Full wwPDB X-ray Structure Validation Report (i)

Aug 15, 2023 – 03:55 PM EDT

PDB ID	:	1TLL
Title	:	CRYSTAL STRUCTURE OF RAT NEURONAL NITRIC-OXIDE SYNTHASE REDUCTASE MODULE AT 2.3 A RESOLUTION.
Authors	:	Garcin, E.D.; Bruns, C.M.; Lloyd, S.J.; Hosfield, D.J.; Tiso, M.; Gachhui, R.; Stuehr, D.J.; Tainer, J.A.; Getzoff, E.D.
Deposited on	:	2004-06-09
Resolution	:	2.30 Å(reported)

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

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

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

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

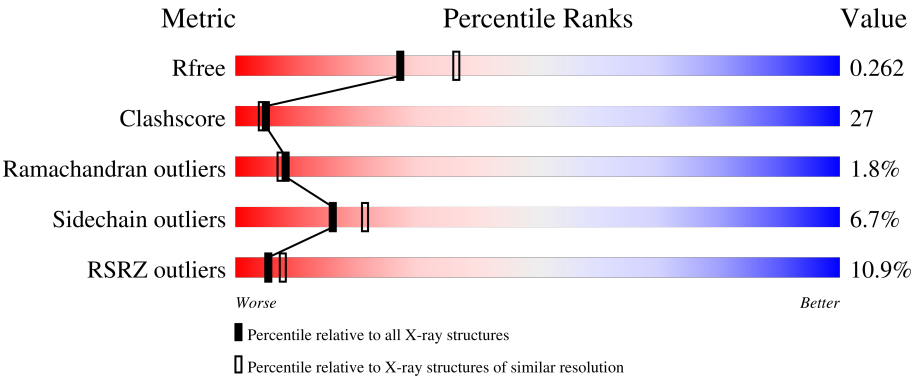
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% 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	688	8% 55% 31% 5% 8%
1	B	688	12% 47% 39% • 10%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 10408 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.

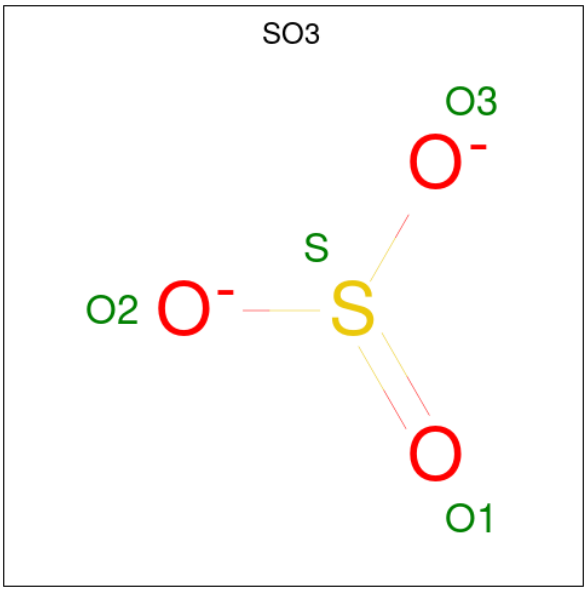
- Molecule 1 is a protein called Nitric-oxide synthase, brain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	630	Total	C	N	O	S	0	0	0
			5010	3170	882	932	26			
1	B	616	Total	C	N	O	S	0	0	0
			4903	3106	862	909	26			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1008	SER	PHE	SEE REMARK 999	UNP P29476
B	3008	SER	PHE	SEE REMARK 999	UNP P29476

- Molecule 2 is SULFITE ION (three-letter code: SO3) (formula: O_3S).



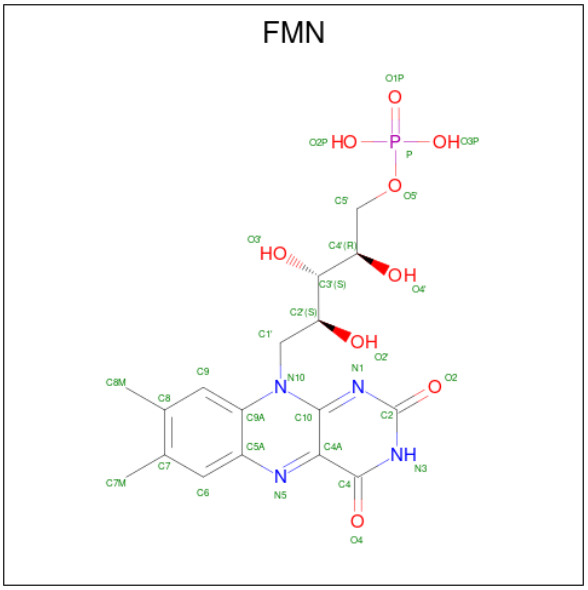
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			4	3	1		

Continued on next page...

Continued from previous page...

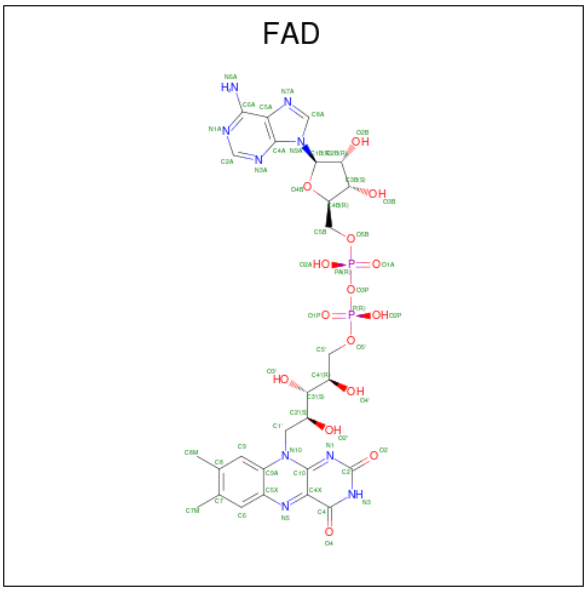
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total O S 4 3 1	0	0

- Molecule 3 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$).



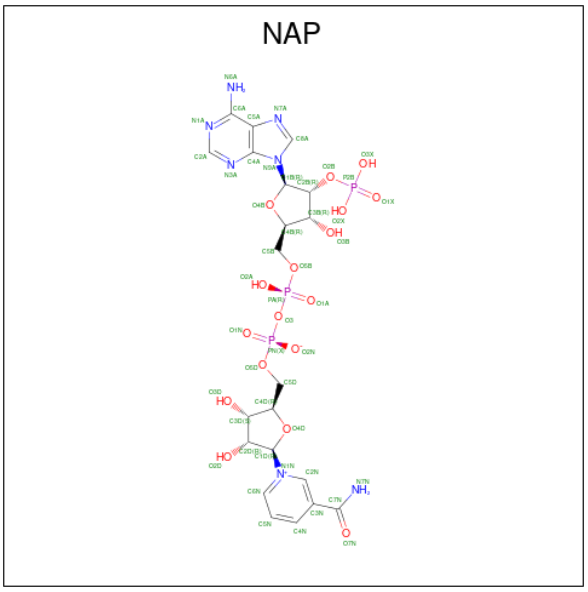
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O P 31 17 4 9 1	0	0
3	B	1	Total C N O P 31 17 4 9 1	0	0

- Molecule 4 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).



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

- Molecule 5 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
5	A	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

Continued on next page...

Continued from previous page...

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

- Molecule 6 is water.

