:92:GLU:H	1.62	0.43
1:B:101:MET:O	1:B:102:ILE:C	2.56	0.43
1:C:192:LYS:HE2	1:C:284:TYR:CD2	2.53	0.43
1:C:447:GLU:OE1	1:D:474:VAL:CG1	2.66	0.43
1:D:258:GLN:NE2	1:D:261:ALA:HB2	2.32	0.43
1:D:310:ASN:O	1:D:312:LYS:N	2.51	0.43
1:E:485:THR:OG1	1:E:488:SER:HB2	2.19	0.43
1:F:176:TYR:CE1	1:F:258:GLN:OE1	2.72	0.43
1:A:29:LYS:HB2	1:A:29:LYS:HZ2	1.80	0.43
1:A:38:VAL:CG2	1:A:39:MET:N	2.81	0.43
1:A:146:LYS:HE3	1:C:187:PRO:HB3	2.01	0.43
1:B:173:ASP:O	1:B:177:CYS:HB2	2.19	0.43
1:B:331:ALA:O	1:B:332:ILE:HD12	2.18	0.43
1:B:373:THR:HG21	1:B:446:GLY:CA	2.48	0.43
1:B:413:ILE:N	1:B:414:PRO:CD	2.82	0.43
1:C:88:TRP:HE3	1:D:94:VAL:HG12	1.83	0.43
1:C:156:ARG:HD3	1:C:330:TYR:HE2	1.82	0.43
1:D:263:THR:O	1:D:264:PRO:C	2.50	0.43
1:E:13:TYR:CD1	1:E:37:LYS:HG2	2.48	0.43
1:E:67:LYS:HD2	1:E:68:LYS:N	2.33	0.43
1:E:158:LEU:HD11	1:E:332:ILE:HB	2.01	0.43
1:E:212:ILE:HG23	1:E:212:ILE:O	2.18	0.43
1:A:371:PRO:HB3	1:A:453:ALA:HB2	1.99	0.43
1:B:77:GLY:HA2	1:B:80:LEU:HD12	2.00	0.43
1:C:44:VAL:CG1	1:C:53:TRP:CE2	3.01	0.43
1:C:85:ASN:CB	1:C:413:ILE:CD1	2.96	0.43
1:C:315:LYS:HD2	1:C:336:LEU:O	2.19	0.43
1:D:64:CYS:SG	2:D:600:FAD:C4X	3.06	0.43
1:E:256:VAL:HG22	1:E:257:GLU:H	1.82	0.43
1:A:487:ARG:O	1:A:489:GLY:N	2.43	0.43
1:B:336:LEU:CB	1:B:339:LYS:HG3	2.43	0.43
1:D:262:GLY:O	1:D:265:GLY:CA	2.67	0.43
1:E:156:ARG:HG3	1:E:156:ARG:NH1	2.33	0.43
1:E:389:LYS:HB2	1:E:389:LYS:NZ	2.33	0.43
1:E:399:ILE:HA	1:E:427:CYS:O	2.18	0.43
1:E:410:GLU:OE2	1:F:68:LYS:CE	2.65	0.43
1:E:420:LYS:HD3	1:E:420:LYS:HA	1.69	0.43
1:F:411:TRP:HZ3	1:F:421:CYS:SG	2.42	0.43
1:A:67:LYS:HD2	1:A:68:LYS:N	2.33	0.43
1:A:255:LYS:HE2	1:A:257:GLU:HG2	2.01	0.43
1:B:432:ASN:HD22	1:B:463:LYS:HZ3	1.65	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:67:LYS:HD2	1:C:68:LYS:N	2.34	0.43
1:C:269:VAL:N	1:C:282:GLY:O	2.47	0.43
1:C:411:TRP:C	1:C:414:PRO:HD2	2.39	0.43
1:D:165:PRO:HG3	5:D:2005:HOH:O	2.18	0.43
1:D:186:LEU:HA	1:D:187:PRO:HD3	1.84	0.43
1:D:262:GLY:O	1:D:264:PRO:C	2.57	0.43
1:D:371:PRO:HB3	1:D:453:ALA:HB2	2.01	0.43
1:D:413:ILE:N	1:D:414:PRO:CD	2.82	0.43
1:E:10:SER:OG	1:E:11:TYR:N	2.49	0.43
1:E:236:ILE:HD11	1:E:380:TYR:CB	2.49	0.43
1:F:77:GLY:HA2	1:F:80:LEU:HD12	2.00	0.43
1:A:59:CYS:SG	1:B:472:HIS:CD2	3.12	0.43
1:A:298:ARG:H	1:A:298:ARG:HG2	1.51	0.43
1:B:344:PRO:HD3	2:B:600:FAD:O2	2.19	0.43
1:C:391:VAL:HG23	1:C:392:GLU:N	2.32	0.43
1:E:13:TYR:O	1:E:154:ALA:HA	2.19	0.43
1:E:14:ASP:CG	1:E:36:LYS:HD2	2.39	0.43
1:E:341:GLU:H	1:E:341:GLU:CD	2.22	0.43
1:E:413:ILE:C	1:E:415:SER:N	2.73	0.43
1:F:432:ASN:HD22	1:F:463:LYS:HZ1	1.64	0.43
1:A:53:TRP:CE3	1:A:62:VAL:CG1	3.02	0.43
1:D:298:ARG:H	1:D:298:ARG:HG2	1.51	0.43
1:D:449:THR:O	1:D:450:GLN:C	2.57	0.43
1:F:144:ASN:CG	1:F:145:ASN:N	2.72	0.43
1:A:69:LEU:O	1:A:72:GLN:HB3	2.19	0.42
1:A:229:ASP:OD1	1:A:231:ASP:HB3	2.19	0.42
1:A:403:HIS:CE1	1:A:492:ILE:HD13	2.53	0.42
1:C:416:ARG:O	1:C:417:ASP:C	2.58	0.42
1:D:389:LYS:O	1:D:389:LYS:HD3	2.19	0.42
1:E:98:TRP:CD1	1:E:98:TRP:C	2.91	0.42
1:E:374:VAL:HG12	1:E:376:THR:HG23	2.01	0.42
1:E:471:ILE:HG21	1:F:373:THR:HG22	1.99	0.42
1:F:337:GLU:HG2	1:F:338:ASP:OD2	2.18	0.42
1:F:342:LEU:O	1:F:345:VAL:HG22	2.19	0.42
1:A:228:PHE:O	1:A:229:ASP:C	2.57	0.42
1:B:258:GLN:HE21	1:B:261:ALA:HA	1.84	0.42
1:C:59:CYS:HA	1:C:63:GLY:HA3	2.00	0.42
1:C:338:ASP:O	1:C:339:LYS:HD3	2.18	0.42
1:C:343:THR:HB	1:C:344:PRO:HD3	2.01	0.42
1:D:55:LEU:CD2	1:D:56:GLY:N	2.82	0.42
1:D:93:THR:O	1:D:93:THR:HG22	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:249:ARG:NH1	5:E:2001:HOH:O	2.50	0.42
1:E:488:SER:C	1:E:490:ALA:H	2.23	0.42
1:F:272:GLN:HG2	1:F:273:SER:H	1.85	0.42
1:A:55:LEU:HD22	1:A:56:GLY:N	2.35	0.42
1:A:82:ASP:O	1:A:83:SER:C	2.57	0.42
1:B:273:SER:OG	1:B:274:THR:N	2.52	0.42
1:C:340:VAL:O	1:C:340:VAL:CG2	2.67	0.42
1:C:471:ILE:H	1:D:450:GLN:HE22	1.68	0.42
1:D:397:GLU:HA	1:D:487:ARG:NH2	2.34	0.42
1:E:267:LEU:N	1:E:267:LEU:CD1	2.82	0.42
1:F:389:LYS:HB2	1:F:389:LYS:NZ	2.34	0.42
1:A:406:PHE:O	1:A:421:CYS:HB2	2.19	0.42
1:A:412:THR:HB	1:B:108:HIS:CD2	2.53	0.42
1:B:339:LYS:HD3	1:B:367:TYR:CE2	2.54	0.42
1:C:156:ARG:HG3	1:C:156:ARG:HH11	1.83	0.42
1:C:176:TYR:HB3	1:C:267:LEU:HD21	2.02	0.42
1:C:186:LEU:HA	1:C:187:PRO:HD3	1.83	0.42
1:D:406:PHE:CD1	1:D:406:PHE:N	2.88	0.42
1:F:333:GLY:O	1:F:336:LEU:HB2	2.20	0.42
1:A:225:LEU:HB3	1:A:228:PHE:CD2	2.54	0.42
1:C:96:HIS:CE1	1:C:212:ILE:HD11	2.54	0.42
1:C:333:GLY:O	1:C:336:LEU:HB2	2.18	0.42
1:C:371:PRO:HB3	1:C:453:ALA:HB2	2.01	0.42
1:D:256:VAL:HG13	1:D:256:VAL:O	2.19	0.42
1:E:116:TYR:O	1:E:117:ARG:C	2.57	0.42
1:E:423:ALA:HB1	1:E:479:PHE:CE1	2.54	0.42
1:F:229:ASP:OD1	1:F:231:ASP:HB3	2.20	0.42
1:A:142:ALA:HB3	1:A:152:TYR:HE1	1.85	0.42
1:A:212:ILE:O	1:A:212:ILE:HG23	2.18	0.42
1:B:229:ASP:OD1	1:B:231:ASP:HB3	2.19	0.42
1:B:337:GLU:O	1:B:339:LYS:HG2	2.20	0.42
1:C:188:TYR:CG	1:C:263:THR:HB	2.54	0.42
1:D:158:LEU:HD11	1:D:332:ILE:HB	2.01	0.42
1:D:263:THR:O	1:D:265:GLY:N	2.53	0.42
1:E:266:ARG:NH1	1:E:266:ARG:HB3	2.34	0.42
1:E:277:GLU:O	1:E:278:GLU:O	2.38	0.42
1:F:142:ALA:HB3	1:F:152:TYR:HE1	1.85	0.42
1:A:194:LEU:HB2	1:A:284:TYR:CD1	2.55	0.42
1:A:389:LYS:NZ	1:A:389:LYS:HB2	2.34	0.42
1:A:391:VAL:HG12	1:A:399:ILE:HD11	2.01	0.42
1:B:142:ALA:HB3	1:B:152:TYR:HE1	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:ILE:HA	1:B:212:ILE:HD12	1.76	0.42
1:B:392:GLU:O	1:B:392:GLU:HG2	2.18	0.42
1:C:30:GLU:HG3	1:C:351:ARG:HA	2.01	0.42
1:C:123:LYS:O	1:C:124:LYS:CB	2.62	0.42
1:C:301:GLY:HA2	1:C:303:GLU:OE2	2.20	0.42
1:D:77:GLY:HA2	1:D:80:LEU:HD12	2.00	0.42
1:D:225:LEU:HB3	1:D:228:PHE:HD2	1.85	0.42
1:E:69:LEU:O	1:E:72:GLN:HB3	2.19	0.42
1:E:142:ALA:HB3	1:E:152:TYR:HE1	1.85	0.42
1:E:344:PRO:HD3	2:E:600:FAD:O2	2.19	0.42
1:F:80:LEU:O	1:F:83:SER:OG	2.35	0.42
4:F:700:MPD:HM2	4:F:700:MPD:H4	1.89	0.42
1:A:12:ASP:HB2	1:A:153:SER:O	2.20	0.42
1:A:75:LEU:HB3	4:B:700:MPD:H53	2.02	0.42
1:A:273:SER:HG	1:A:275:ASN:H	1.65	0.42
1:B:219:MET:SD	1:B:253:PRO:HD3	2.60	0.42
1:C:41:LEU:HD23	1:C:128:GLU:HB3	2.00	0.42
1:D:142:ALA:HB3	1:D:152:TYR:HE1	1.85	0.42
1:E:76:LEU:CD2	1:F:86:TYR:CD2	3.03	0.42
1:E:373:THR:HG21	1:E:446:GLY:CA	2.49	0.42
1:A:98:TRP:NE1	1:A:102:ILE:HG13	2.34	0.42
1:B:70:MET:HG2	1:B:101:MET:HE3	2.01	0.42
1:C:55:LEU:HD22	1:C:56:GLY:N	2.35	0.42
1:C:340:VAL:HG22	1:C:345:VAL:HG11	2.01	0.42
1:D:405:TYR:CD1	1:D:492:ILE:HG13	2.55	0.42
1:F:161:THR:O	2:F:600:FAD:H8A	2.20	0.42
1:F:164:ARG:O	1:F:293:ARG:HB3	2.19	0.42
1:F:209:LEU:O	1:F:212:ILE:HG22	2.19	0.42
1:A:58:THR:O	1:A:63:GLY:N	2.52	0.42
1:A:410:GLU:O	1:A:414:PRO:HG2	2.20	0.42
1:B:38:VAL:CG2	1:B:39:MET:N	2.83	0.42
1:B:163:GLU:OE1	1:B:334:ASP:HB3	2.19	0.42
1:B:309:ILE:O	1:B:311:GLU:N	2.53	0.42
1:C:17:ILE:HD12	1:C:28:ALA:HB2	2.02	0.42
1:D:191:GLY:O	1:D:193:THR:CG2	2.67	0.42
1:E:98:TRP:HB3	1:E:189:CYS:HB2	2.02	0.42
1:A:48:PRO:HG2	1:A:167:TYR:CZ	2.56	0.41
1:A:84:ARG:HD2	1:A:90:VAL:O	2.20	0.41
1:A:477:GLU:HA	1:B:450:GLN:NE2	2.35	0.41
1:E:188:TYR:HD2	1:E:264:PRO:HG3	1.85	0.41
1:F:207:GLY:HA2	1:F:245:ILE:HD11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:400:GLU:OE2	1:F:400:GLU:HA	2.20	0.41
1:F:410:GLU:O	1:F:414:PRO:HG2	2.20	0.41
1:A:402:TYR:CD2	1:A:485:THR:HG22	2.55	0.41
1:B:298:ARG:H	1:B:298:ARG:HG2	1.50	0.41
1:D:69:LEU:O	1:D:72:GLN:HB3	2.20	0.41
1:D:303:GLU:CD	1:D:303:GLU:H	2.23	0.41
1:D:391:VAL:HG23	1:D:392:GLU:N	2.34	0.41
1:E:55:LEU:HD23	1:E:127:TYR:CZ	2.55	0.41
1:F:36:LYS:O	1:F:38:VAL:HG13	2.20	0.41
1:F:167:TYR:CE2	1:F:174:LYS:HG2	2.55	0.41
1:F:397:GLU:HA	1:F:487:ARG:NH2	2.33	0.41
1:A:48:PRO:HB2	1:A:49:LEU:HD22	2.01	0.41
1:B:189:CYS:HA	1:B:190:PRO:HD3	1.93	0.41
1:B:225:LEU:HB3	1:B:228:PHE:CD2	2.55	0.41
1:B:303:GLU:CD	1:B:303:GLU:H	2.22	0.41
1:C:236:ILE:HD11	1:C:380:TYR:HB2	2.02	0.41
1:C:413:ILE:N	1:C:414:PRO:CD	2.83	0.41
1:D:16:ILE:HG23	1:D:39:MET:HE3	2.02	0.41
1:D:408:PRO:O	1:D:411:TRP:N	2.39	0.41
1:E:72:GLN:CD	1:F:410:GLU:CG	2.88	0.41
1:E:333:GLY:O	1:E:336:LEU:HB2	2.20	0.41
1:F:61:ASN:HA	1:F:109:ILE:HD13	2.02	0.41
1:A:192:LYS:HB3	1:A:285:ASN:HD22	1.84	0.41
1:A:309:ILE:O	1:A:311:GLU:N	2.53	0.41
1:A:471:ILE:N	1:B:450:GLN:HE22	2.18	0.41
1:B:108:HIS:CE1	1:B:112:LEU:HD11	2.55	0.41
1:C:487:ARG:C	1:C:489:GLY:N	2.73	0.41
1:D:374:VAL:CG1	1:D:376:THR:HG23	2.51	0.41
1:E:103:GLU:O	1:E:104:ALA:C	2.58	0.41
1:F:191:GLY:O	1:F:193:THR:CG2	2.67	0.41
1:F:260:GLU:H	1:F:266:ARG:HB2	1.85	0.41
1:A:348:GLN:HG3	1:B:469:ILE:CD1	2.50	0.41
1:A:494:GLN:HE21	1:A:494:GLN:HB3	1.63	0.41
1:B:267:LEU:HD23	1:B:287:VAL:CG2	2.50	0.41
1:D:273:SER:CB	1:D:276:SER:HB3	2.51	0.41
1:E:64:CYS:O	1:E:67:LYS:HB3	2.19	0.41
1:E:286:THR:HG22	1:E:287:VAL:N	2.34	0.41
1:E:303:GLU:CD	1:E:303:GLU:H	2.22	0.41
1:F:69:LEU:O	1:F:72:GLN:HB3	2.19	0.41
1:F:391:VAL:HG23	1:F:392:GLU:N	2.34	0.41
1:A:69:LEU:CD1	1:A:105:VAL:HG13	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:TYR:CD2	1:A:413:ILE:HD11	2.55	0.41
1:B:158:LEU:HD11	1:B:332:ILE:HB	2.02	0.41
1:B:258:GLN:O	1:B:258:GLN:HG2	2.21	0.41
1:C:229:ASP:OD1	1:C:231:ASP:HB3	2.21	0.41
1:C:267:LEU:HD13	1:C:285:ASN:O	2.21	0.41
1:D:207:GLY:HA2	1:D:245:ILE:HD11	2.03	0.41
1:F:118:VAL:O	1:F:119:ALA:C	2.59	0.41
1:F:263:THR:CB	1:F:264:PRO:CD	2.98	0.41
1:A:86:TYR:HE2	1:A:414:PRO:CG	2.29	0.41
1:A:94:VAL:HG13	1:B:89:LYS:O	2.20	0.41
1:A:392:GLU:O	1:A:392:GLU:HG2	2.21	0.41
1:A:440:VAL:HG13	1:A:440:VAL:O	2.20	0.41
1:D:272:GLN:HA	1:D:279:ILE:HA	2.02	0.41
1:A:318:VAL:CG1	1:A:322:GLU:HA	2.51	0.41
1:A:409:LEU:HD12	1:A:409:LEU:O	2.21	0.41
1:B:49:LEU:N	1:B:49:LEU:CD2	2.84	0.41
1:B:472:HIS:HA	1:B:473:PRO:HA	1.92	0.41
1:D:156:ARG:HD3	1:D:330:TYR:HE2	1.86	0.41
1:D:292:GLY:HA2	3:D:601:NAP:PA	2.61	0.41
1:E:236:ILE:HD11	1:E:380:TYR:HB2	2.03	0.41
1:F:47:THR:O	1:F:49:LEU:N	2.54	0.41
1:F:251:PHE:CE2	1:F:280:ILE:HG23	2.56	0.41
1:F:438:PHE:CE2	1:F:479:PHE:CE1	3.09	0.41
1:F:485:THR:O	1:F:488:SER:O	2.39	0.41
1:A:13:TYR:O	1:A:154:ALA:HA	2.21	0.41
1:A:252:VAL:C	1:A:271:ALA:HB1	2.40	0.41
1:A:259:ILE:CD1	1:A:268:ARG:HB2	2.31	0.41
1:A:385:LEU:HD22	1:A:389:LYS:CG	2.51	0.41
1:A:446:GLY:CA	1:B:474:VAL:HG21	2.50	0.41
1:B:255:LYS:HG2	1:B:256:VAL:N	2.35	0.41
1:B:318:VAL:CG1	1:B:322:GLU:HA	2.51	0.41
1:C:56:GLY:O	1:C:60:VAL:HG23	2.21	0.41
1:C:209:LEU:HD23	1:C:209:LEU:HA	1.94	0.41
1:C:236:ILE:HD11	1:C:380:TYR:CB	2.50	0.41
1:C:303:GLU:CD	1:C:303:GLU:H	2.23	0.41
1:C:397:GLU:HA	1:C:487:ARG:HH22	1.86	0.41
1:C:440:VAL:O	1:C:440:VAL:HG13	2.21	0.41
1:D:103:GLU:O	1:D:107:ASN:HB2	2.21	0.41
1:D:236:ILE:HD11	1:D:380:TYR:CB	2.51	0.41
1:D:309:ILE:O	1:D:311:GLU:N	2.54	0.41
1:D:340:VAL:O	1:D:345:VAL:HG21	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:440:VAL:HB	1:D:479:PHE:HZ	1.85	0.41
1:E:12:ASP:OD1	1:E:153:SER:OG	2.37	0.41
1:F:43:PHE:HE2	1:F:45:THR:HA	1.86	0.41
1:F:319:THR:C	1:F:321:GLU:H	2.25	0.41
1:A:55:LEU:HD23	1:A:56:GLY:H	1.86	0.41
1:A:98:TRP:CD1	1:A:98:TRP:C	2.93	0.41
1:A:156:ARG:HG3	1:A:156:ARG:NH1	2.35	0.41
1:A:471:ILE:HD13	1:B:373:THR:HG22	2.01	0.41
1:B:172:GLY:CA	1:B:175:GLU:HG2	2.51	0.41
1:D:114:TRP:O	1:D:117:ARG:HB2	2.21	0.41
1:D:405:TYR:CE1	1:D:492:ILE:HG13	2.56	0.41
1:E:84:ARG:HH22	1:E:91:GLU:C	2.24	0.41
1:E:123:LYS:NZ	1:E:123:LYS:CB	2.83	0.41
1:B:250:GLN:O	1:B:273:SER:HA	2.21	0.40
1:C:186:LEU:HA	1:C:186:LEU:HD23	1.95	0.40
1:D:137:PRO:HA	1:D:328:TYR:OH	2.21	0.40
1:D:373:THR:HG21	1:D:446:GLY:CA	2.52	0.40
1:E:144:ASN:CG	1:E:145:ASN:N	2.73	0.40
1:F:49:LEU:HD23	1:F:182:ASP:OD2	2.20	0.40
1:F:133:GLN:O	1:F:140:ILE:HG13	2.21	0.40
1:F:373:THR:HG21	1:F:446:GLY:CA	2.52	0.40
1:C:158:LEU:HD11	1:C:332:ILE:HB	2.03	0.40
1:C:189:CYS:HA	1:C:190:PRO:HD3	1.91	0.40
1:C:255:LYS:O	1:C:270:VAL:N	2.39	0.40
1:E:76:LEU:CD1	4:F:700:MPD:HM3	2.50	0.40
1:E:340:VAL:HG13	1:E:340:VAL:O	2.22	0.40
1:E:342:LEU:O	1:E:345:VAL:HG22	2.21	0.40
1:E:406:PHE:O	1:E:421:CYS:HB2	2.22	0.40
1:E:447:GLU:CD	1:F:474:VAL:CG1	2.90	0.40
1:A:446:GLY:C	1:B:474:VAL:HG21	2.41	0.40
1:B:67:LYS:HD2	1:B:67:LYS:C	2.41	0.40
1:B:191:GLY:O	1:B:193:THR:CG2	2.67	0.40
1:B:413:ILE:HG12	1:B:414:PRO:HD3	2.02	0.40
1:C:203:LEU:HD22	1:C:240:MET:SD	2.61	0.40
1:C:356:ARG:HG2	1:C:361:SER:O	2.22	0.40
1:C:374:VAL:HG12	1:C:376:THR:HG23	2.03	0.40
1:D:176:TYR:CE1	1:D:258:GLN:HB2	2.56	0.40
1:E:447:GLU:CD	1:F:474:VAL:HG12	2.42	0.40
1:F:47:THR:C	1:F:49:LEU:N	2.74	0.40
1:F:203:LEU:HD23	1:F:203:LEU:HA	1.93	0.40
1:F:270:VAL:HA	1:F:280:ILE:O	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:385:LEU:HD22	1:F:389:LYS:CG	2.51	0.40
1:F:392:GLU:HG2	1:F:392:GLU:O	2.20	0.40
1:F:449:THR:O	1:F:450:GLN:C	2.60	0.40
1:A:55:LEU:CD2	1:A:56:GLY:N	2.85	0.40
1:A:80:LEU:HD21	1:B:90:VAL:HG21	2.03	0.40
1:B:212:ILE:O	1:B:212:ILE:HG23	2.20	0.40
1:B:342:LEU:O	1:B:345:VAL:HG22	2.22	0.40
1:C:399:ILE:O	1:C:399:ILE:CD1	2.68	0.40
1:D:189:CYS:HA	1:D:190:PRO:HD3	1.91	0.40
1:D:263:THR:HB	1:D:264:PRO:HD3	2.03	0.40
1:D:476:ALA:O	1:D:477:GLU:C	2.59	0.40
1:F:63:GLY:O	1:F:66:PRO:HG2	2.21	0.40
1:F:332:ILE:HD13	1:F:353:LEU:HD22	2.04	0.40
1:A:100:ARG:HG3	1:A:100:ARG:NH1	2.37	0.40
1:A:331:ALA:O	1:A:332:ILE:HD12	2.21	0.40
1:B:271:ALA:O	1:B:279:ILE:HG23	2.22	0.40
1:C:43:PHE:C	1:C:43:PHE:HD2	2.25	0.40
1:C:156:ARG:HG3	1:C:156:ARG:NH1	2.36	0.40
1:D:67:LYS:HD2	1:D:68:LYS:N	2.36	0.40
4:D:700:MPD:O4	4:D:700:MPD:C1	2.69	0.40
1:E:391:VAL:HG23	1:E:392:GLU:N	2.36	0.40
1:F:164:ARG:HA	1:F:164:ARG:HD2	1.89	0.40
1:F:409:LEU:O	1:F:409:LEU:HG	2.21	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	485/519 (93%)	426 (88%)	51 (10%)	8 (2%)	<b>9</b> 31
1	B	485/519 (93%)	419 (86%)	60 (12%)	6 (1%)	<b>13</b> 39