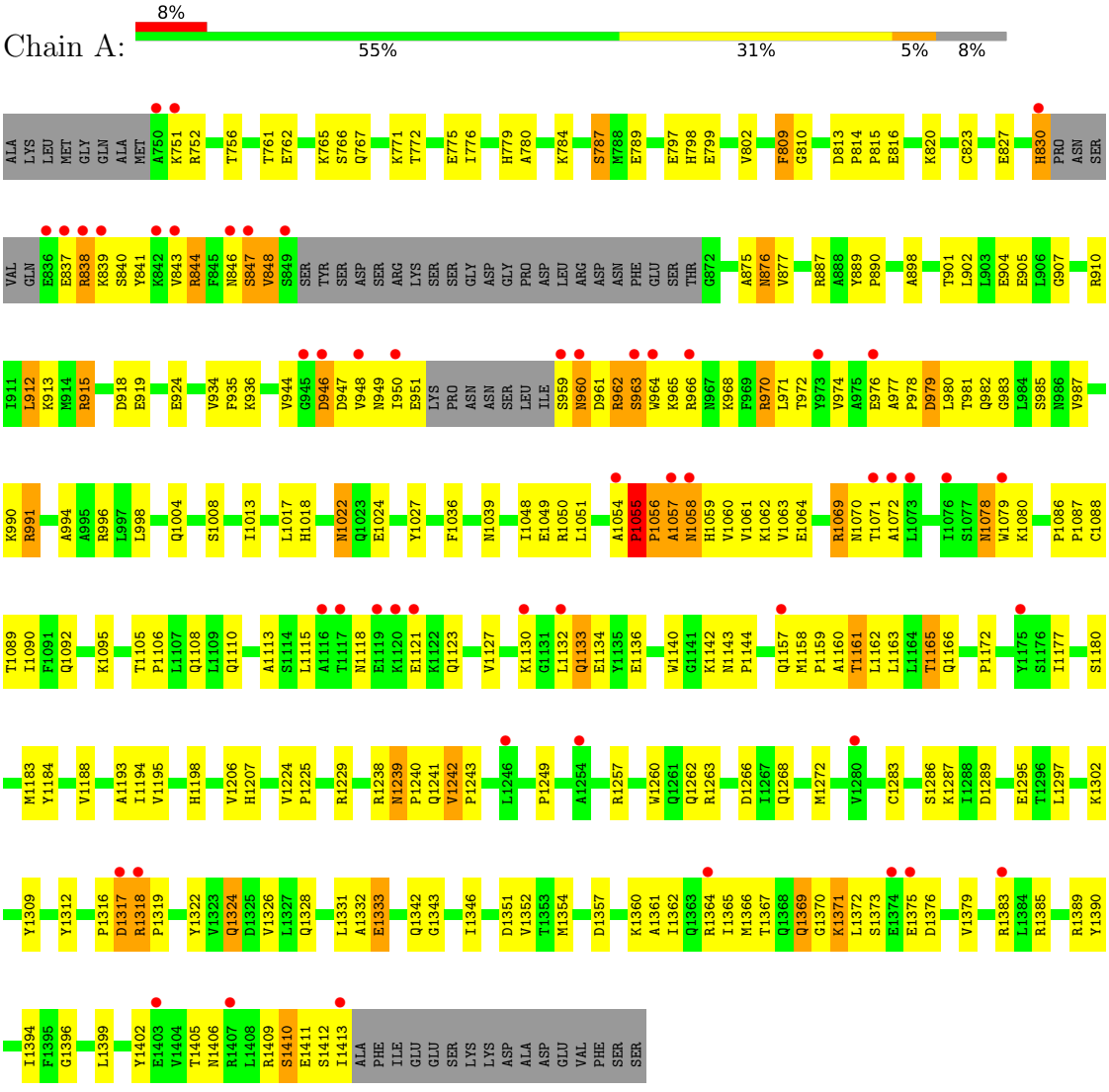
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	127	Total	O	0	0
			127	127		
6	B	96	Total	O	0	0
			96	96		

3 Residue-property plots (i)

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

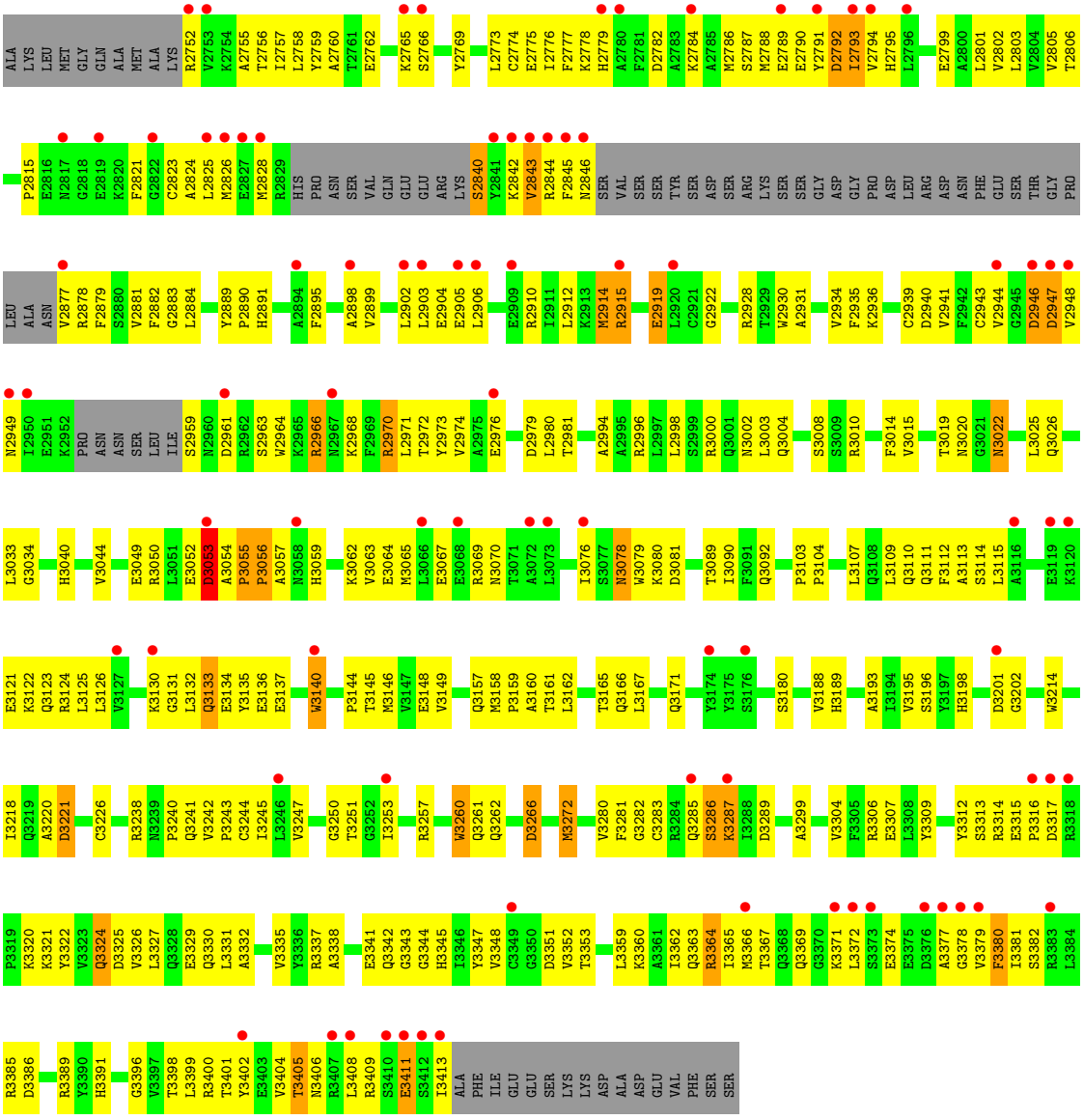
• Molecule 1: Nitric-oxide synthase, brain