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	488/519 (94%)	425 (87%)	51 (10%)	12 (2%)	5	19
1	D	489/519 (94%)	424 (87%)	51 (10%)	14 (3%)	4	15
1	E	488/519 (94%)	421 (86%)	54 (11%)	13 (3%)	5	17
1	F	484/519 (93%)	417 (86%)	55 (11%)	12 (2%)	5	19
All	All	2919/3114 (94%)	2532 (87%)	322 (11%)	65 (2%)	6	22

All (65) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	489	GLY
1	B	263	THR
1	C	263	THR
1	C	276	SER
1	C	278	GLU
1	C	417	ASP
1	D	263	THR
1	D	497	CYS
1	E	261	ALA
1	E	262	GLY
1	E	263	THR
1	E	278	GLU
1	F	58	THR
1	F	59	CYS
1	F	263	THR
1	A	311	GLU
1	B	311	GLU
1	C	51	THR
1	C	260	GLU
1	C	311	GLU
1	D	260	GLU
1	D	273	SER
1	D	311	GLU
1	D	489	GLY
1	D	495	ALA
1	E	115	GLY
1	E	311	GLU
1	E	341	GLU
1	E	488	SER
1	E	496	GLY
1	F	32	ALA
1	F	259	ILE

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Mol	Chain	Res	Type
1	F	311	GLU
1	F	417	ASP
1	F	492	ILE
1	A	33	GLN
1	A	83	SER
1	A	278	GLU
1	B	476	ALA
1	C	33	GLN
1	D	91	GLU
1	D	255	LYS
1	D	494	GLN
1	D	496	GLY
1	E	64	CYS
1	E	114	TRP
1	A	404	SER
1	B	93	THR
1	C	490	ALA
1	D	409	LEU
1	F	275	ASN
1	A	263	THR
1	C	273	SER
1	C	275	ASN
1	D	417	ASP
1	F	31	ALA
1	B	259	ILE
1	E	255	LYS
1	F	35	GLY
1	A	473	PRO
1	B	473	PRO
1	C	473	PRO
1	D	473	PRO
1	F	473	PRO
1	E	473	PRO

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	399/426 (94%)	370 (93%)	29 (7%)	14	38
1	B	400/426 (94%)	372 (93%)	28 (7%)	15	40
1	C	401/426 (94%)	362 (90%)	39 (10%)	8	24
1	D	402/426 (94%)	371 (92%)	31 (8%)	13	35
1	E	401/426 (94%)	370 (92%)	31 (8%)	13	35
1	F	399/426 (94%)	370 (93%)	29 (7%)	14	38
All	All	2402/2556 (94%)	2215 (92%)	187 (8%)	12	35

All (187) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	LYS
1	A	55	LEU
1	A	64	CYS
1	A	76	LEU
1	A	91	GLU
1	A	111	SER
1	A	123	LYS
1	A	133	GLN
1	A	139	ARG
1	A	144	ASN
1	A	151	ILE
1	A	175	GLU
1	A	193	THR
1	A	212	ILE
1	A	256	VAL
1	A	298	ARG
1	A	303	GLU
1	A	318	VAL
1	A	332	ILE
1	A	336	LEU
1	A	340	VAL
1	A	373	THR
1	A	389	LYS
1	A	403	HIS
1	A	404	SER
1	A	409	LEU
1	A	413	ILE
1	A	493	LEU
1	A	494	GLN
1	B	14	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	55	LEU
1	B	64	CYS
1	B	76	LEU
1	B	93	THR
1	B	121	ARG
1	B	133	GLN
1	B	139	ARG
1	B	144	ASN
1	B	151	ILE
1	B	175	GLU
1	B	193	THR
1	B	252	VAL
1	B	268	ARG
1	B	277	GLU
1	B	280	ILE
1	B	298	ARG
1	B	303	GLU
1	B	318	VAL
1	B	332	ILE
1	B	336	LEU
1	B	373	THR
1	B	389	LYS
1	B	403	HIS
1	B	413	ILE
1	B	416	ARG
1	B	474	VAL
1	B	483	SER
1	C	38	VAL
1	C	43	PHE
1	C	45	THR
1	C	51	THR
1	C	55	LEU
1	C	64	CYS
1	C	76	LEU
1	C	83	SER
1	C	111	SER
1	C	118	VAL
1	C	133	GLN
1	C	139	ARG
1	C	144	ASN
1	C	151	ILE
1	C	175	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	193	THR
1	C	212	ILE
1	C	277	GLU
1	C	279	ILE
1	C	281	GLU
1	C	298	ARG
1	C	303	GLU
1	C	318	VAL
1	C	332	ILE
1	C	336	LEU
1	C	373	THR
1	C	389	LYS
1	C	403	HIS
1	C	408	PRO
1	C	413	ILE
1	C	416	ARG
1	C	417	ASP
1	C	418	ASN
1	C	475	CYS
1	C	483	SER
1	C	491	SER
1	C	494	GLN
1	C	497	CYS
1	C	498	CYS
1	D	14	ASP
1	D	38	VAL
1	D	49	LEU
1	D	55	LEU
1	D	76	LEU
1	D	90	VAL
1	D	91	GLU
1	D	111	SER
1	D	133	GLN
1	D	139	ARG
1	D	144	ASN
1	D	151	ILE
1	D	175	GLU
1	D	193	THR
1	D	212	ILE
1	D	254	ILE
1	D	267	LEU
1	D	270	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	D	298	ARG
1	D	303	GLU
1	D	318	VAL
1	D	332	ILE
1	D	336	LEU
1	D	340	VAL
1	D	373	THR
1	D	389	LYS
1	D	403	HIS
1	D	406	PHE
1	D	413	ILE
1	D	418	ASN
1	D	497	CYS
1	E	45	THR
1	E	49	LEU
1	E	52	ARG
1	E	64	CYS
1	E	76	LEU
1	E	84	ARG
1	E	92	GLU
1	E	123	LYS
1	E	133	GLN
1	E	139	ARG
1	E	144	ASN
1	E	151	ILE
1	E	175	GLU
1	E	193	THR
1	E	212	ILE
1	E	257	GLU
1	E	267	LEU
1	E	298	ARG
1	E	303	GLU
1	E	318	VAL
1	E	332	ILE
1	E	336	LEU
1	E	373	THR
1	E	389	LYS
1	E	403	HIS
1	E	413	ILE
1	E	416	ARG
1	E	418	ASN
1	E	493	LEU

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Mol	Chain	Res	Type
1	E	497	CYS
1	E	498	CYS
1	F	11	TYR
1	F	49	LEU
1	F	52	ARG
1	F	64	CYS
1	F	76	LEU
1	F	82	ASP
1	F	91	GLU
1	F	102	ILE
1	F	107	ASN
1	F	133	GLN
1	F	139	ARG
1	F	144	ASN
1	F	151	ILE
1	F	175	GLU
1	F	193	THR
1	F	212	ILE
1	F	281	GLU
1	F	298	ARG
1	F	303	GLU
1	F	318	VAL
1	F	332	ILE
1	F	336	LEU
1	F	373	THR
1	F	389	LYS
1	F	403	HIS
1	F	413	ILE
1	F	416	ARG
1	F	420	LYS
1	F	493	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (91) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	96	HIS
1	A	106	GLN
1	A	113	ASN
1	A	129	ASN
1	A	133	GLN
1	A	138	HIS
1	A	250	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	258	GLN
1	A	285	ASN
1	A	325	ASN
1	A	432	ASN
1	A	439	HIS
1	A	450	GLN
1	A	494	GLN
1	B	78	GLN
1	B	85	ASN
1	B	96	HIS
1	B	108	HIS
1	B	113	ASN
1	B	129	ASN
1	B	133	GLN
1	B	250	GLN
1	B	258	GLN
1	B	285	ASN
1	B	325	ASN
1	B	418	ASN
1	B	419	ASN
1	B	432	ASN
1	B	439	HIS
1	B	450	GLN
1	B	472	HIS
1	B	494	GLN
1	C	96	HIS
1	C	106	GLN
1	C	107	ASN
1	C	113	ASN
1	C	129	ASN
1	C	133	GLN
1	C	258	GLN
1	C	285	ASN
1	C	325	ASN
1	C	348	GLN
1	C	418	ASN
1	C	432	ASN
1	C	439	HIS
1	C	450	GLN
1	C	494	GLN
1	D	96	HIS
1	D	108	HIS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	D	113	ASN
1	D	129	ASN
1	D	133	GLN
1	D	138	HIS
1	D	258	GLN
1	D	275	ASN
1	D	285	ASN
1	D	325	ASN
1	D	348	GLN
1	D	418	ASN
1	D	432	ASN
1	D	439	HIS
1	D	450	GLN
1	E	96	HIS
1	E	106	GLN
1	E	107	ASN
1	E	129	ASN
1	E	133	GLN
1	E	138	HIS
1	E	250	GLN
1	E	258	GLN
1	E	285	ASN
1	E	325	ASN
1	E	418	ASN
1	E	428	ASN
1	E	432	ASN
1	E	439	HIS
1	E	450	GLN
1	F	96	HIS
1	F	106	GLN
1	F	113	ASN
1	F	129	ASN
1	F	133	GLN
1	F	258	GLN
1	F	272	GLN
1	F	285	ASN
1	F	325	ASN
1	F	348	GLN
1	F	428	ASN
1	F	432	ASN
1	F	439	HIS
1	F	450	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

17 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	B	600	-	53,58,58	1.60	9 (16%)	68,89,89	1.29	8 (11%)
3	NAP	D	601	-	45,52,52	1.91	9 (20%)	56,80,80	1.25	4 (7%)
4	MPD	F	700	-	7,7,7	0.38	0	9,10,10	0.42	0
2	FAD	D	600	-	53,58,58	1.96	10 (18%)	68,89,89	1.25	7 (10%)
2	FAD	F	600	-	53,58,58	1.59	9 (16%)	68,89,89	1.24	5 (7%)
4	MPD	D	700	-	7,7,7	0.32	0	9,10,10	0.24	0
3	NAP	C	601	-	45,52,52	1.71	8 (17%)	56,80,80	2.93	10 (17%)
2	FAD	C	600	-	53,58,58	1.68	8 (15%)	68,89,89	1.19	6 (8%)
3	NAP	F	601	-	45,52,52	1.50	6 (13%)	56,80,80	1.28	4 (7%)
3	NAP	E	601	-	45,52,52	1.56	7 (15%)	56,80,80	1.26	8 (14%)
4	MPD	B	701	-	7,7,7	0.35	0	9,10,10	0.32	0
3	NAP	B	601	-	45,52,52	1.60	8 (17%)	56,80,80	2.72	10 (17%)
4	MPD	A	701	-	7,7,7	0.31	0	9,10,10	0.41	0
4	MPD	B	700	-	7,7,7	0.32	0	9,10,10	0.42	0
2	FAD	A	600	-	53,58,58	1.69	7 (13%)	68,89,89	1.24	6 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FAD	E	600	-	53,58,58	1.64	9 (16%)	68,89,89	1.18	5 (7%)
3	NAP	A	601	-	45,52,52	1.74	8 (17%)	56,80,80	2.98	10 (17%)

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	B	600	-	-	6/30/50/50	0/6/6/6
3	NAP	D	601	-	-	11/31/67/67	0/5/5/5
4	MPD	F	700	-	-	0/5/5/5	-
2	FAD	D	600	-	-	6/30/50/50	0/6/6/6
2	FAD	F	600	-	-	6/30/50/50	0/6/6/6
4	MPD	D	700	-	-	0/5/5/5	-
3	NAP	C	601	-	1/1/12/12	12/31/67/67	0/5/5/5
2	FAD	C	600	-	-	6/30/50/50	0/6/6/6
3	NAP	F	601	-	-	14/31/67/67	0/5/5/5
3	NAP	E	601	-	-	9/31/67/67	0/5/5/5
4	MPD	B	701	-	-	0/5/5/5	-
3	NAP	B	601	-	1/1/12/12	6/31/67/67	0/5/5/5
4	MPD	A	701	-	-	0/5/5/5	-
4	MPD	B	700	-	-	0/5/5/5	-
2	FAD	A	600	-	-	6/30/50/50	0/6/6/6
2	FAD	E	600	-	-	6/30/50/50	0/6/6/6
3	NAP	A	601	-	1/1/12/12	5/31/67/67	0/5/5/5

All (98) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	600	FAD	O4B-C1B	6.86	1.50	1.41
2	D	600	FAD	C4X-N5	6.65	1.43	1.30
2	C	600	FAD	C4X-N5	6.10	1.42	1.30
3	A	601	NAP	O4B-C4B	5.97	1.58	1.45
3	D	601	NAP	O4B-C1B	5.94	1.49	1.41
2	A	600	FAD	C4X-N5	5.87	1.42	1.30
2	E	600	FAD	C4X-N5	5.74	1.41	1.30
2	B	600	FAD	C4X-N5	5.50	1.41	1.30
3	C	601	NAP	O4B-C4B	5.36	1.57	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	600	FAD	C4X-N5	5.12	1.40	1.30
3	E	601	NAP	O4B-C1B	4.98	1.48	1.41
2	A	600	FAD	O4B-C1B	4.85	1.47	1.41
3	B	601	NAP	O4B-C4B	4.71	1.55	1.45
2	C	600	FAD	C9-C8	4.54	1.46	1.39
3	F	601	NAP	C2N-N1N	4.47	1.40	1.35
3	D	601	NAP	C2N-N1N	4.24	1.40	1.35
2	F	600	FAD	C9-C8	4.23	1.45	1.39
2	B	600	FAD	C4A-N3A	4.16	1.41	1.35
2	D	600	FAD	C4A-N3A	3.95	1.41	1.35
2	B	600	FAD	C9-C8	3.94	1.45	1.39
3	D	601	NAP	C4N-C3N	3.76	1.45	1.39
2	C	600	FAD	C9A-N10	3.76	1.47	1.41
3	C	601	NAP	C2A-N3A	3.72	1.38	1.32
3	D	601	NAP	O4B-C4B	3.71	1.53	1.45
3	A	601	NAP	C2N-N1N	3.70	1.39	1.35
2	E	600	FAD	C9-C8	3.69	1.45	1.39
3	A	601	NAP	C6N-N1N	3.67	1.44	1.35
3	C	601	NAP	C6N-N1N	3.65	1.44	1.35
2	D	600	FAD	C9-C8	3.64	1.44	1.39
3	F	601	NAP	C6N-N1N	3.63	1.44	1.35
3	C	601	NAP	C4N-C3N	3.62	1.45	1.39
2	C	600	FAD	C4A-N3A	3.58	1.40	1.35
3	B	601	NAP	C4N-C3N	3.52	1.45	1.39
3	F	601	NAP	C2A-N3A	3.50	1.37	1.32
2	A	600	FAD	C4A-N3A	3.49	1.40	1.35
3	E	601	NAP	O4B-C4B	3.49	1.52	1.45
3	B	601	NAP	C6N-N1N	3.49	1.43	1.35
3	C	601	NAP	P2B-O2B	3.46	1.65	1.59
3	A	601	NAP	C4N-C3N	3.41	1.45	1.39
3	D	601	NAP	C6N-N1N	3.41	1.43	1.35
2	E	600	FAD	C4A-N3A	3.40	1.40	1.35
3	C	601	NAP	C2N-N1N	3.39	1.39	1.35
2	A	600	FAD	C2B-C1B	-3.37	1.48	1.53
2	F	600	FAD	C4A-N3A	3.37	1.40	1.35
2	D	600	FAD	C9A-C5X	3.35	1.46	1.41
3	D	601	NAP	C2A-N3A	3.35	1.37	1.32
2	D	600	FAD	C9A-N10	3.34	1.47	1.41
3	F	601	NAP	C4N-C3N	3.34	1.45	1.39
2	C	600	FAD	C6-C5X	3.33	1.45	1.40
2	F	600	FAD	O4B-C1B	3.33	1.45	1.41
3	E	601	NAP	C6N-N1N	3.29	1.43	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	600	FAD	C9-C8	3.26	1.44	1.39
3	B	601	NAP	C2N-N1N	3.26	1.38	1.35
3	D	601	NAP	C3N-C7N	3.26	1.55	1.50
2	E	600	FAD	C10-N1	3.24	1.39	1.33
3	C	601	NAP	C4A-N3A	3.21	1.40	1.35
3	E	601	NAP	C2A-N3A	3.18	1.37	1.32
3	E	601	NAP	C4N-C3N	3.18	1.44	1.39
3	A	601	NAP	C3B-C2B	-3.14	1.46	1.52
3	F	601	NAP	C4A-N3A	3.13	1.40	1.35
2	B	600	FAD	C9A-C5X	3.11	1.46	1.41
3	E	601	NAP	C2N-N1N	3.07	1.38	1.35
2	E	600	FAD	C9A-C5X	3.06	1.46	1.41
3	A	601	NAP	P2B-O2B	2.98	1.64	1.59
3	A	601	NAP	C2A-N3A	2.97	1.36	1.32
2	E	600	FAD	C9A-N10	2.95	1.46	1.41
3	B	601	NAP	C4A-N3A	2.80	1.39	1.35
3	D	601	NAP	C4A-N3A	2.79	1.39	1.35
2	F	600	FAD	C9A-N10	2.77	1.46	1.41
3	B	601	NAP	C2A-N3A	2.67	1.36	1.32
2	B	600	FAD	C10-N1	2.67	1.38	1.33
3	A	601	NAP	C4A-N3A	2.65	1.39	1.35
2	F	600	FAD	C10-N1	2.64	1.38	1.33
2	E	600	FAD	C2A-N3A	2.57	1.36	1.32
2	F	600	FAD	C9A-C5X	2.56	1.45	1.41
3	C	601	NAP	O4B-C1B	2.51	1.44	1.41
3	F	601	NAP	P2B-O2B	2.51	1.64	1.59
2	F	600	FAD	C2A-N3A	2.51	1.36	1.32
2	E	600	FAD	O4B-C1B	2.51	1.44	1.41
2	C	600	FAD	C10-N1	2.49	1.38	1.33
2	A	600	FAD	C9A-C5X	2.48	1.45	1.41
3	B	601	NAP	C3B-C2B	-2.47	1.47	1.52
2	A	600	FAD	C6-C5X	2.47	1.43	1.40
2	C	600	FAD	C9A-C5X	2.46	1.45	1.41
2	B	600	FAD	C10-N10	2.43	1.42	1.37
3	E	601	NAP	C4A-N3A	2.39	1.39	1.35
2	B	600	FAD	C9A-N10	2.38	1.45	1.41
2	D	600	FAD	C2A-N3A	2.37	1.35	1.32
3	D	601	NAP	C2A-N1A	2.25	1.38	1.33
2	D	600	FAD	C6-C5X	2.22	1.43	1.40
2	C	600	FAD	C2A-N3A	2.19	1.35	1.32
3	B	601	NAP	O4B-C1B	2.18	1.44	1.41
2	F	600	FAD	C2B-C1B	-2.17	1.50	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	600	FAD	C4'-C3'	2.12	1.57	1.53
2	D	600	FAD	C10-N1	2.08	1.37	1.33
2	B	600	FAD	C2A-N1A	2.04	1.37	1.33
2	B	600	FAD	C2A-N3A	2.03	1.35	1.32
2	D	600	FAD	C2A-N1A	2.02	1.37	1.33

All (83) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	601	NAP	C5B-C4B-C3B	15.14	171.93	115.18
3	B	601	NAP	C5B-C4B-C3B	14.49	169.49	115.18
3	C	601	NAP	C5B-C4B-C3B	14.35	168.96	115.18
3	A	601	NAP	O4B-C4B-C5B	-8.62	81.03	109.37
3	B	601	NAP	O4B-C4B-C5B	-7.88	83.43	109.37
3	C	601	NAP	O4B-C4B-C5B	-7.84	83.59	109.37
3	C	601	NAP	O4B-C1B-C2B	-7.02	94.42	106.59
3	A	601	NAP	O4B-C4B-C3B	-6.45	92.35	105.11
3	A	601	NAP	O4B-C1B-C2B	-6.27	95.71	106.59
3	C	601	NAP	C3B-C2B-C1B	-5.88	91.83	102.89
3	C	601	NAP	O4B-C4B-C3B	-5.67	93.89	105.11
3	B	601	NAP	O4B-C1B-C2B	-5.40	97.22	106.59
3	B	601	NAP	O4B-C4B-C3B	-4.86	95.49	105.11
2	D	600	FAD	P-O3P-PA	4.61	148.64	132.83
3	A	601	NAP	C3B-C2B-C1B	-4.50	94.42	102.89
2	B	600	FAD	P-O3P-PA	4.28	147.52	132.83
2	E	600	FAD	P-O3P-PA	4.09	146.85	132.83
3	C	601	NAP	O5B-C5B-C4B	-4.09	94.93	108.99
2	A	600	FAD	O2A-PA-O1A	4.07	132.34	112.24
2	C	600	FAD	O2A-PA-O1A	4.04	132.19	112.24
2	C	600	FAD	P-O3P-PA	4.03	146.66	132.83
2	F	600	FAD	O4B-C4B-C5B	4.02	122.59	109.37
2	A	600	FAD	P-O3P-PA	4.01	146.58	132.83
2	E	600	FAD	O2A-PA-O1A	3.97	131.86	112.24
2	F	600	FAD	O2A-PA-O1A	3.95	131.78	112.24
2	D	600	FAD	O2A-PA-O1A	3.94	131.72	112.24
2	B	600	FAD	O2A-PA-O1A	3.89	131.48	112.24
3	F	601	NAP	C6N-N1N-C2N	-3.62	118.67	121.97
2	A	600	FAD	O5B-C5B-C4B	3.46	120.90	108.99
2	B	600	FAD	O5B-C5B-C4B	3.42	120.77	108.99
3	E	601	NAP	C6N-N1N-C2N	-3.39	118.88	121.97
2	F	600	FAD	O5B-C5B-C4B	3.35	120.51	108.99
3	C	601	NAP	O2B-C2B-C1B	3.30	121.97	110.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	601	NAP	O5B-C5B-C4B	-3.27	97.73	108.99
3	A	601	NAP	C6N-N1N-C2N	-3.19	119.06	121.97
3	D	601	NAP	O4B-C1B-C2B	-3.18	101.07	106.59
3	E	601	NAP	O4B-C4B-C5B	-3.12	99.11	109.37
3	B	601	NAP	C3B-C2B-C1B	-3.12	97.03	102.89
2	C	600	FAD	C3B-C2B-C1B	3.01	105.52	100.98
3	C	601	NAP	C6N-N1N-C2N	-2.95	119.29	121.97
3	B	601	NAP	C6N-N1N-C2N	-2.90	119.33	121.97
2	F	600	FAD	P-O3P-PA	2.88	142.71	132.83
3	A	601	NAP	O2B-C2B-C1B	2.83	120.31	110.10
3	D	601	NAP	C6N-N1N-C2N	-2.83	119.39	121.97
2	D	600	FAD	O5B-C5B-C4B	2.80	118.63	108.99
3	B	601	NAP	O5B-C5B-C4B	-2.65	99.87	108.99
2	B	600	FAD	O4B-C1B-C2B	-2.61	103.12	106.93
2	D	600	FAD	C4X-C10-N10	2.51	120.15	116.48
2	B	600	FAD	C4X-C10-N10	2.48	120.11	116.48
3	F	601	NAP	O4B-C1B-C2B	-2.46	102.32	106.59
2	D	600	FAD	O2B-C2B-C3B	2.38	119.51	111.82
2	A	600	FAD	C4X-C10-N10	2.37	119.95	116.48
3	D	601	NAP	O2B-C2B-C1B	2.36	118.59	110.10
3	C	601	NAP	C3D-C2D-C1D	2.36	104.53	100.98
3	B	601	NAP	O2B-C2B-C1B	2.34	118.54	110.10
3	D	601	NAP	C4A-C5A-N7A	2.34	111.83	109.40
3	E	601	NAP	C2A-N1A-C6A	2.33	122.74	118.75
2	C	600	FAD	C4X-C10-N10	2.32	119.87	116.48
2	D	600	FAD	O4B-C1B-C2B	-2.31	103.55	106.93
3	F	601	NAP	O2A-PA-O1A	2.29	123.56	112.24
2	B	600	FAD	O2B-C2B-C3B	2.27	119.18	111.82
3	C	601	NAP	C2A-N1A-C6A	2.27	122.64	118.75
3	A	601	NAP	C2A-N1A-C6A	2.27	122.63	118.75
3	B	601	NAP	C3N-C2N-N1N	2.25	122.63	120.43
2	E	600	FAD	C3B-C2B-C1B	2.24	104.35	100.98
2	F	600	FAD	C4X-C10-N10	2.23	119.73	116.48
3	F	601	NAP	C2A-N1A-C6A	2.23	122.56	118.75
3	E	601	NAP	C3D-C2D-C1D	2.22	104.32	100.98
3	B	601	NAP	C2A-N1A-C6A	2.20	122.52	118.75
3	A	601	NAP	N3A-C2A-N1A	-2.20	125.24	128.68
3	E	601	NAP	C5A-C6A-N6A	2.19	123.68	120.35
3	E	601	NAP	O4B-C4B-C3B	-2.16	100.84	105.11
3	E	601	NAP	O4B-C1B-C2B	-2.16	102.84	106.59
2	A	600	FAD	O4B-C4B-C5B	2.15	116.45	109.37
2	B	600	FAD	C4A-C5A-N7A	2.13	111.62	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	600	FAD	O2B-C2B-C3B	2.09	118.59	111.82
2	D	600	FAD	O5'-C5'-C4'	2.06	114.85	109.36
2	E	600	FAD	C5'-C4'-C3'	-2.05	108.24	112.20
2	C	600	FAD	O2A-PA-O5B	2.05	117.25	107.75
2	B	600	FAD	C5'-C4'-C3'	-2.03	108.28	112.20
3	E	601	NAP	C5A-C6A-N1A	-2.02	115.78	120.35
2	E	600	FAD	C4X-C10-N10	2.01	119.41	116.48
2	A	600	FAD	O2B-C2B-C3B	2.00	118.29	111.82