Chain A:



• Molecule 1: Nitric-oxide synthase, brain

Chain B:


ALA LYS LEU MET GLY GLN ALA MET ALA LYS R2752 V2753 K2754 A2755 T2756 I2757 L2758 Y2759 A2760 T2761 E2762 K2765 S2766 Y2769 L2773 C2774 E2775 I2776 F2777 K2778 H2779 A2780 F2781 D2782 A2783 K2784 A2785 M2786 S2787 M2788 E2789 E2790 Y2791 D2792 I2793 V2794 H2795 L2796 E2799 A2800 L2801 V2802 L2803 V2804 V2805 T2806
P2815 E2816 N2817 G2818 E2819 K2820 F2821 G2822 C2823 A2824 L2825 M2826 E2827 M2828 R2829 HIS PRO ASN SER VAL GLN GLU GLU ARG LYS S2840 Y2841 K2842 V2843 R2844 F2845 N2846 SER VAL SER SER TYR SER ASP SER ARG LYS SER SER GLY ASP GLY PRO ASP LEU ARG ASP ASN PHE GLU SER THR GLY PRO
LEU ALA ASN V2877 R2878 F2879 S2880 V2881 F2882 G2883 L2884 Y2889 P2890 H2891 A2894 F2895 A2898 V2899 L2902 L2903 E2904 E2905 L2906 E2909 R2910 I2911 L2912 K2913 M2914 R2915 E2919 L2920 C2921 G2922 R2928 T2929 W2930 A2931 V2934 F2935 K2936 C2939 D2940 V2941 F2942 C2943 V2944 G2945 D2946 D2947 V2948
N2949 I2950 E2951 K2952 PRO ASN ASN SER LEU ILE S2959 N2960 D2961 R2962 S2963 W2964 K2965 R2966 N2967 K2968 F2969 R2970 L2971 T2972 Y2973 V2974 A2975 E2976 D2979 L2980 T2981 A2994 A2995 R2996 L2997 L2998 S2999 R3000 Q3001 N3002 L3003 Q3004 S3008 S3009 R3010 F3014 V3015 T3019 N3020 G3021 N3022 L3025 Q3026
L3033 G3034 H3040 V3044 E3049 R3050 L3051 E3052 D3053 A3054 P3055 P3056 A3057 N3058 H3059 K3062 V3063 E3064 M3065 L3066 E3067 E3068 R3069 N3070 T3071 A3072 L3073 I3076 S3077 N3078 W3079 K3080 D3081 T3089 I3090 F3091 Q3092 P3103 P3104 L3107 Q3108 L3109 Q3110 Q3111 F3112 A3113 S3114 L3115 A3116 E3119 K3120
E3121 K3122 Q3123 R3124 L3125 L3126 V3127 K3130 G3131 L3132 Q3133 E3134 Y3135 E3136 E3137 W3140 P3144 T3145 M3146 V3147 E3148 V3149 Q3157 M3158 P3159 A3160 T3161 L3162 T3165 Q3166 L3167 Q3171 Y3174 Y3175 S3176 S3180 V3188 H3189 A3193 I3194 V3195 S3196 Y3197 H3198 D3201 G3202 W3214
I3218 Q3219 A3220 D3221 C3226 R3238 N3239 P3240 Q3241 V3242 P3243 C3244 I3245 L3246 V3247 G3250 T3251 G3252 I3253 R3257 W3260 Q3261 Q3262 D3266 M3272 V3280 F3281 G3282 C3283 R3284 Q3285 S3286 K3287 I3288 D3289 A3299 V3304 F3305 R3306 E3307 L3308 Y3309 Y3312 S3313 R3314 E3315 P3316 D3317 R3318
P3319 K3320 K3321 Y3322 V3323 Q3324 D3325 V3326 L3327 Q3328 E3329 Q3330 L3331 A3332 V3335 Y3336 R3337 A3338 E3341 Q3342 G3343 G3344 H3345 I3346 Y3347 V3348 C3349 G3350 D3351 V3352 T3353 L3359 K3360 A3361 I3362 Q3363 R3364 I3365 M3366 T3367 Q3368 Q3369 G3370 K3371 L3372 S3373 E3374 E3375 D3376 A3377 G3378 V3379 F3380 I3381 S3382 R3383 L3384
R3385 D3386 R3389 Y3390 H3391 G3396 V3397 T3398 L3399 R3400 T3401 Y3402 E3403 V3404 T3405 N3406 R3407 L3408 R3409 S3410 E3411 S3412 I3413 ALA PHE ILE GLU GLU SER LYS LYS ASP ALA ASP GLU VAL PHE SER SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	65.76Å 69.17Å 82.63Å 76.80° 72.07° 67.14°	Depositor
Resolution (Å)	35.21 – 2.30 35.21 – 2.17	Depositor EDS
% Data completeness (in resolution range)	97.8 (35.21-2.30) 95.5 (35.21-2.17)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	1.61 (at 2.18Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.244 , 0.272 0.237 , 0.262	Depositor DCC
R_{free} test set	1909 reflections (2.98%)	wwPDB-VP
Wilson B-factor (Å^2)	37.4	Xtriage
Anisotropy	0.505	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 55.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	10408	wwPDB-VP
Average B, all atoms (Å^2)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.32% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: FMN, NAP, FAD, SO3

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.43	2/5122 (0.0%)	0.71	2/6932 (0.0%)
1	B	0.40	0/5014	0.76	6/6788 (0.1%)
All	All	0.41	2/10136 (0.0%)	0.73	8/13720 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1133	GLN	CA-CB	-5.70	1.41	1.53
1	A	1133	GLN	CG-CD	-5.18	1.39	1.51

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	3364	ARG	NE-CZ-NH1	19.58	130.09	120.30
1	B	3364	ARG	NE-CZ-NH2	-16.65	111.97	120.30
1	B	2944	VAL	N-CA-C	-6.22	94.21	111.00
1	B	2966	ARG	N-CA-C	5.69	126.37	111.00
1	B	3364	ARG	CD-NE-CZ	5.38	131.14	123.60
1	A	1133	GLN	CB-CG-CD	-5.15	98.22	111.60
1	B	2943	CYS	N-CA-C	5.06	124.67	111.00
1	A	944	VAL	N-CA-C	-5.01	97.47	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5010	0	4925	260	1
1	B	4903	0	4814	287	1
2	A	4	0	0	0	0
2	B	4	0	0	0	0
3	A	31	0	18	0	0
3	B	31	0	18	0	0
4	A	53	0	28	0	0
4	B	53	0	28	0	0
5	A	48	0	24	9	0
5	B	48	0	24	13	0
6	A	127	0	0	2	0
6	B	96	0	0	6	0
All	All	10408	0	9879	545	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 27.