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	A	601	NAP	C4B
3	B	601	NAP	C4B
3	C	601	NAP	C4B

All (93) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	600	FAD	C5B-O5B-PA-O2A
2	B	600	FAD	C5B-O5B-PA-O2A
2	B	600	FAD	O4B-C4B-C5B-O5B
2	C	600	FAD	C5B-O5B-PA-O2A
2	C	600	FAD	C4B-C5B-O5B-PA
2	D	600	FAD	C5B-O5B-PA-O2A
2	D	600	FAD	O4B-C4B-C5B-O5B
2	E	600	FAD	C5B-O5B-PA-O2A
2	E	600	FAD	C4B-C5B-O5B-PA
2	F	600	FAD	C5B-O5B-PA-O2A
3	A	601	NAP	C3B-C4B-C5B-O5B
3	A	601	NAP	O4D-C1D-N1N-C2N
3	A	601	NAP	O4D-C1D-N1N-C6N
3	B	601	NAP	C2B-O2B-P2B-O1X
3	B	601	NAP	C4D-C5D-O5D-PN
3	B	601	NAP	C3D-C4D-C5D-O5D
3	C	601	NAP	C5D-O5D-PN-O3
3	C	601	NAP	C2D-C1D-N1N-C6N
3	C	601	NAP	C2N-C3N-C7N-O7N
3	C	601	NAP	C2N-C3N-C7N-N7N
3	D	601	NAP	C2B-O2B-P2B-O2X
3	D	601	NAP	O4D-C4D-C5D-O5D
3	D	601	NAP	O4D-C1D-N1N-C2N

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Mol	Chain	Res	Type	Atoms
3	D	601	NAP	C2D-C1D-N1N-C2N
3	E	601	NAP	C5D-O5D-PN-O3
3	E	601	NAP	O4D-C1D-N1N-C6N
3	E	601	NAP	C2N-C3N-C7N-O7N
3	E	601	NAP	C2N-C3N-C7N-N7N
3	F	601	NAP	C2B-O2B-P2B-O1X
3	F	601	NAP	C5D-O5D-PN-O1N
3	F	601	NAP	C5D-O5D-PN-O2N
3	F	601	NAP	O4D-C1D-N1N-C2N
3	F	601	NAP	C2D-C1D-N1N-C2N
3	F	601	NAP	C2N-C3N-C7N-O7N
3	F	601	NAP	C2N-C3N-C7N-N7N
3	E	601	NAP	C4N-C3N-C7N-O7N
3	E	601	NAP	C4N-C3N-C7N-N7N
3	C	601	NAP	C4N-C3N-C7N-O7N
3	C	601	NAP	C4N-C3N-C7N-N7N
3	F	601	NAP	C4N-C3N-C7N-N7N
3	F	601	NAP	C4N-C3N-C7N-O7N
2	C	600	FAD	O4B-C4B-C5B-O5B
2	F	600	FAD	O4B-C4B-C5B-O5B
2	F	600	FAD	C3B-C4B-C5B-O5B
3	D	601	NAP	C3D-C4D-C5D-O5D
2	B	600	FAD	C3B-C4B-C5B-O5B
2	D	600	FAD	C3B-C4B-C5B-O5B
3	A	601	NAP	O4B-C4B-C5B-O5B
3	C	601	NAP	O4B-C4B-C5B-O5B
3	C	601	NAP	O4D-C4D-C5D-O5D
3	F	601	NAP	O4D-C4D-C5D-O5D
3	D	601	NAP	C3B-C2B-O2B-P2B
3	B	601	NAP	O4B-C4B-C5B-O5B
3	B	601	NAP	O4D-C4D-C5D-O5D
3	C	601	NAP	C3D-C4D-C5D-O5D
2	A	600	FAD	O4B-C4B-C5B-O5B
3	D	601	NAP	C1B-C2B-O2B-P2B
3	F	601	NAP	C3D-C4D-C5D-O5D
2	B	600	FAD	C4B-C5B-O5B-PA
2	C	600	FAD	C3B-C4B-C5B-O5B
2	A	600	FAD	C2'-C1'-N10-C10
2	A	600	FAD	C4B-C5B-O5B-PA
3	E	601	NAP	C4D-C5D-O5D-PN
3	E	601	NAP	C3B-C2B-O2B-P2B
3	A	601	NAP	PA-O3-PN-O5D

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Mol	Chain	Res	Type	Atoms
3	C	601	NAP	PA-O3-PN-O5D
3	D	601	NAP	C5D-O5D-PN-O3
2	E	600	FAD	O4B-C4B-C5B-O5B
2	A	600	FAD	P-O3P-PA-O1A
2	B	600	FAD	P-O3P-PA-O1A
2	C	600	FAD	P-O3P-PA-O1A
2	D	600	FAD	P-O3P-PA-O1A
2	E	600	FAD	P-O3P-PA-O1A
2	F	600	FAD	P-O3P-PA-O1A
2	D	600	FAD	C4B-C5B-O5B-PA
3	C	601	NAP	C5D-O5D-PN-O1N
3	E	601	NAP	C5D-O5D-PN-O2N
3	D	601	NAP	PN-O3-PA-O2A
3	D	601	NAP	C4D-C5D-O5D-PN
3	B	601	NAP	C3B-C2B-O2B-P2B
2	E	600	FAD	C5B-O5B-PA-O3P
2	F	600	FAD	C5B-O5B-PA-O3P
3	C	601	NAP	C2D-C1D-N1N-C2N
3	D	601	NAP	C2D-C1D-N1N-C6N
3	F	601	NAP	C2B-O2B-P2B-O2X
3	F	601	NAP	C5D-O5D-PN-O3
3	F	601	NAP	C2D-C1D-N1N-C6N
2	A	600	FAD	P-O3P-PA-O2A
2	B	600	FAD	P-O3P-PA-O2A
2	C	600	FAD	P-O3P-PA-O2A
2	D	600	FAD	P-O3P-PA-O2A
2	E	600	FAD	P-O3P-PA-O2A
2	F	600	FAD	P-O3P-PA-O2A

There are no ring outliers.

16 monomers are involved in 53 short contacts:

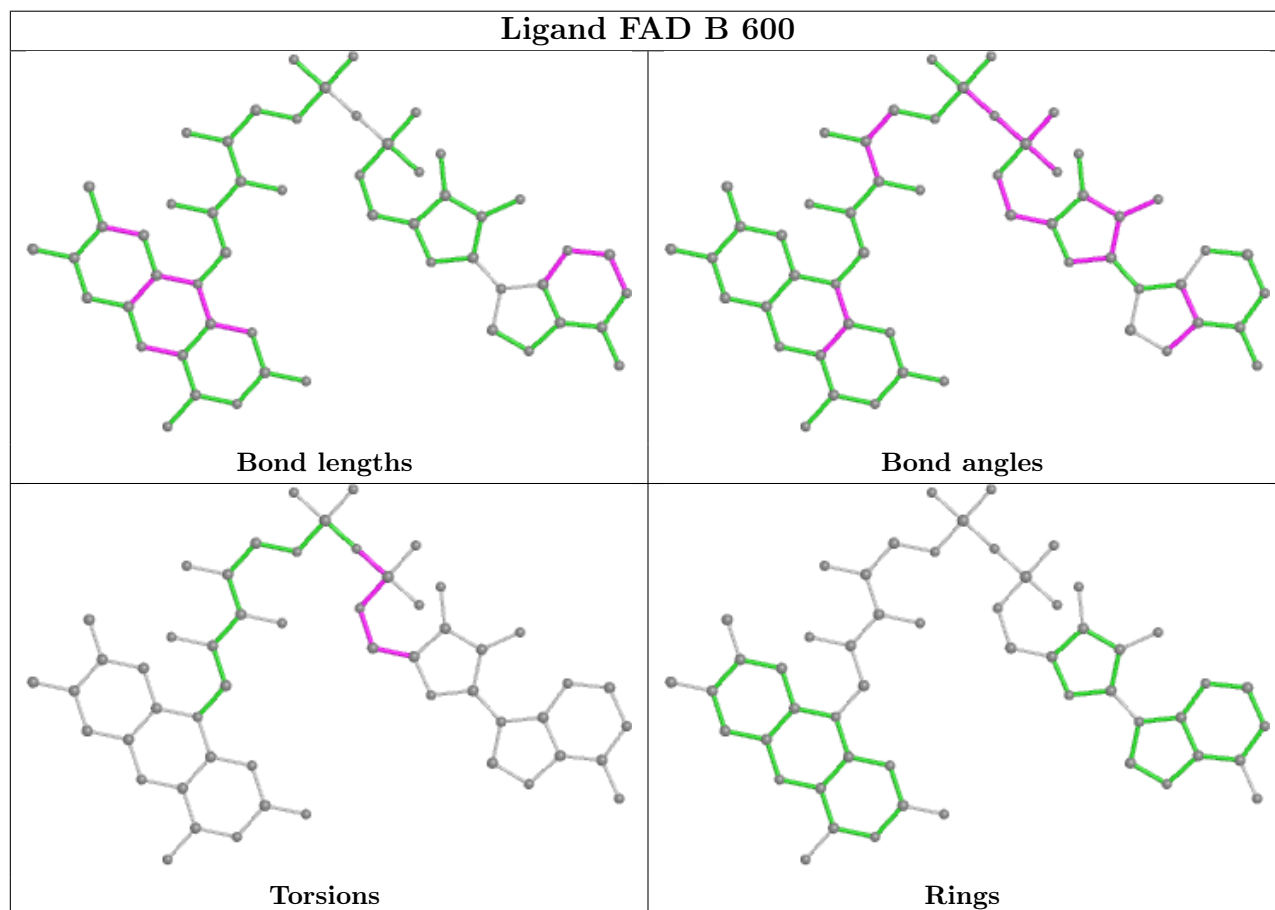
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	600	FAD	1	0
3	D	601	NAP	4	0
4	F	700	MPD	5	0
2	D	600	FAD	5	0
2	F	600	FAD	10	0
4	D	700	MPD	3	0
3	C	601	NAP	1	0
3	F	601	NAP	1	0
3	E	601	NAP	1	0