All (545) 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)
5:A:1453:NAP:O2A	5:A:1453:NAP:O3D	1.55	1.21
1:B:3360:LYS:O	1:B:3364:ARG:CD	1.98	1.11
1:B:3196:SER:N	6:B:6093:HOH:O	1.59	1.10
1:A:991:ARG:HG3	1:A:991:ARG:HH11	1.12	1.08
1:B:3053:ASP:HB2	1:B:3160:ALA:H	1.11	1.06
1:B:3360:LYS:O	1:B:3364:ARG:HD3	1.54	1.04
1:A:1161:THR:O	1:A:1165:THR:HG22	1.56	1.04
1:B:3324:GLN:H	1:B:3324:GLN:HE21	1.04	1.00
1:B:3398:THR:O	5:B:2453:NAP:O2D	1.80	1.00
1:A:1328:GLN:HE21	1:A:1361:ALA:HA	1.22	0.99
1:A:1078:ASN:N	1:A:1078:ASN:HD22	1.62	0.97
1:B:3313:SER:HB2	1:B:3320:LYS:HE2	1.45	0.96
1:A:1071:THR:HG22	1:A:1072:ALA:H	1.30	0.96
1:B:3360:LYS:HB3	1:B:3364:ARG:NH1	1.81	0.95
1:B:3019:THR:HG23	1:B:3025:LEU:HD12	1.50	0.94
1:B:2843:VAL:HG23	1:B:3386:ASP:OD2	1.68	0.94
1:A:1324:GLN:H	1:A:1324:GLN:HE21	1.08	0.93
1:B:2799:GLU:O	1:B:2877:VAL:HG22	1.70	0.92
1:B:3324:GLN:H	1:B:3324:GLN:NE2	1.68	0.92

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1324:GLN:HE22	5:A:1453:NAP:H2A	1.34	0.91
1:B:3193:ALA:HB1	5:B:2453:NAP:H51N	1.55	0.89
1:A:991:ARG:HH11	1:A:991:ARG:CG	1.87	0.88
1:A:1071:THR:HG22	1:A:1072:ALA:N	1.89	0.87
1:B:2930:TRP:O	1:B:2934:VAL:HG23	1.74	0.87
1:A:797:GLU:HG3	1:A:798:HIS:CD2	2.10	0.86
1:B:2881:VAL:HB	1:B:2914:MET:HG3	1.54	0.86
1:A:840:SER:OG	1:A:843:VAL:HG23	1.75	0.86
1:B:3283:CYS:HB2	1:B:3289:ASP:HB3	1.58	0.85
1:A:964:TRP:CZ2	1:A:966:ARG:HG3	2.11	0.85
1:A:1309:TYR:CZ	1:A:1331:LEU:HD21	2.11	0.84
1:A:912:LEU:HD22	1:A:915:ARG:HH12	1.41	0.84
1:A:1379:VAL:O	1:A:1383:ARG:HG2	1.77	0.83
1:B:2912:LEU:HD21	1:B:2915:ARG:NH1	1.93	0.83
1:A:775:GLU:HG2	1:A:961:ASP:CB	2.09	0.83
1:A:823:CYS:O	1:A:827:GLU:HG2	1.77	0.83
1:B:2922:GLY:N	1:B:3136:GLU:OE2	2.11	0.82
1:A:1069:ARG:HG2	1:A:1070:ASN:H	1.44	0.82
1:B:3353:THR:HG22	5:B:2453:NAP:H62A	1.44	0.81
1:A:972:THR:HG21	1:A:1064:GLU:OE1	1.80	0.81
1:A:1324:GLN:H	1:A:1324:GLN:NE2	1.79	0.81
1:B:3324:GLN:HE21	1:B:3324:GLN:N	1.76	0.81
1:A:1062:LYS:HE3	1:A:1087:PRO:HG3	1.62	0.80
1:B:3360:LYS:O	1:B:3364:ARG:HD2	1.78	0.80
1:A:1328:GLN:NE2	1:A:1361:ALA:HA	1.96	0.80
1:A:1324:GLN:HE21	1:A:1324:GLN:N	1.80	0.79
1:B:2842:LYS:HD3	1:B:2846:ASN:HD22	1.47	0.79
1:A:1048:ILE:HG21	1:A:1057:ALA:HB2	1.64	0.79
1:A:1328:GLN:NE2	1:A:1364:ARG:HD2	1.98	0.79
1:B:2792:ASP:HB3	1:B:2794:VAL:HG12	1.66	0.78
1:A:1372:LEU:HB3	1:A:1376:ASP:HB2	1.63	0.78
1:B:3162:LEU:HD12	1:B:3166:GLN:HG2	1.66	0.78
1:A:1022:ASN:HD21	1:A:1024:GLU:HG2	1.48	0.77
1:A:1324:GLN:NE2	5:A:1453:NAP:H2A	1.98	0.77
1:A:1328:GLN:HE21	1:A:1361:ALA:CA	1.97	0.76
1:A:1158:MET:CE	1:A:1162:LEU:HB3	2.17	0.75
1:B:3053:ASP:HB2	1:B:3160:ALA:N	1.96	0.75
1:B:3322:TYR:HB3	1:B:3324:GLN:HE22	1.51	0.75
1:B:2760:ALA:HB3	1:B:2806:THR:OG1	1.87	0.75
1:B:2930:TRP:CE2	1:B:2934:VAL:HG21	2.21	0.74
1:A:1180:SER:OG	1:A:1262:GLN:NE2	2.20	0.74

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3162:LEU:HD12	1:B:3166:GLN:CG	2.17	0.74
1:A:1078:ASN:N	1:A:1078:ASN:ND2	2.36	0.74
1:B:3367:THR:HG23	1:B:3372:LEU:O	1.87	0.74
1:A:876:ASN:C	1:A:876:ASN:HD22	1.91	0.74
1:B:2912:LEU:CD2	1:B:2934:VAL:HG22	2.17	0.74
1:A:959:SER:O	1:A:960:ASN:HB3	1.86	0.74
1:A:1324:GLN:HG2	1:A:1357:ASP:HB3	1.70	0.73
1:A:1022:ASN:HD22	1:A:1024:GLU:H	1.36	0.73
1:A:775:GLU:HG2	1:A:961:ASP:HB3	1.71	0.73
1:A:1071:THR:CG2	1:A:1072:ALA:H	2.00	0.73
1:B:3285:GLN:HG2	1:B:3287:LYS:HG2	1.71	0.73
1:A:965:LYS:HD2	1:A:968:LYS:HD2	1.68	0.72
1:B:3198:HIS:HB2	1:B:3202:GLY:HA2	1.71	0.72
1:B:2889:TYR:OH	1:B:3396:GLY:HA2	1.89	0.72
1:A:965:LYS:HG3	1:A:968:LYS:HB2	1.71	0.72
1:A:1243:PRO:HG3	1:A:1342:GLN:HE21	1.54	0.72
1:B:2966:ARG:HG3	1:B:2966:ARG:O	1.90	0.72
1:A:1062:LYS:HG3	1:A:1087:PRO:HG3	1.70	0.71
1:A:780:ALA:HB2	1:A:948:VAL:HG21	1.70	0.71
1:B:2765:LYS:NZ	1:B:2919:GLU:OE1	2.24	0.71
1:B:2959:SER:HA	1:B:3110:GLN:HE22	1.55	0.71
1:B:3019:THR:HG23	1:B:3025:LEU:CD1	2.20	0.71
1:A:816:GLU:HB2	1:A:1229:ARG:NH2	2.06	0.70
1:A:1127:VAL:HA	1:A:1130:LYS:HE3	1.73	0.70
1:A:962:ARG:O	1:A:963:SER:O	2.09	0.70
1:A:1036:PHE:HB2	1:A:1225:PRO:HB2	1.73	0.70
1:A:887:ARG:HG2	1:A:918:ASP:OD2	1.92	0.70
1:A:946:ASP:OD1	1:A:946:ASP:O	2.09	0.69
1:B:3111:GLN:O	1:B:3115:LEU:HD12	1.92	0.69
1:B:3053:ASP:CB	1:B:3160:ALA:H	1.97	0.69
1:A:799:GLU:HG2	1:A:802:VAL:HG22	1.74	0.69
1:A:1062:LYS:HE3	1:A:1087:PRO:CG	2.21	0.69
1:A:1198:HIS:NE2	1:A:1206:VAL:HG22	2.08	0.69
1:B:3107:LEU:O	1:B:3110:GLN:HG2	1.93	0.69
1:B:3345:HIS:CE1	1:B:3389:ARG:HG2	2.28	0.69
1:B:3130:LYS:O	1:B:3132:LEU:N	2.25	0.69
1:A:1158:MET:HE3	1:A:1162:LEU:HB3	1.74	0.69
1:B:2878:ARG:HH12	1:B:2941:VAL:HG13	1.58	0.69
1:B:3247:VAL:HG12	1:B:3280:VAL:HB	1.75	0.68
1:B:3351:ASP:HB2	1:B:3399:LEU:HG	1.74	0.68
1:A:1048:ILE:HD13	1:A:1057:ALA:CB	2.23	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3240:PRO:HG2	1:B:3241:GLN:HE21	1.57	0.68
1:A:1022:ASN:ND2	1:A:1024:GLU:HG2	2.07	0.68
1:B:3322:TYR:HB3	1:B:3324:GLN:NE2	2.07	0.68
1:A:779:HIS:CE1	1:A:951:GLU:OE2	2.47	0.68
1:B:2971:LEU:HD12	1:B:3055:PRO:HG2	1.75	0.68
1:A:1118:ASN:HB3	1:A:1121:GLU:HB3	1.76	0.67
1:A:976:GLU:OE2	1:B:2784:LYS:HD2	1.94	0.67
1:A:765:LYS:NZ	1:A:919:GLU:HG3	2.10	0.67
1:A:991:ARG:HG3	1:A:991:ARG:NH1	1.92	0.67
1:A:1161:THR:O	1:A:1165:THR:CG2	2.39	0.66
1:B:3314:ARG:O	1:B:3316:PRO:HD3	1.96	0.66
1:A:1158:MET:HE3	1:A:1159:PRO:HD2	1.76	0.66
1:A:912:LEU:HD12	1:A:934:VAL:HA	1.78	0.66
1:A:1238:ARG:O	1:A:1240:PRO:HD3	1.95	0.66
1:A:961:ASP:C	1:A:963:SER:H	1.99	0.66
1:A:848:VAL:HG12	1:A:848:VAL:O	1.94	0.66
1:A:1078:ASN:HD22	1:A:1078:ASN:H	1.44	0.66
1:A:1324:GLN:HE22	5:A:1453:NAP:C2A	2.07	0.66
1:B:3180:SER:OG	1:B:3262:GLN:NE2	2.30	0.65
1:B:2912:LEU:HD23	1:B:2934:VAL:HG22	1.78	0.65
1:A:1351:ASP:HB2	1:A:1399:LEU:HG	1.79	0.65
1:B:3193:ALA:HB2	1:B:3251:THR:HG21	1.79	0.65
1:B:2794:VAL:HG13	1:B:2795:HIS:HD2	1.62	0.65
1:B:2840:SER:HB2	1:B:3386:ASP:OD1	1.97	0.64
1:B:3242:VAL:HG11	1:B:3343:GLY:O	1.97	0.64
1:B:3158:MET:HE3	1:B:3162:LEU:HD23	1.78	0.64
1:B:2947:ASP:O	1:B:2949:ASN:N	2.30	0.64
1:B:2878:ARG:NH1	1:B:2941:VAL:HG13	2.13	0.64
1:B:2757:ILE:HG12	1:B:2803:LEU:HD12	1.80	0.64
1:A:1058:ASN:CG	1:A:1058:ASN:O	2.36	0.64
1:A:1268:GLN:HE21	1:A:1302:LYS:HD3	1.62	0.64
1:B:3283:CYS:HB2	1:B:3289:ASP:CB	2.27	0.64
1:B:3158:MET:HE3	1:B:3159:PRO:HD2	1.79	0.63
1:B:2946:ASP:OD2	1:B:2946:ASP:N	2.30	0.63
1:B:3019:THR:CG2	1:B:3025:LEU:HB2	2.28	0.63
1:A:1328:GLN:HE22	1:A:1364:ARG:HD2	1.61	0.63
1:A:1048:ILE:HD13	1:A:1057:ALA:HB1	1.79	0.63
1:A:1069:ARG:HG2	1:A:1070:ASN:N	2.12	0.63
1:A:1322:TYR:HB3	1:A:1324:GLN:NE2	2.13	0.63
1:B:3158:MET:CE	1:B:3162:LEU:HB3	2.29	0.63
1:B:3242:VAL:HG13	1:B:3243:PRO:HD2	1.80	0.63