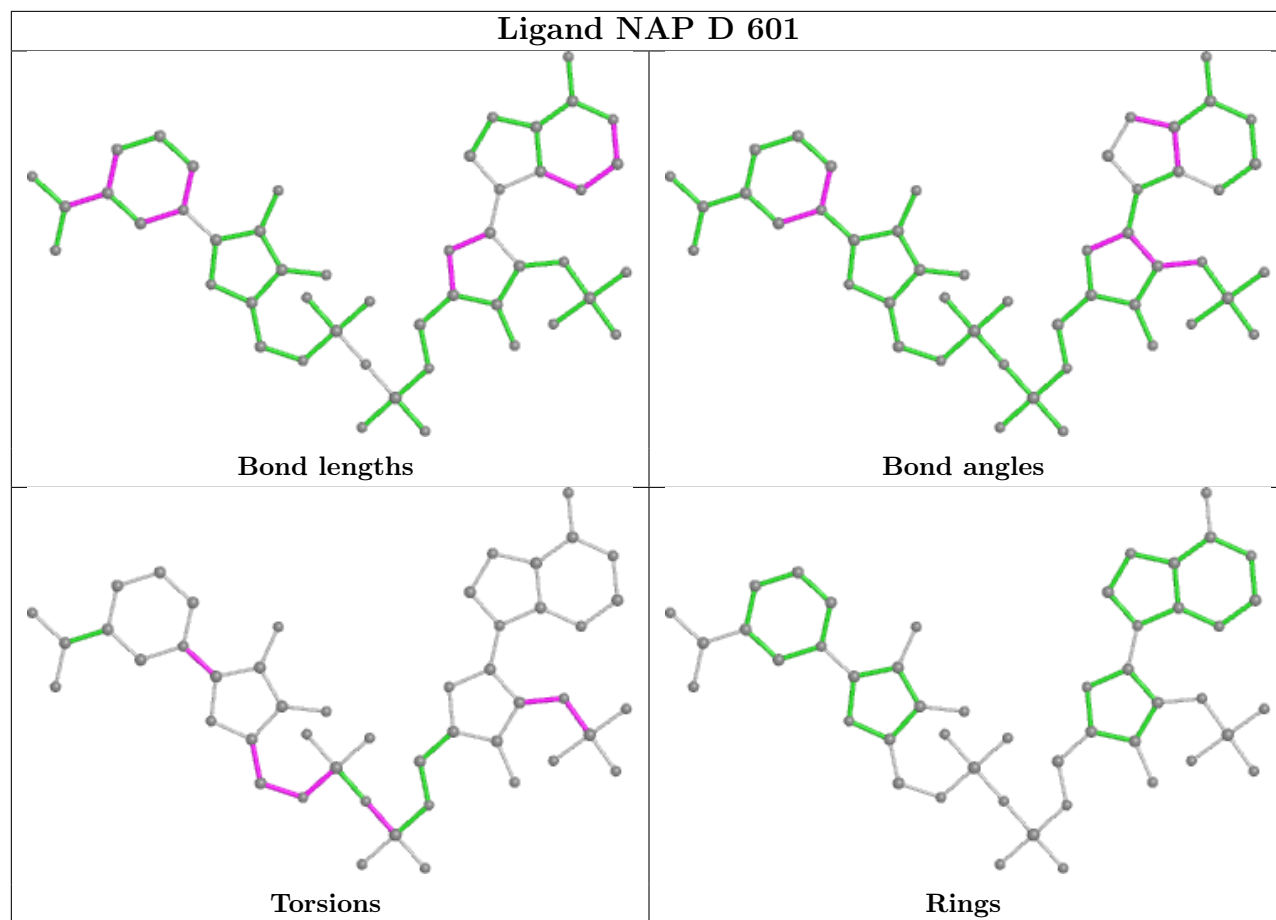
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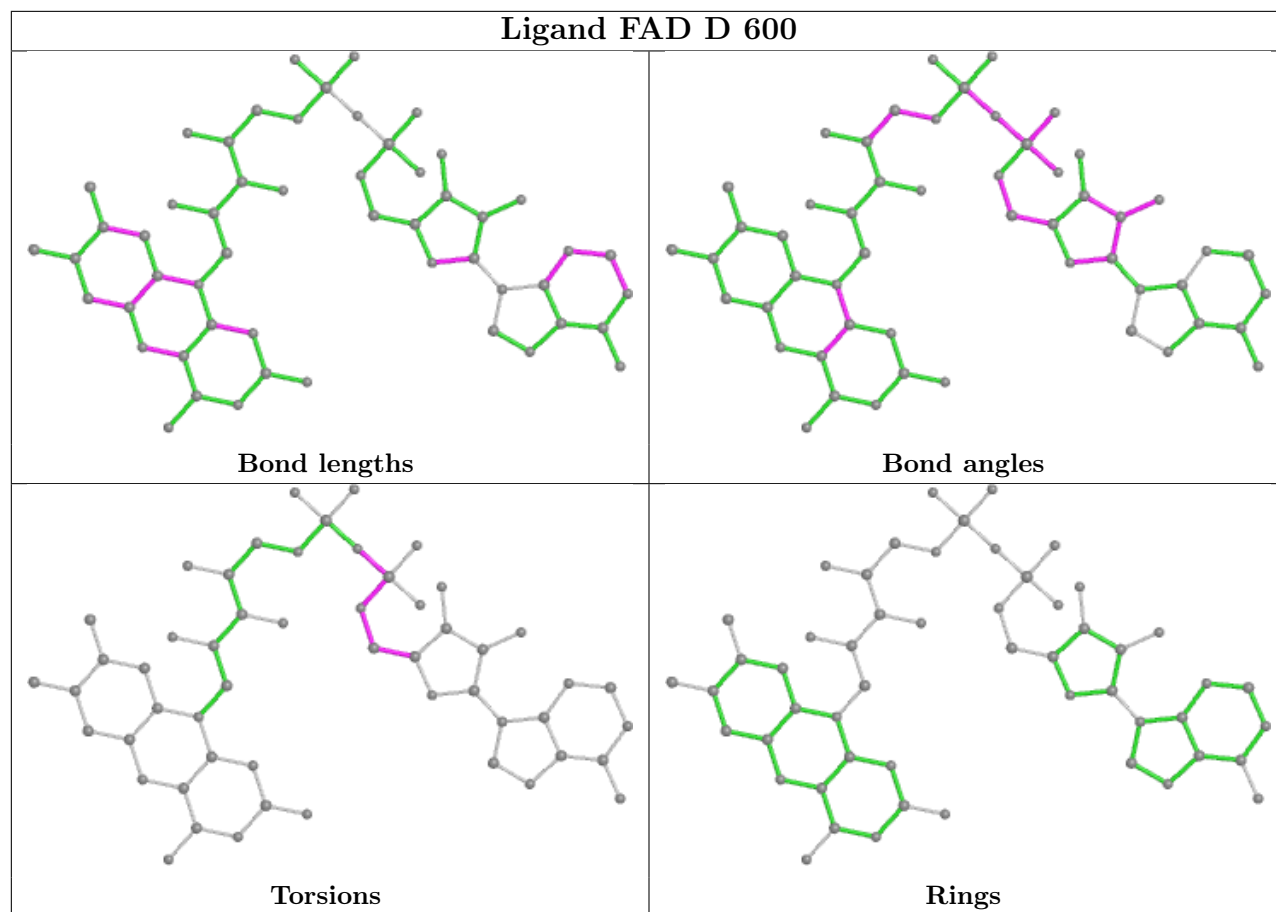
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	701	MPD	3	0
3	B	601	NAP	6	0
4	A	701	MPD	2	0
4	B	700	MPD	2	0
2	A	600	FAD	4	0
2	E	600	FAD	4	0
3	A	601	NAP	1	0

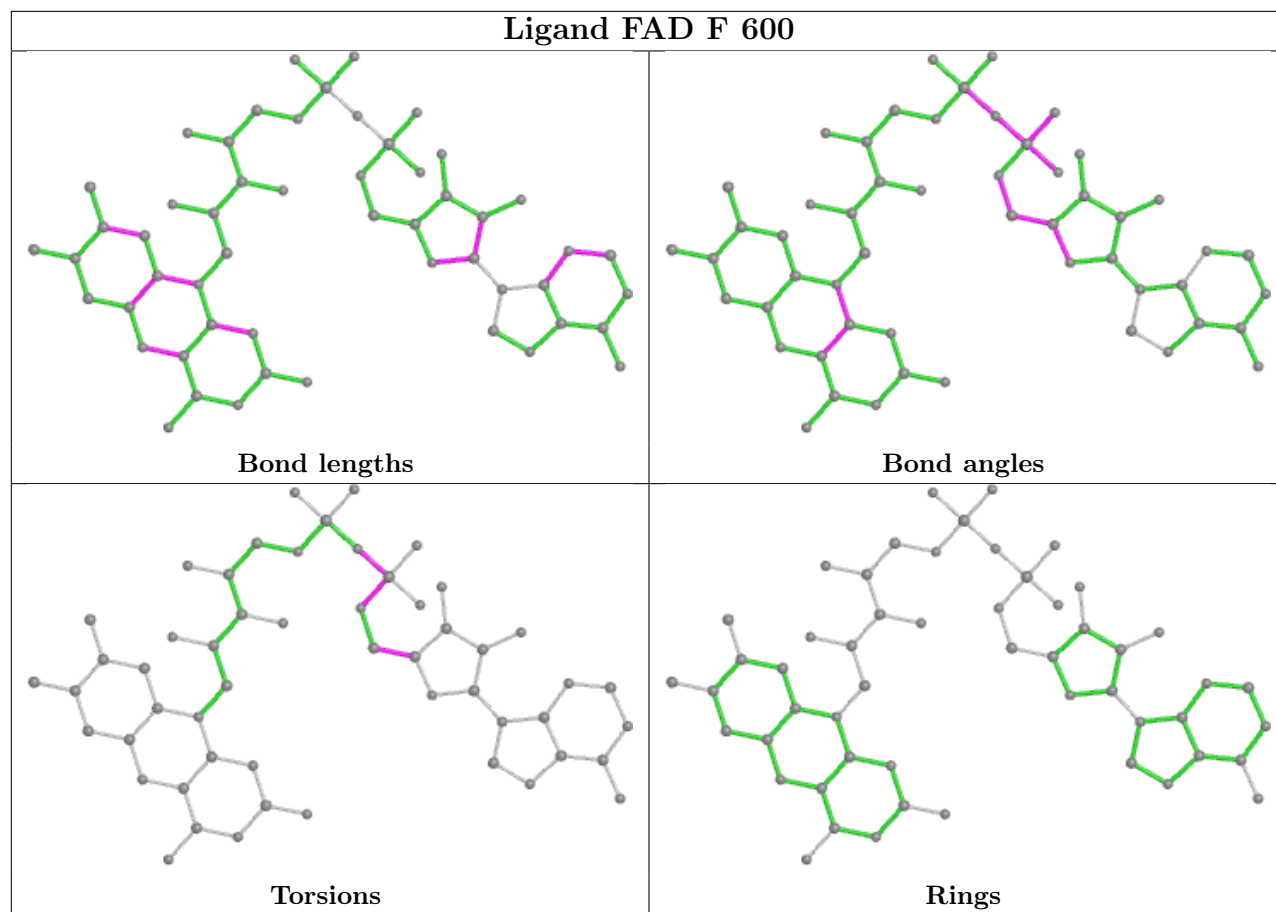
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

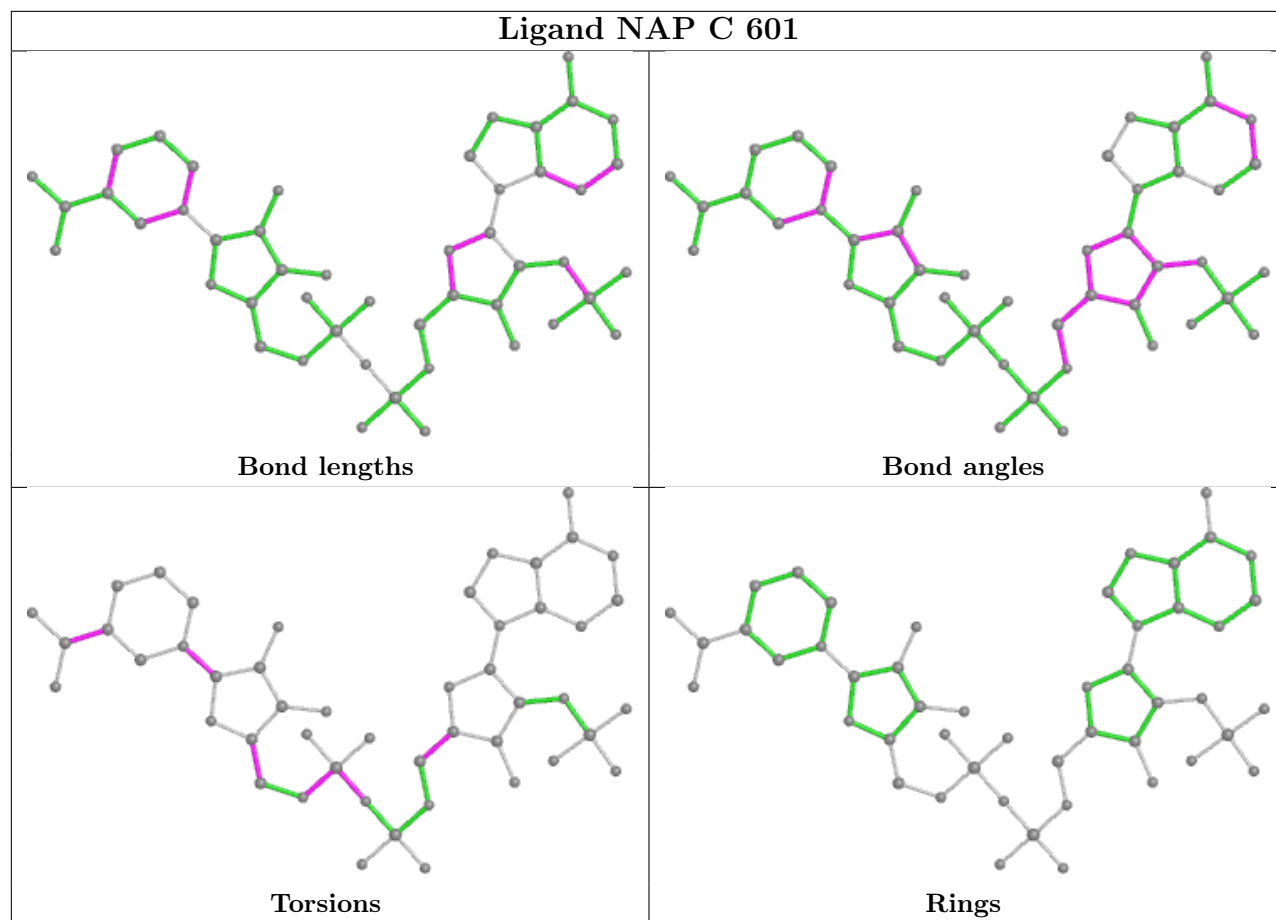


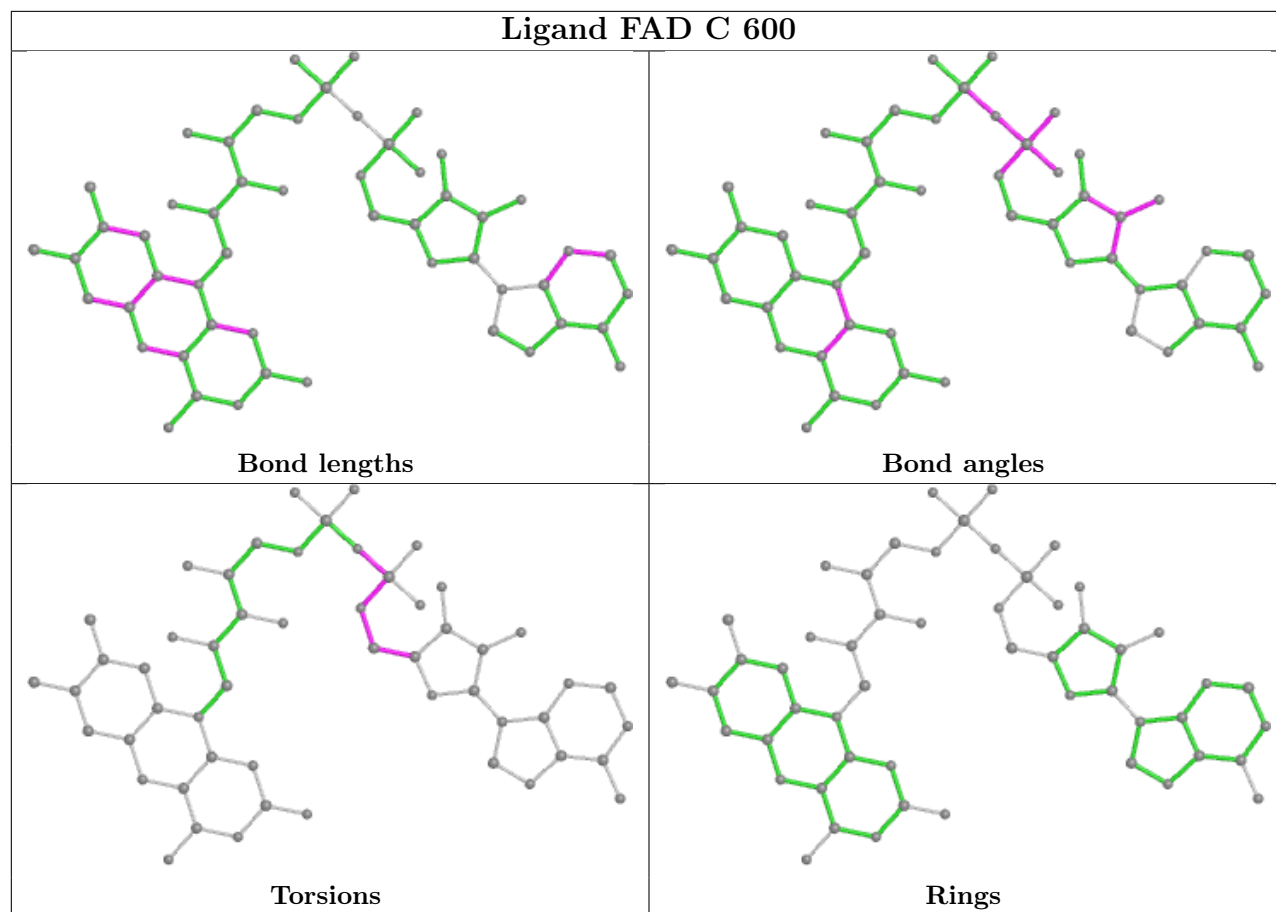


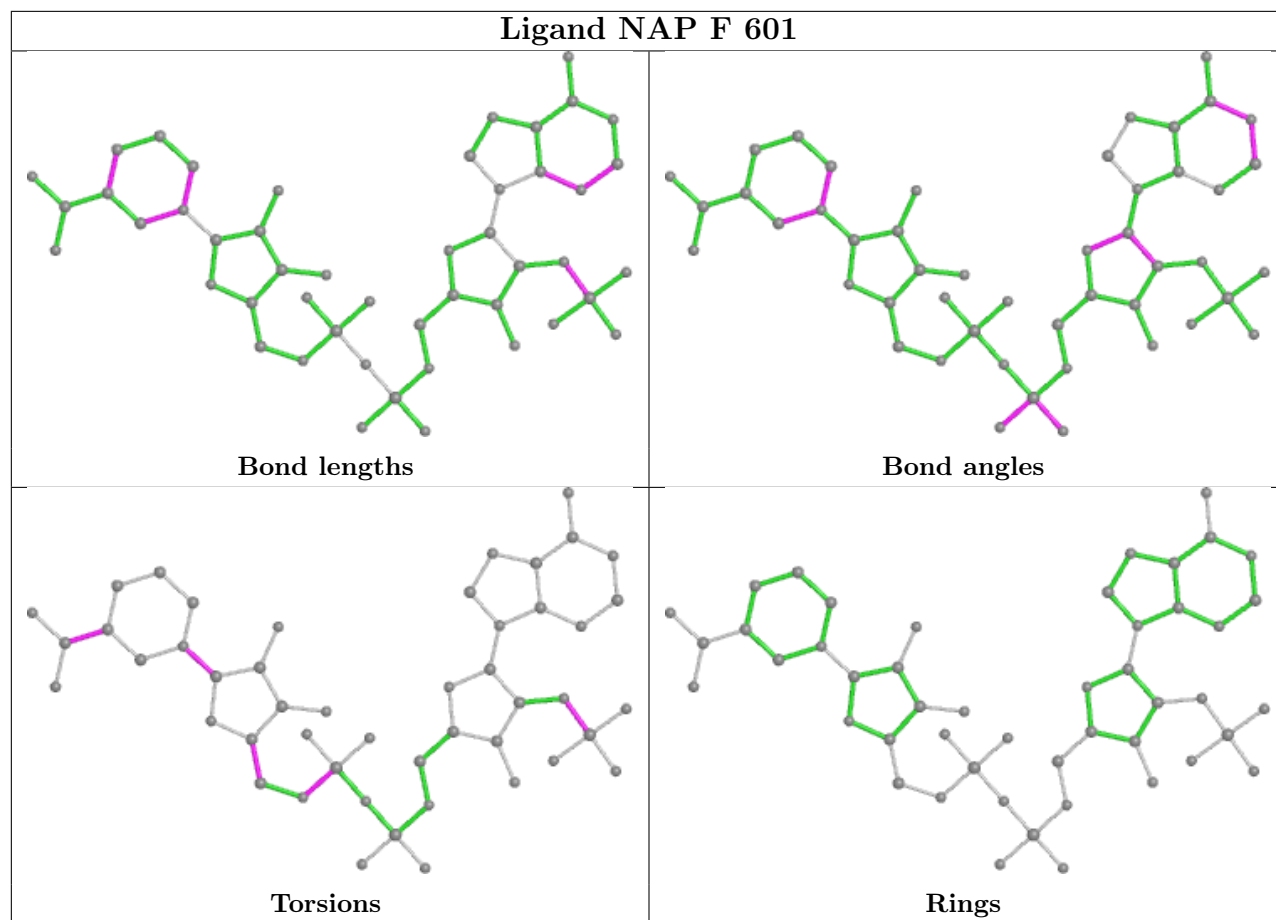


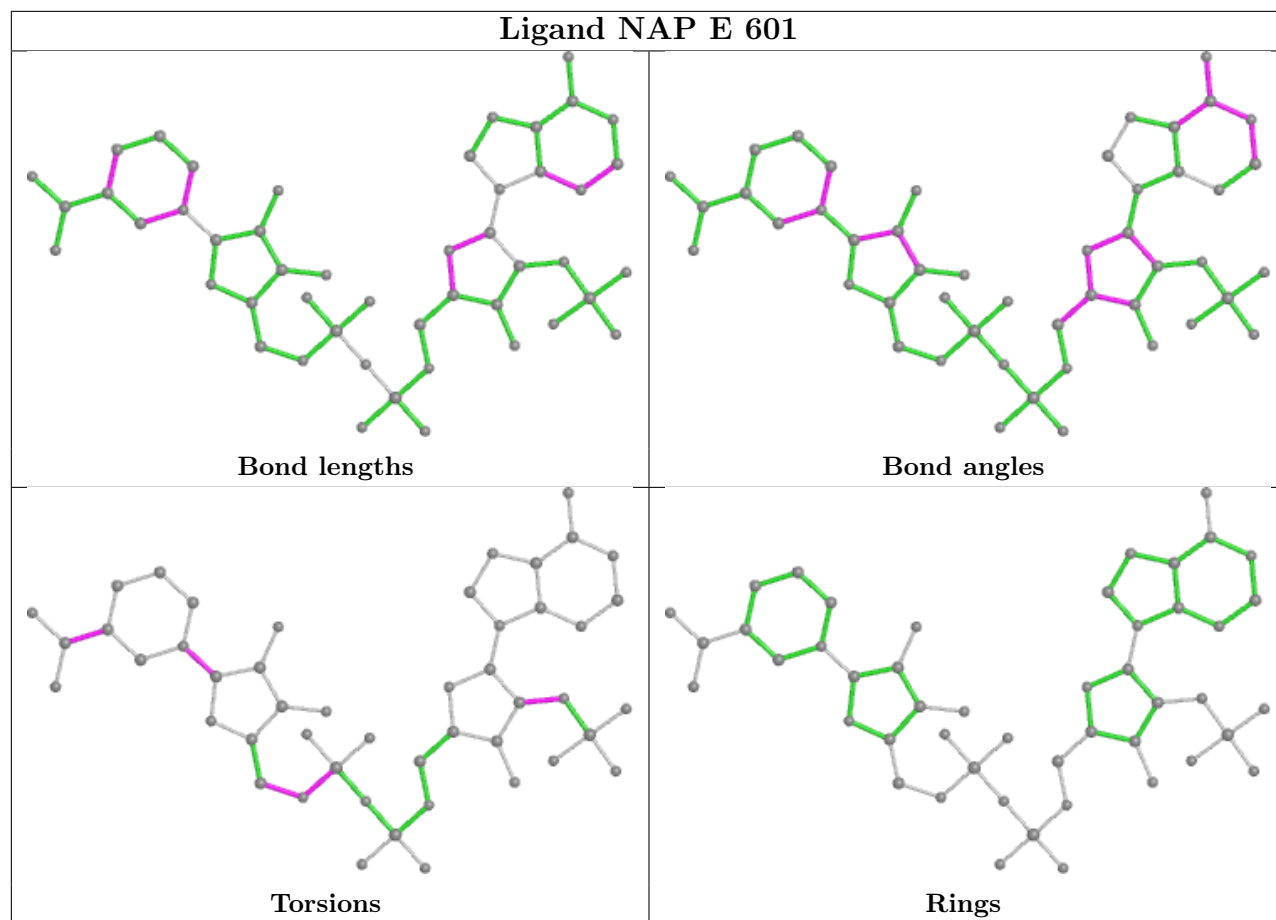


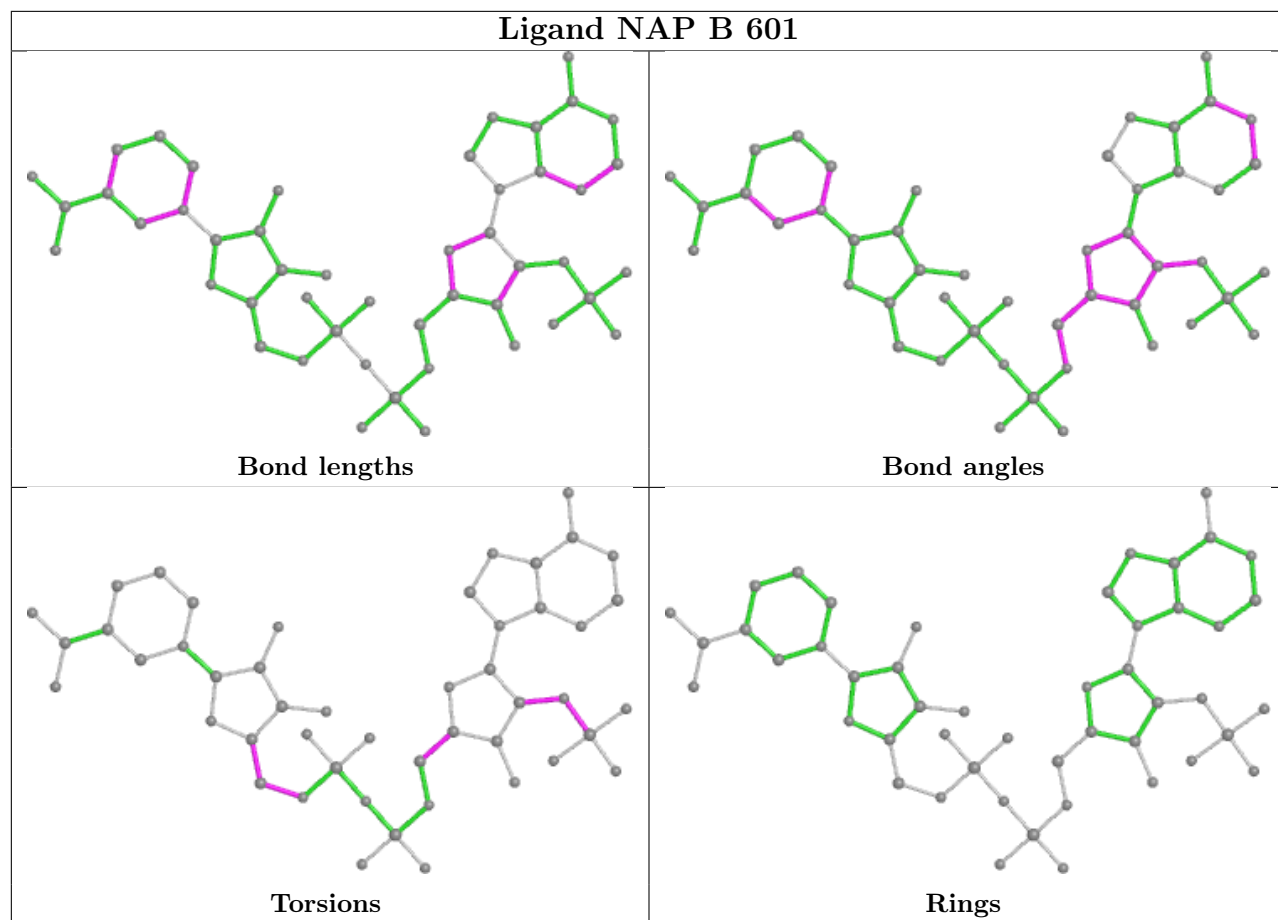


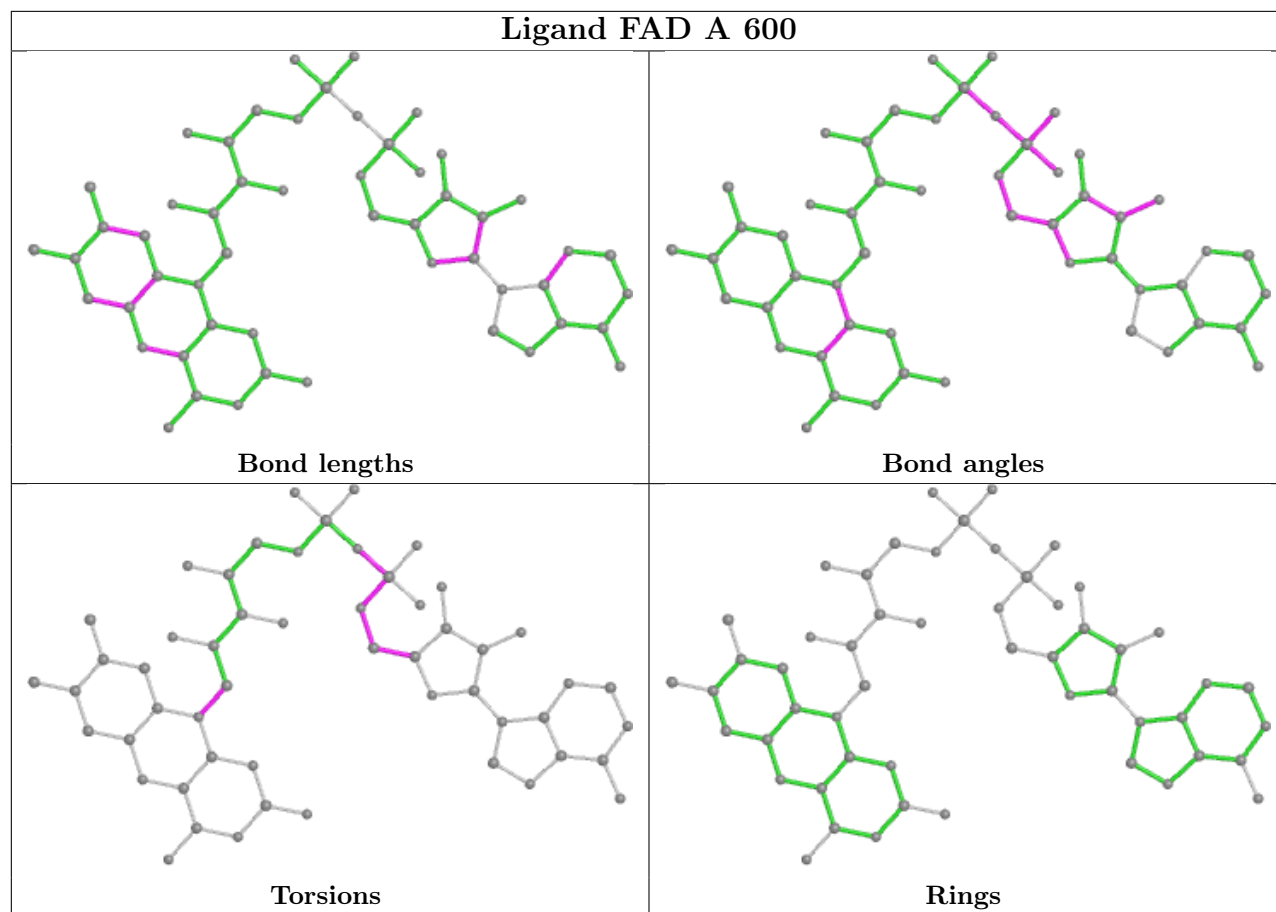


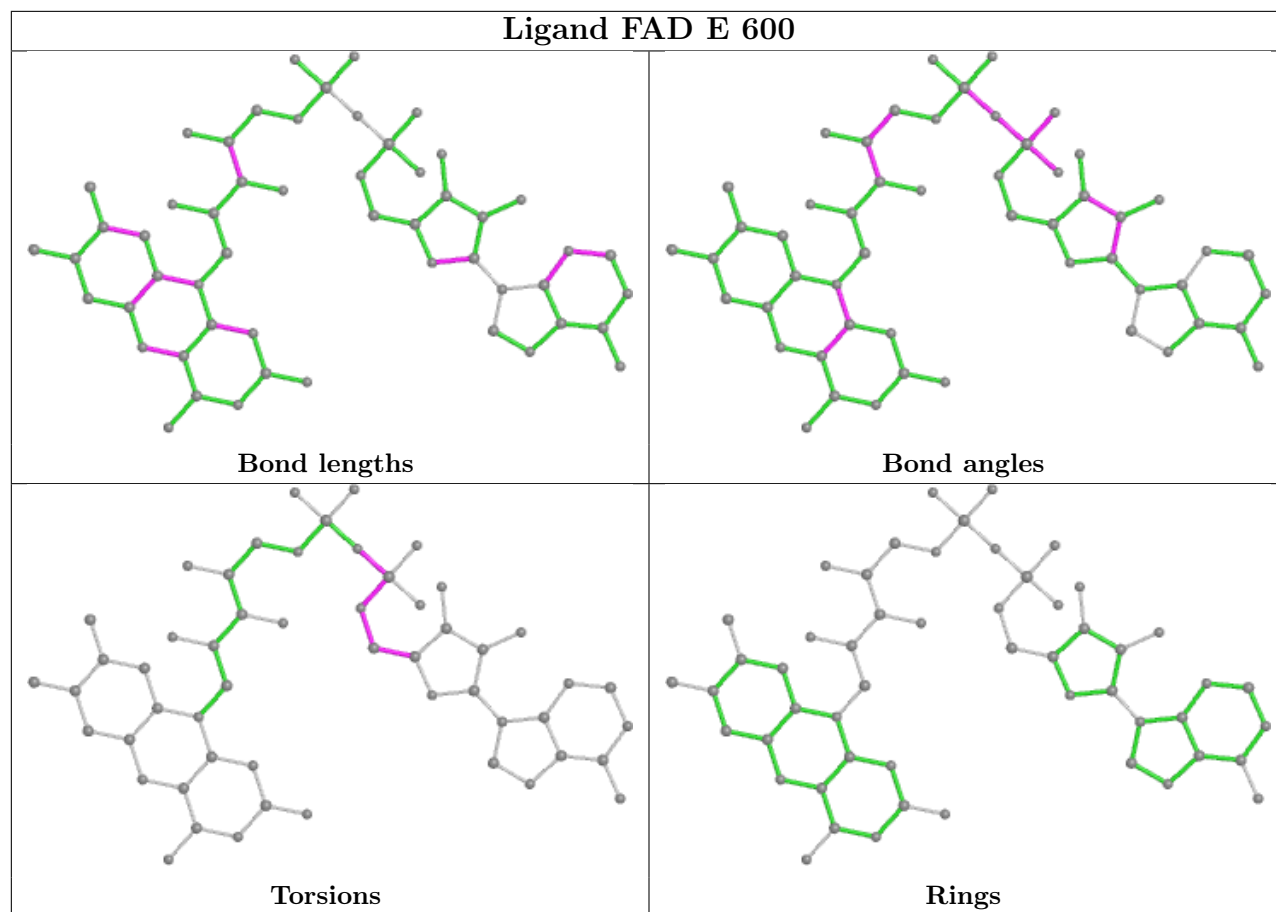




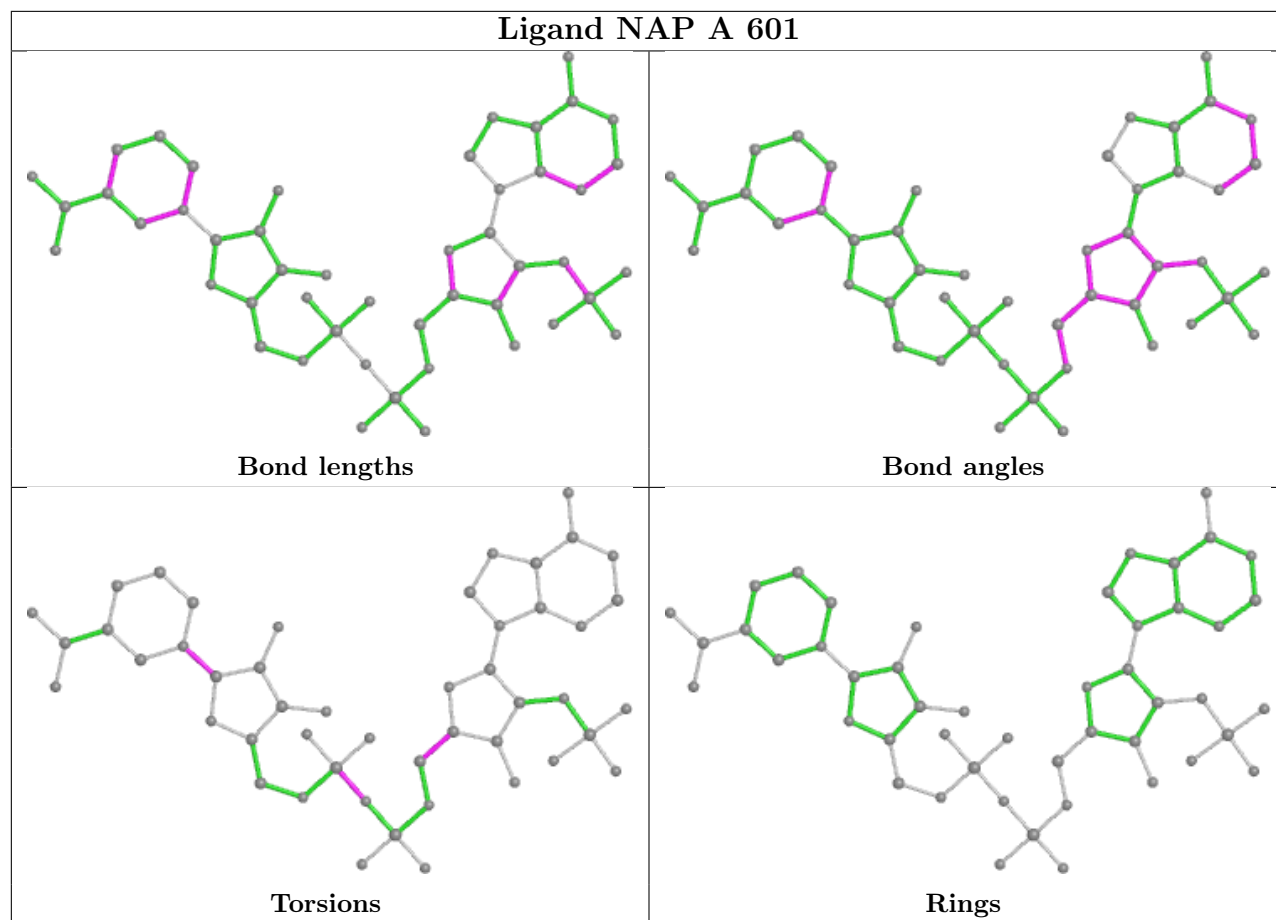












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 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, 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	487/519 (93%)	-0.19	2 (0%) 92 91	25, 51, 70, 83	0
1	B	487/519 (93%)	-0.22	4 (0%) 86 81	26, 51, 69, 93	0
1	C	490/519 (94%)	-0.10	10 (2%) 65 56	31, 55, 75, 102	0
1	D	491/519 (94%)	-0.15	8 (1%) 72 66	26, 52, 73, 107	0
1	E	490/519 (94%)	-0.01	12 (2%) 59 49	32, 59, 82, 105	0
1	F	486/519 (93%)	-0.09	7 (1%) 75 70	29, 57, 77, 91	0
All	All	2931/3114 (94%)	-0.13	43 (1%) 73 68	25, 54, 75, 107	0

All (43) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	499	GLY	4.6
1	B	495	ALA	4.1
1	E	496	GLY	3.9
1	E	498	CYS	3.9
1	C	498	CYS	3.8
1	E	497	CYS	3.7
1	A	10	SER	3.7
1	E	495	ALA	3.6
1	F	490	ALA	3.5
1	F	491	SER	3.5
1	D	9	LYS	3.5
1	D	495	ALA	3.4
1	F	9	LYS	3.4
1	E	52	ARG	3.3
1	B	9	LYS	3.3
1	B	494	GLN	3.0
1	F	10	SER	3.0
1	A	495	ALA	2.9
1	E	148	LYS	2.9

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Mol	Chain	Res	Type	RSRZ
1	D	499	GLY	2.8
1	C	10	SER	2.7
1	C	494	GLN	2.6
1	C	261	ALA	2.6
1	C	495	ALA	2.6
1	C	262	GLY	2.5
1	C	277	GLU	2.5
1	D	10	SER	2.4
1	C	497	CYS	2.4
1	F	259	ILE	2.4
1	C	276	SER	2.4
1	F	139	ARG	2.3
1	B	493	LEU	2.2
1	D	498	CYS	2.2
1	E	139	ARG	2.2
1	E	10	SER	2.2
1	F	308	LYS	2.2
1	E	93	THR	2.1
1	D	158	LEU	2.1
1	E	279	ILE	2.1