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3195:VAL:HA	6:B:6093:HOH:O	1.99	0.63
1:B:3363:GLN:HE21	1:B:3378:GLY:CA	2.12	0.62
1:B:2915:ARG:HD2	1:B:2930:TRP:HB2	1.79	0.62
1:B:2905:GLU:O	1:B:2906:LEU:HD23	1.99	0.62
1:B:2884:LEU:N	1:B:2884:LEU:HD12	2.14	0.62
1:B:3286:SER:HB3	1:B:3312:TYR:CZ	2.34	0.62
1:A:1283:CYS:HB2	1:A:1289:ASP:HB3	1.82	0.62
1:B:2774:CYS:O	1:B:2778:LYS:HG2	2.00	0.62
1:B:2971:LEU:CD1	1:B:3055:PRO:HG2	2.29	0.62
1:B:3312:TYR:H	1:B:3321:LYS:HE3	1.64	0.62
1:B:3165:THR:OG1	1:B:3166:GLN:NE2	2.30	0.61
1:A:991:ARG:CG	1:A:991:ARG:NH1	2.55	0.61
1:B:3002:ASN:HB3	6:B:6013:HOH:O	2.00	0.61
1:B:2840:SER:HB2	1:B:3386:ASP:CG	2.21	0.61
1:A:987:VAL:CG2	1:A:1086:PRO:HD3	2.31	0.61
1:B:2878:ARG:NH1	1:B:2941:VAL:CG1	2.64	0.61
1:A:1022:ASN:HD21	1:A:1024:GLU:CG	2.14	0.60
1:B:2760:ALA:HB1	1:B:2815:PRO:HG3	1.82	0.60
1:B:2974:VAL:HG12	1:B:2976:GLU:H	1.67	0.60
1:A:1402:TYR:O	1:A:1406:ASN:HB2	2.02	0.60
5:B:2453:NAP:H1D	6:B:6095:HOH:O	2.01	0.60
1:A:1057:ALA:HA	1:A:1090:ILE:HD11	1.83	0.60
1:A:1162:LEU:HD12	1:A:1166:GLN:HG2	1.84	0.59
1:B:3193:ALA:CB	5:B:2453:NAP:H51N	2.30	0.59
1:B:3353:THR:HG22	5:B:2453:NAP:N6A	2.16	0.59
1:B:2912:LEU:HD22	1:B:2934:VAL:HG22	1.82	0.59
1:A:1239:ASN:HD22	1:A:1239:ASN:C	2.06	0.59
1:A:1373:SER:C	1:A:1375:GLU:H	2.05	0.59
1:A:1123:GLN:O	1:A:1127:VAL:HG23	2.02	0.59
1:B:2828:MET:SD	1:B:2906:LEU:HD13	2.43	0.59
1:B:2973:TYR:HE2	1:B:3059:HIS:CD2	2.21	0.59
1:A:1361:ALA:O	1:A:1365:ILE:HG13	2.02	0.58
1:B:3161:THR:O	1:B:3165:THR:HG23	2.03	0.58
1:B:2757:ILE:CG1	1:B:2803:LEU:HD12	2.34	0.58
1:A:1268:GLN:NE2	1:A:1302:LYS:HD3	2.17	0.58
1:B:2842:LYS:HD3	1:B:2846:ASN:ND2	2.16	0.58
1:B:3019:THR:O	1:B:3022:ASN:HB2	2.03	0.58
1:B:2973:TYR:HE2	1:B:3059:HIS:HD2	1.52	0.58
1:B:3247:VAL:HG23	1:B:3348:VAL:HA	1.85	0.58
1:A:924:GLU:HG3	1:A:1106:PRO:HD2	1.85	0.58
1:B:3324:GLN:NE2	5:B:2453:NAP:H2A	2.18	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3033:LEU:HD22	1:B:3188:VAL:HG11	1.85	0.58
1:A:1266:ASP:HB3	1:A:1272:MET:HG3	1.86	0.58
1:B:3262:GLN:O	1:B:3266:ASP:OD2	2.22	0.57
1:A:779:HIS:ND1	1:A:951:GLU:OE2	2.37	0.57
1:A:876:ASN:O	1:A:876:ASN:ND2	2.27	0.57
1:A:964:TRP:CG	1:A:1162:LEU:HD13	2.39	0.57
1:B:3337:ARG:HG3	1:B:3341:GLU:OE1	2.05	0.57
1:B:3052:GLU:HB3	1:B:3158:MET:O	2.04	0.57
1:A:765:LYS:HZ3	1:A:919:GLU:HG3	1.69	0.57
1:A:1367:THR:HG23	1:A:1372:LEU:O	2.04	0.57
1:B:2981:THR:HG21	1:B:2994:ALA:HB2	1.86	0.57
1:B:2793:ILE:O	1:B:2793:ILE:HG13	2.04	0.57
1:B:3360:LYS:CB	1:B:3364:ARG:NH1	2.64	0.57
1:A:971:LEU:CD2	1:A:1063:VAL:HG22	2.35	0.57
1:B:3287:LYS:NZ	1:B:3315:GLU:OE1	2.36	0.57
1:B:3363:GLN:HE21	1:B:3378:GLY:HA3	1.68	0.57
1:A:767:GLN:O	1:A:771:LYS:HG2	2.05	0.57
1:A:887:ARG:CG	1:A:918:ASP:OD2	2.53	0.57
1:A:1257:ARG:NE	1:A:1295:GLU:OE1	2.38	0.57
1:B:2821:PHE:HE1	1:B:2825:LEU:HD11	1.68	0.57
1:A:775:GLU:HG2	1:A:961:ASP:HB2	1.83	0.56
1:B:2912:LEU:HD21	1:B:2915:ARG:HH12	1.68	0.56
1:A:1057:ALA:HA	1:A:1090:ILE:CG1	2.35	0.56
1:B:2976:GLU:O	1:B:2976:GLU:HG2	2.05	0.56
1:B:2895:PHE:O	1:B:2899:VAL:HG23	2.05	0.56
1:B:2939:CYS:HA	6:B:6058:HOH:O	2.05	0.56
1:B:3133:GLN:O	1:B:3137:GLU:HG3	2.05	0.56
1:B:3180:SER:H	1:B:3261:GLN:NE2	2.03	0.56
1:A:1410:SER:O	1:A:1412:SER:N	2.39	0.56
1:B:2930:TRP:NE1	1:B:2934:VAL:HG21	2.21	0.56
1:B:2964:TRP:CZ2	1:B:2966:ARG:HD2	2.41	0.56
1:B:2766:SER:OG	1:B:2884:LEU:HD22	2.05	0.56
1:A:981:THR:HG21	1:A:994:ALA:HB2	1.86	0.56
1:A:1322:TYR:HB3	1:A:1324:GLN:HE22	1.71	0.56
1:B:2794:VAL:HG13	1:B:2795:HIS:CD2	2.39	0.56
1:B:2979:ASP:OD1	1:B:2980:LEU:N	2.38	0.56
1:B:3257:ARG:O	1:B:3261:GLN:HG3	2.05	0.56
1:B:3353:THR:CG2	5:B:2453:NAP:H62A	2.18	0.56
1:A:965:LYS:HG3	1:A:968:LYS:CB	2.36	0.55
1:B:3000:ARG:HA	1:B:3014:PHE:O	2.07	0.55
1:A:1333:GLU:HA	1:A:1369:GLN:NE2	2.21	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2773:LEU:O	1:B:2776:ILE:HG22	2.06	0.55
1:B:2846:ASN:O	1:B:3385:ARG:NH2	2.40	0.55
1:B:3110:GLN:HG3	1:B:3111:GLN:N	2.22	0.55
1:A:799:GLU:HG2	1:A:802:VAL:CG2	2.36	0.55
1:A:1371:LYS:CG	1:A:1371:LYS:O	2.55	0.55
1:A:1346:ILE:HD13	1:A:1362:ILE:CD1	2.37	0.55
1:B:2760:ALA:HB1	1:B:2815:PRO:CG	2.37	0.55
1:A:1057:ALA:HA	1:A:1090:ILE:HG12	1.89	0.55
1:A:1194:ILE:O	5:A:1453:NAP:H5N	2.07	0.55
1:A:1316:PRO:HG2	1:A:1317:ASP:OD1	2.05	0.55
1:B:2757:ILE:HG12	1:B:2803:LEU:HB2	1.89	0.55
1:B:3110:GLN:O	1:B:3113:ALA:HB3	2.07	0.55
1:A:1051:LEU:HD21	1:A:1163:LEU:HD12	1.89	0.54
1:A:1056:PRO:C	1:A:1058:ASN:H	2.11	0.54
1:A:1193:ALA:HB1	5:A:1453:NAP:H51N	1.89	0.54
1:B:2877:VAL:HG12	1:B:2878:ARG:O	2.06	0.54
1:A:1239:ASN:ND2	1:A:1241:GLN:H	2.06	0.54
1:A:762:GLU:HB2	1:A:809:PHE:CE1	2.43	0.54
1:A:959:SER:O	1:A:960:ASN:CB	2.54	0.54
1:B:3325:ASP:O	1:B:3329:GLU:HB2	2.08	0.54
1:A:1056:PRO:O	1:A:1058:ASN:N	2.38	0.54
1:A:1318:ARG:CB	1:A:1319:PRO:HD2	2.38	0.54
1:B:3306:ARG:C	1:B:3307:GLU:HG2	2.28	0.54
1:A:756:THR:OG1	1:A:799:GLU:OE2	2.25	0.54
1:A:1036:PHE:CE1	1:A:1172:PRO:HB3	2.43	0.54
1:B:2970:ARG:HB3	1:B:3079:TRP:CZ3	2.43	0.54
1:B:2964:TRP:HZ2	1:B:2966:ARG:NH1	2.06	0.53
1:B:2843:VAL:HG22	1:B:3382:SER:OG	2.09	0.53
1:B:3351:ASP:OD1	1:B:3353:THR:HB	2.07	0.53
1:A:1048:ILE:HD13	1:A:1057:ALA:HB2	1.91	0.53
1:A:1057:ALA:HA	1:A:1090:ILE:CD1	2.38	0.53
1:B:2787:SER:HB2	1:B:2789:GLU:HG2	1.90	0.53
1:B:2802:VAL:O	1:B:2879:PHE:HA	2.08	0.53
1:B:3010:ARG:HE	5:B:2453:NAP:C5N	2.22	0.53
1:B:3132:LEU:O	1:B:3134:GLU:N	2.41	0.53
1:A:912:LEU:HD22	1:A:915:ARG:NH1	2.16	0.53
1:A:1346:ILE:HD13	1:A:1362:ILE:HD13	1.89	0.53
1:B:3408:LEU:HA	1:B:3411:GLU:HB2	1.91	0.53
1:A:1004:GLN:NE2	1:A:1008:SER:OG	2.42	0.53
1:A:775:GLU:CD	1:A:961:ASP:HB2	2.29	0.53
1:B:3345:HIS:ND1	1:B:3389:ARG:HA	2.23	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1394:ILE:HG22	1:A:1396:GLY:H	1.73	0.52
1:B:3054:ALA:O	1:B:3056:PRO:HD3	2.09	0.52
1:A:846:ASN:O	1:A:1385:ARG:NH2	2.42	0.52
1:A:1127:VAL:HA	1:A:1130:LYS:CE	2.38	0.52
1:A:1410:SER:O	1:A:1413:ILE:HG22	2.08	0.52
1:B:2752:ARG:HD2	1:B:2782:ASP:HB2	1.91	0.52
1:B:3309:TYR:CD2	1:B:3331:LEU:HD11	2.45	0.52
1:B:2840:SER:O	1:B:2843:VAL:HB	2.09	0.52
1:B:3019:THR:HG21	1:B:3025:LEU:HB2	1.89	0.52
1:B:2966:ARG:O	1:B:2966:ARG:CG	2.57	0.52
1:A:1328:GLN:HE22	1:A:1364:ARG:NH1	2.08	0.52
1:B:3245:ILE:HD13	1:B:3335:VAL:HG22	1.91	0.52
1:B:3363:GLN:HA	1:B:3381:ILE:HD11	1.92	0.52
1:A:970:ARG:HB3	1:A:1079:TRP:CZ3	2.44	0.52
1:A:1286:SER:HA	1:A:1312:TYR:CE2	2.44	0.52
1:B:3162:LEU:HD12	1:B:3166:GLN:HG3	1.90	0.52
1:B:3242:VAL:CG1	1:B:3344:GLY:HA2	2.38	0.52
1:A:1162:LEU:HD12	1:A:1166:GLN:CG	2.40	0.51
1:B:3313:SER:O	1:B:3320:LYS:HE3	2.10	0.51
1:A:974:VAL:HG12	1:A:976:GLU:H	1.76	0.51
1:A:1373:SER:C	1:A:1375:GLU:N	2.63	0.51
1:B:3034:GLY:O	1:B:3226:CYS:HA	2.10	0.51
1:B:2972:THR:HG21	1:B:3064:GLU:OE2	2.10	0.51
1:A:1087:PRO:O	1:A:1088:CYS:HB3	2.10	0.51
1:A:1143:ASN:O	1:A:1207:HIS:HE1	1.94	0.51
1:B:3019:THR:HG23	1:B:3025:LEU:HB2	1.93	0.51
1:B:3158:MET:CE	1:B:3159:PRO:HD2	2.41	0.51
1:B:3162:LEU:CD1	1:B:3166:GLN:HG3	2.41	0.51
1:B:3309:TYR:HB3	1:B:3326:VAL:HG11	1.92	0.51
1:A:775:GLU:CG	1:A:961:ASP:HB2	2.41	0.51
1:A:1360:LYS:O	1:A:1364:ARG:HG3	2.11	0.51
1:B:3158:MET:HE3	1:B:3162:LEU:HB3	1.92	0.51
1:B:3330:GLN:C	1:B:3331:LEU:HD12	2.31	0.51
1:A:1064:GLU:HA	1:A:1080:LYS:O	2.11	0.51
1:A:1318:ARG:HB2	1:A:1319:PRO:HD2	1.92	0.51
1:B:2821:PHE:CE1	1:B:2825:LEU:HD11	2.45	0.51
1:A:1058:ASN:HA	1:A:1089:THR:HB	1.93	0.50
1:A:1157:GLN:O	1:A:1159:PRO:HD3	2.10	0.50
1:A:1239:ASN:HD22	1:A:1240:PRO:N	2.08	0.50
1:B:3180:SER:H	1:B:3261:GLN:HE21	1.58	0.50
1:A:964:TRP:CH2	1:A:966:ARG:HG3	2.46	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1071:THR:CG2	1:A:1072:ALA:N	2.59	0.50
1:A:1195:VAL:HA	5:A:1453:NAP:C5N	2.41	0.50
1:A:904:GLU:OE2	1:A:910:ARG:NH1	2.42	0.50
1:B:3015:VAL:O	1:B:3189:HIS:HA	2.12	0.50
1:A:1268:GLN:NE2	1:A:1302:LYS:HE2	2.26	0.50
1:B:3351:ASP:OD1	1:B:3353:THR:N	2.43	0.50
1:B:3076:ILE:HG23	1:B:3076:ILE:O	2.11	0.50
1:B:3360:LYS:HE2	1:B:3360:LYS:HA	1.94	0.50
1:B:3240:PRO:HG2	1:B:3241:GLN:NE2	2.26	0.50
1:A:961:ASP:C	1:A:963:SER:N	2.65	0.49
1:A:1239:ASN:C	1:A:1239:ASN:ND2	2.64	0.49
1:A:898:ALA:O	1:A:902:LEU:HG	2.12	0.49
1:A:979:ASP:OD1	1:A:979:ASP:C	2.50	0.49
1:A:1140:TRP:CD1	1:A:1409:ARG:HD2	2.47	0.49
1:B:2790:GLU:HG2	1:B:2790:GLU:O	2.12	0.49
1:B:3004:GLN:NE2	1:B:3008:SER:OG	2.46	0.49
1:B:3145:THR:O	1:B:3149:VAL:HG23	2.12	0.49
1:A:910:ARG:HD3	1:A:913:LYS:HA	1.95	0.49
1:A:971:LEU:HD23	1:A:1063:VAL:HG22	1.95	0.49
1:A:1022:ASN:ND2	1:A:1024:GLU:CG	2.73	0.49
1:A:1198:HIS:NE2	1:A:1206:VAL:CG2	2.75	0.49
1:B:2879:PHE:CD1	1:B:2903:LEU:HD13	2.47	0.49
1:B:2959:SER:HA	1:B:3110:GLN:NE2	2.24	0.49
1:A:837:GLU:O	1:A:838:ARG:CB	2.61	0.49
1:A:1158:MET:HE3	1:A:1162:LEU:HD23	1.94	0.49
1:A:1309:TYR:HB3	1:A:1326:VAL:HG11	1.95	0.49
1:B:2968:LYS:O	1:B:3065:MET:HA	2.13	0.49
1:A:912:LEU:CD1	1:A:934:VAL:HA	2.42	0.49
1:B:3140:TRP:HA	1:B:3140:TRP:CE3	2.47	0.49
1:B:3069:ARG:HG2	6:B:6069:HOH:O	2.12	0.48
1:B:3010:ARG:NH2	5:B:2453:NAP:H51N	2.28	0.48
1:B:3123:GLN:NE2	1:B:3126:LEU:HD12	2.28	0.48