1	E	494	GLN	2.0
1	D	497	CYS	2.0
1	D	430	LYS	2.0
1	E	364	LYS	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](#)

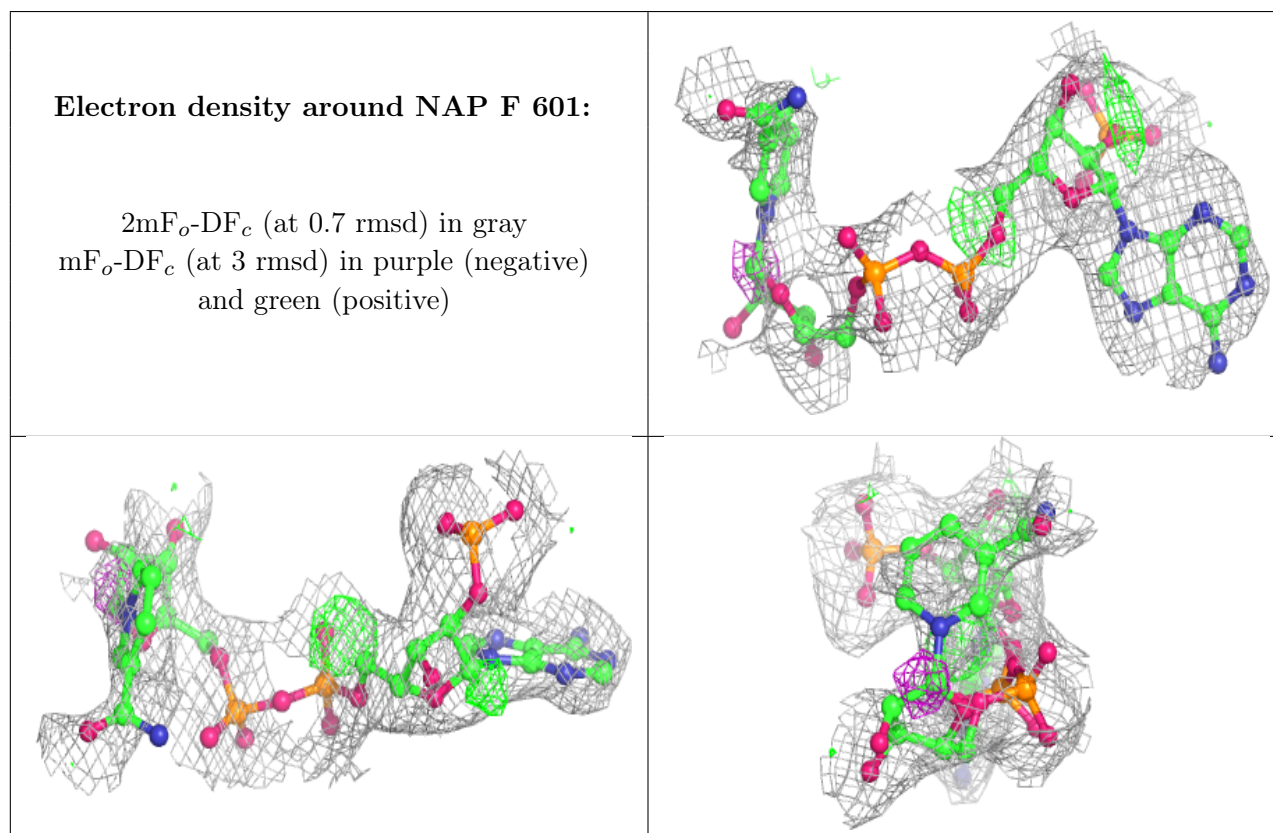
There are no monosaccharides in this entry.

## 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.

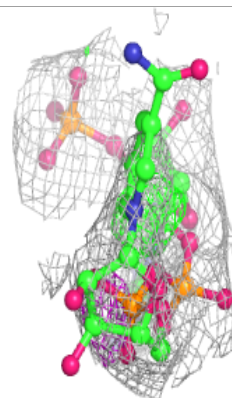
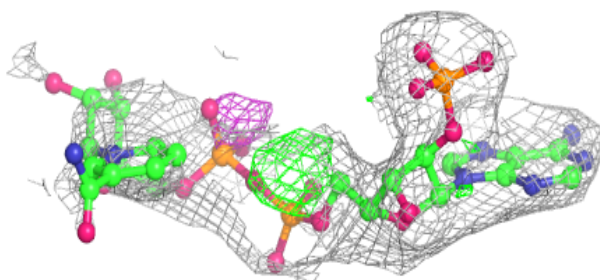
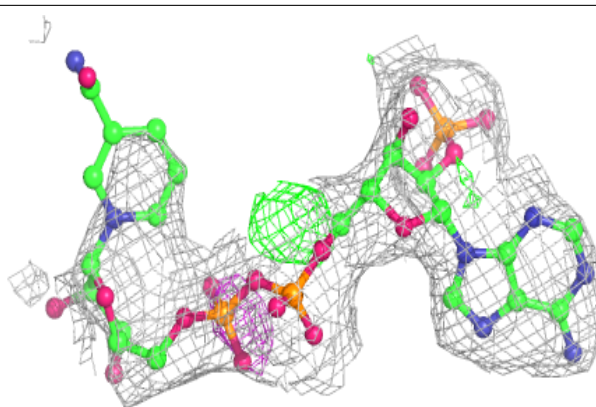
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	NAP	F	601	48/48	0.81	0.21	83,108,119,120	0
3	NAP	E	601	48/48	0.84	0.25	73,104,121,121	0
4	MPD	B	701	8/8	0.85	0.29	58,60,61,62	0
4	MPD	A	701	8/8	0.86	0.41	76,78,79,79	0
3	NAP	C	601	48/48	0.87	0.22	80,95,101,102	0
3	NAP	B	601	48/48	0.88	0.21	63,86,104,105	0
3	NAP	D	601	48/48	0.89	0.20	26,68,87,87	0
3	NAP	A	601	48/48	0.90	0.20	68,86,102,104	0
4	MPD	D	700	8/8	0.92	0.20	39,41,43,43	0
2	FAD	D	600	53/53	0.94	0.16	25,49,70,70	0
4	MPD	B	700	8/8	0.94	0.18	34,38,39,44	0
2	FAD	E	600	53/53	0.94	0.20	54,59,83,84	0
2	FAD	F	600	53/53	0.94	0.21	52,60,62,64	0
4	MPD	F	700	8/8	0.94	0.17	34,35,37,37	0
2	FAD	B	600	53/53	0.95	0.16	35,45,50,52	0
2	FAD	A	600	53/53	0.96	0.15	25,35,44,47	0
2	FAD	C	600	53/53	0.96	0.15	20,40,61,62	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.

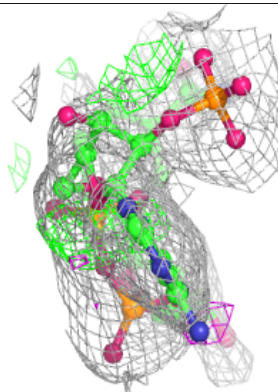
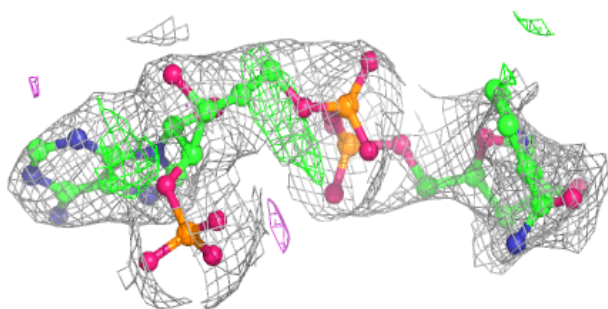
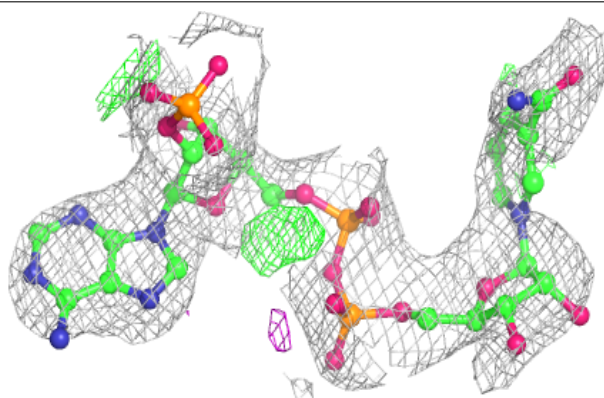


**Electron density around NAP E 601:**

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

**Electron density around NAP C 601:**

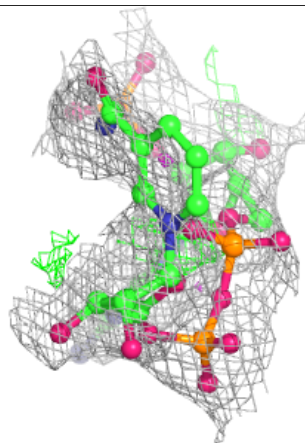
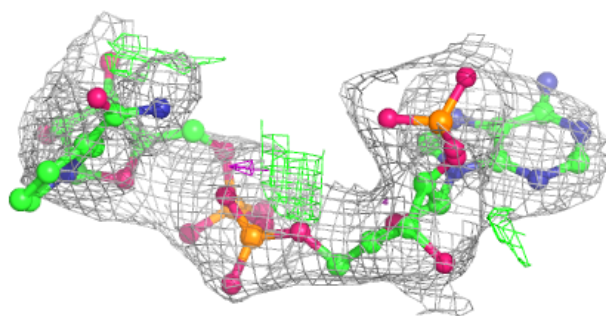
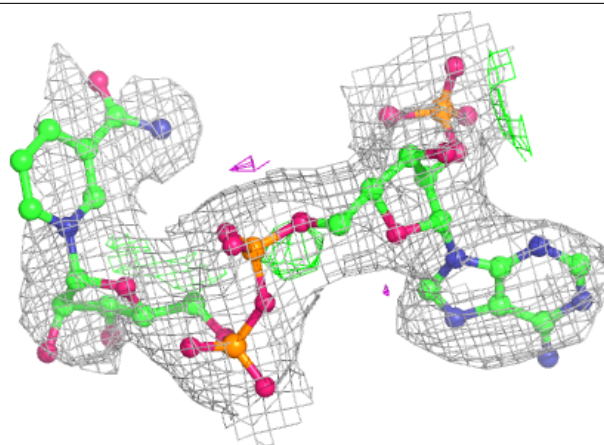
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



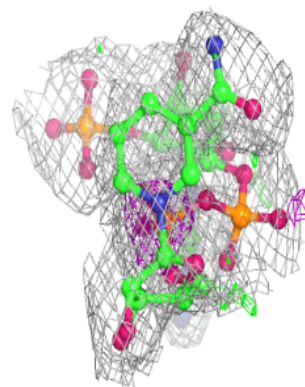
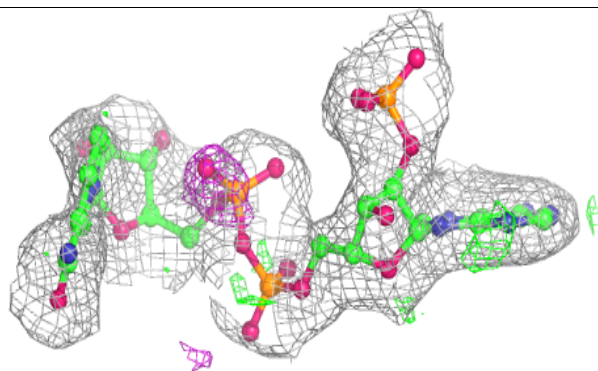
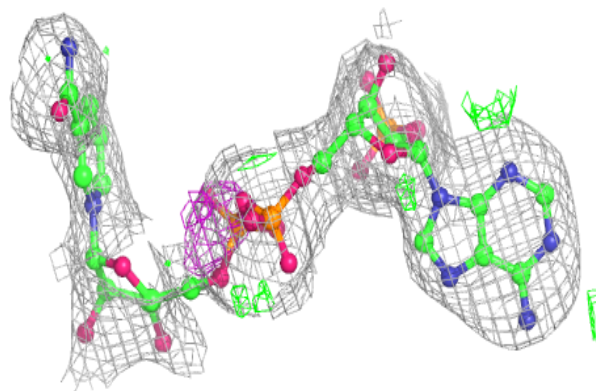


**Electron density around NAP B 601:**

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

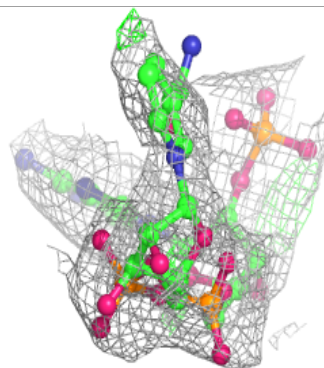
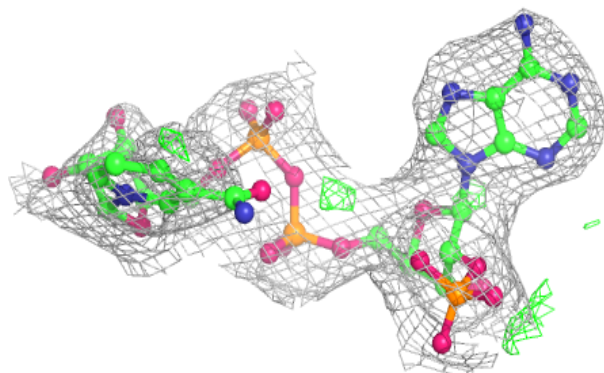
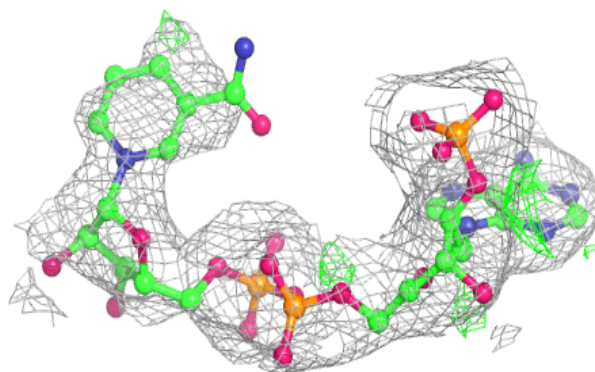
**Electron density around NAP D 601:**

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

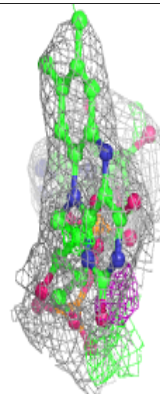
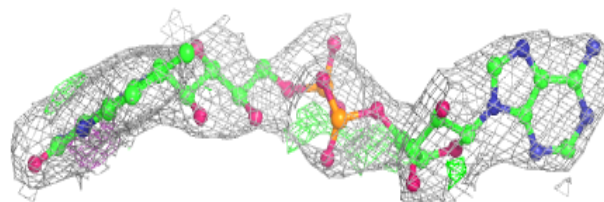
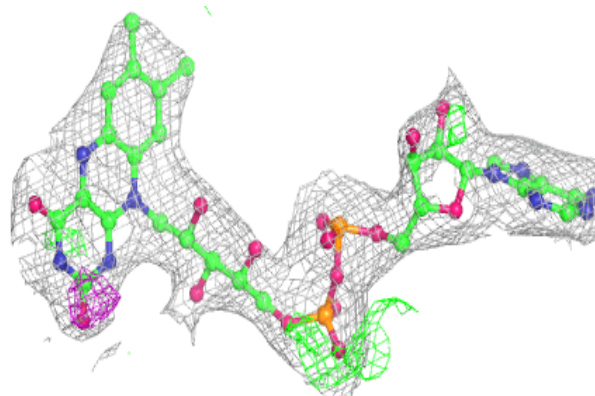


**Electron density around NAP A 601:**

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

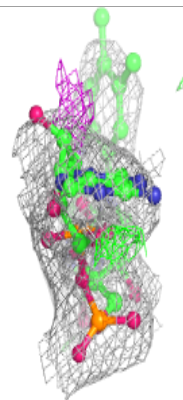
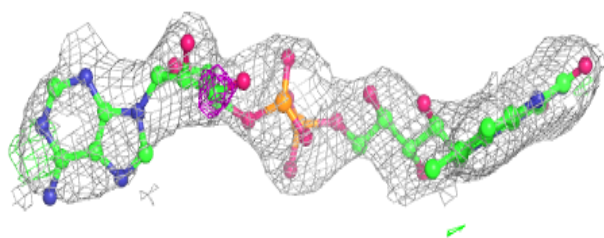
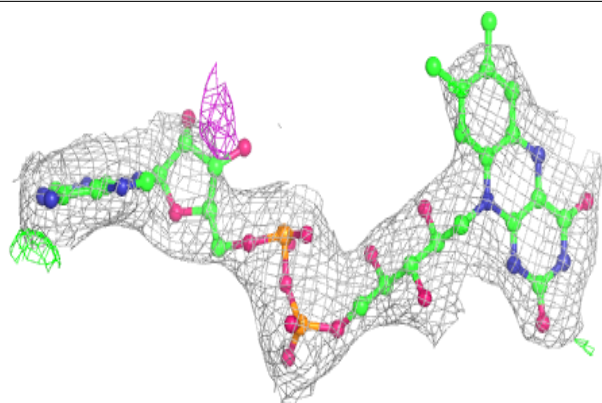
**Electron density around FAD D 600:**

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

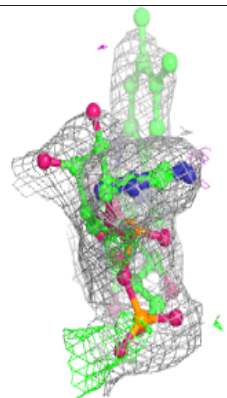
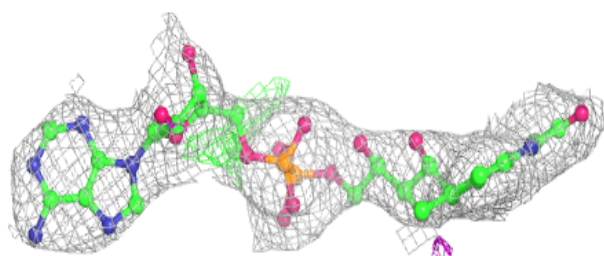
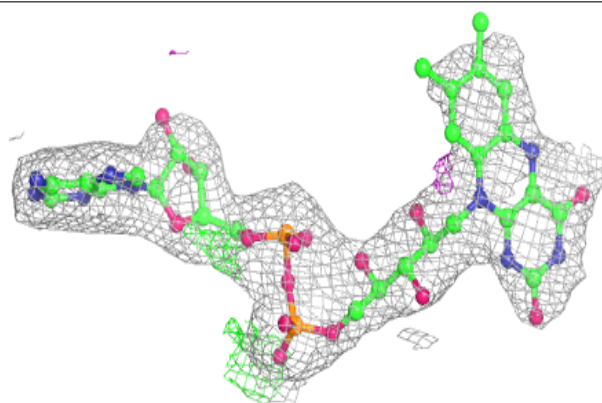


**Electron density around FAD E 600:**

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

**Electron density around FAD F 600:**

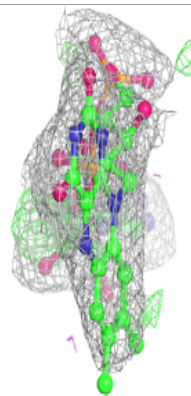
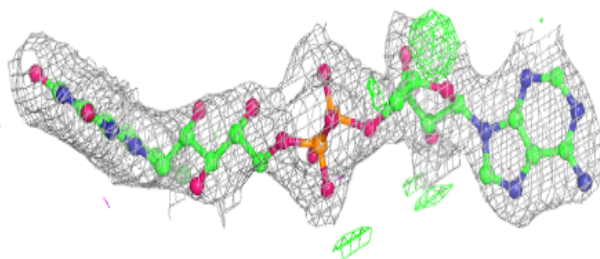
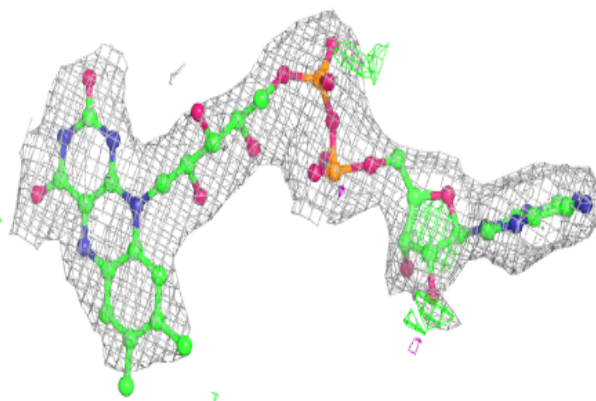
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



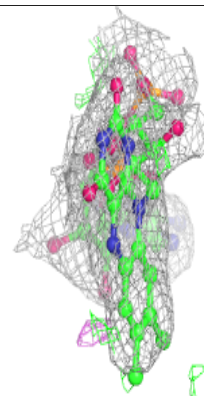
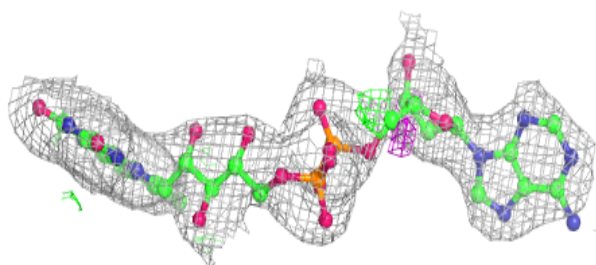
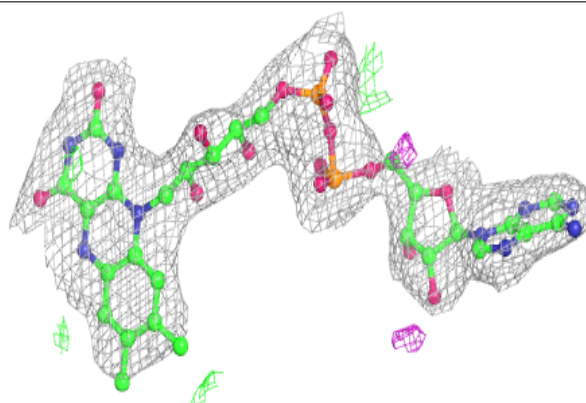


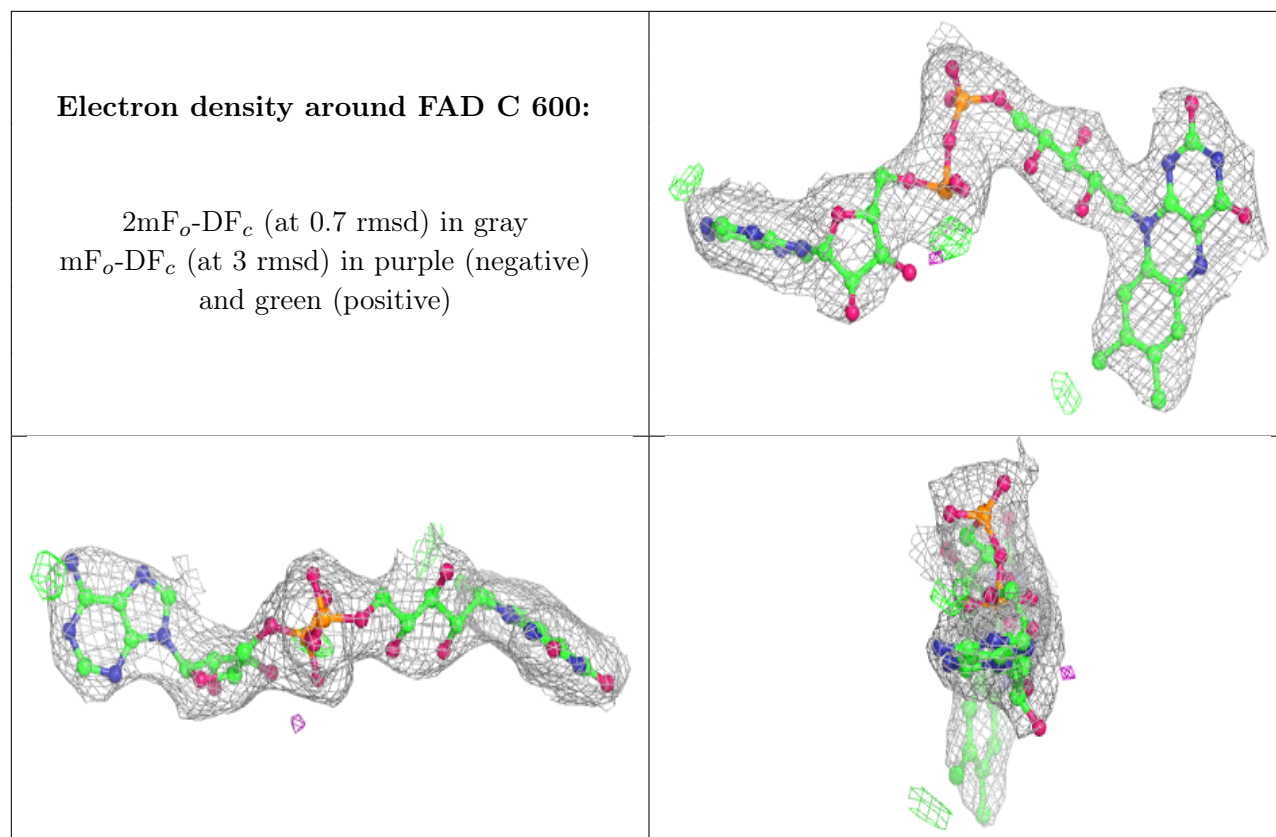
**Electron density around FAD B 600:**

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

**Electron density around FAD 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.