1:B:2759:TYR:HA	1:B:2805:VAL:O	2.12	0.48
1:B:3144:PRO:HA	1:B:3148:GLU:OE1	2.13	0.48
1:A:1346:ILE:CD1	1:A:1362:ILE:HD11	2.43	0.48
1:B:2964:TRP:HZ2	1:B:2966:ARG:HH11	1.59	0.48
1:A:843:VAL:O	1:A:847:SER:HB2	2.14	0.48
1:B:3122:LYS:O	1:B:3126:LEU:HG	2.13	0.48
1:B:3089:THR:OG1	1:B:3092:GLN:HG3	2.13	0.48
1:A:761:THR:HB	1:A:766:SER:HB2	1.95	0.48
1:A:977:ALA:HB2	1:A:1060:VAL:CG2	2.44	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1328:GLN:HE22	1:A:1364:ARG:HH11	1.61	0.48
1:A:784:LYS:HD2	1:A:784:LYS:HA	1.59	0.48
1:A:996:ARG:O	1:A:1017:LEU:HA	2.14	0.48
1:B:3299:ALA:O	1:B:3304:VAL:HB	2.13	0.48
1:B:3247:VAL:HG11	1:B:3327:LEU:HD21	1.96	0.47
1:B:3324:GLN:HE22	5:B:2453:NAP:H2A	1.79	0.47
1:A:1105:THR:OG1	1:A:1108:GLN:HG3	2.13	0.47
1:A:1158:MET:CE	1:A:1159:PRO:HD2	2.44	0.47
1:B:3053:ASP:HB3	1:B:3160:ALA:CB	2.45	0.47
1:A:1110:GLN:HE21	1:A:1110:GLN:HA	1.78	0.47
1:B:3057:ALA:HA	1:B:3090:ILE:HG22	1.96	0.47
1:B:3140:TRP:HA	1:B:3140:TRP:HE3	1.80	0.47
1:B:3377:ALA:O	1:B:3381:ILE:HG13	2.15	0.47
1:A:1224:VAL:O	1:A:1224:VAL:HG12	2.14	0.47
1:A:1268:GLN:HE22	1:A:1302:LYS:HE2	1.80	0.47
1:B:3351:ASP:CB	1:B:3399:LEU:HG	2.44	0.47
1:A:947:ASP:OD1	1:A:947:ASP:N	2.48	0.47
1:A:1049:GLU:HG3	1:A:1049:GLU:O	2.15	0.47
1:A:1333:GLU:HA	1:A:1369:GLN:HE21	1.78	0.47
1:A:876:ASN:C	1:A:876:ASN:ND2	2.64	0.46
1:B:2970:ARG:HD2	1:B:3079:TRP:CE3	2.49	0.46
1:B:3379:VAL:O	1:B:3382:SER:HB3	2.15	0.46
1:B:2760:ALA:HB2	1:B:2788:MET:SD	2.55	0.46
1:A:964:TRP:CB	1:A:1162:LEU:HD13	2.45	0.46
1:B:3362:ILE:O	1:B:3366:MET:HG2	2.15	0.46
1:B:3405:THR:O	1:B:3409:ARG:HG3	2.15	0.46
1:A:772:THR:O	1:A:776:ILE:HG13	2.15	0.46
1:A:1027:TYR:CE2	1:A:1188:VAL:HG22	2.49	0.46
1:B:3400:ARG:O	1:B:3404:VAL:HB	2.16	0.46
1:A:1062:LYS:CG	1:A:1087:PRO:HG3	2.42	0.46
1:B:2842:LYS:HA	1:B:2846:ASN:HD22	1.80	0.46
1:A:780:ALA:CB	1:A:948:VAL:HG21	2.42	0.46
1:A:1059:HIS:O	1:A:1061:VAL:HG13	2.16	0.46
1:B:2902:LEU:HD23	1:B:2905:GLU:OE1	2.16	0.46
1:B:2788:MET:HE3	1:B:2821:PHE:CD1	2.51	0.46
1:B:2971:LEU:HD12	1:B:3055:PRO:CG	2.44	0.46
1:A:1049:GLU:O	1:A:1049:GLU:CG	2.64	0.46
1:B:2787:SER:CB	1:B:2789:GLU:HG2	2.46	0.46
1:B:2884:LEU:N	1:B:2884:LEU:CD1	2.77	0.46
1:B:2889:TYR:CD1	1:B:3352:VAL:HG21	2.50	0.46
1:A:799:GLU:O	1:A:877:VAL:HG22	2.16	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1362:ILE:O	1:A:1366:MET:HG2	2.16	0.46
1:B:2846:ASN:O	1:B:2891:HIS:CE1	2.69	0.46
1:B:3281:PHE:CG	1:B:3282:GLY:N	2.84	0.46
1:A:1080:LYS:NZ	1:B:3079:TRP:O	2.48	0.45
1:B:3104:PRO:HG3	1:B:3146:MET:SD	2.56	0.45
1:A:1317:ASP:OD1	1:A:1317:ASP:N	2.46	0.45
1:B:2775:GLU:OE1	1:B:2775:GLU:HA	2.17	0.45
1:A:961:ASP:O	1:A:963:SER:N	2.48	0.45
1:A:1309:TYR:CE1	1:A:1331:LEU:HD21	2.51	0.45
1:B:2776:ILE:HG23	1:B:2777:PHE:N	2.32	0.45
1:B:2904:GLU:OE1	1:B:2910:ARG:NH2	2.49	0.45
1:B:3312:TYR:H	1:B:3321:LYS:HG3	1.82	0.45
1:A:762:GLU:HG3	1:A:809:PHE:CG	2.51	0.45
1:B:2755:ALA:HB2	1:B:2801:LEU:HD23	1.98	0.45
1:B:3132:LEU:O	1:B:3133:GLN:C	2.55	0.45
1:A:1372:LEU:HB3	1:A:1376:ASP:CB	2.41	0.45
1:B:2786:MET:SD	1:B:2791:TYR:HB2	2.57	0.45
1:B:3113:ALA:C	1:B:3115:LEU:H	2.19	0.45
1:A:840:SER:O	1:A:844:ARG:HG3	2.17	0.45
1:A:1055:PRO:O	1:A:1056:PRO:C	2.55	0.45
1:B:3026:GLN:HA	1:B:3026:GLN:OE1	2.17	0.45
1:B:3247:VAL:CG2	1:B:3348:VAL:HG22	2.47	0.45
1:B:3338:ALA:HA	1:B:3342:GLN:HB2	1.99	0.45
1:A:787:SER:OG	1:A:789:GLU:HG2	2.16	0.45
1:B:3380:PHE:CD1	1:B:3380:PHE:C	2.90	0.45
1:B:3112:PHE:HZ	1:B:3146:MET:HE3	1.82	0.44
1:A:875:ALA:HA	1:A:907:GLY:O	2.16	0.44
1:B:2806:THR:O	1:B:2883:GLY:HA2	2.18	0.44
1:B:3306:ARG:O	1:B:3307:GLU:HG2	2.18	0.44
1:A:841:TYR:HE2	1:A:846:ASN:ND2	2.16	0.44
1:B:3019:THR:HG22	1:B:3022:ASN:HB2	1.99	0.44
1:B:3067:GLU:OE1	1:B:3080:LYS:HG3	2.16	0.44
1:A:1050:ARG:HD2	1:A:1050:ARG:O	2.17	0.44
1:A:1061:VAL:HG23	1:A:1061:VAL:O	2.18	0.44
1:A:1351:ASP:CB	1:A:1399:LEU:HG	2.47	0.44
5:A:1453:NAP:O3D	5:A:1453:NAP:PA	2.70	0.44
1:B:2769:TYR:CD2	1:B:2884:LEU:HD21	2.52	0.44
1:B:2961:ASP:C	1:B:2963:SER:H	2.21	0.44
1:B:2971:LEU:CD2	1:B:3063:VAL:HG22	2.48	0.44
1:B:3062:LYS:HD2	1:B:3081:ASP:OD1	2.18	0.44
1:B:3360:LYS:HB3	1:B:3364:ARG:CZ	2.44	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:830:HIS:NE2	1:A:838:ARG:O	2.34	0.44
1:A:1080:LYS:NZ	1:B:3080:LYS:HA	2.33	0.44
1:A:1080:LYS:HZ2	1:B:3080:LYS:HA	1.82	0.44
1:B:3053:ASP:HB3	1:B:3160:ALA:HB2	1.99	0.44
1:B:3134:GLU:OE1	1:B:3134:GLU:HA	2.18	0.44
1:B:3201:ASP:HB2	1:B:3402:TYR:OH	2.18	0.44
1:B:3330:GLN:HB2	1:B:3331:LEU:HD12	1.98	0.44
1:B:3115:LEU:HD22	1:B:3157:GLN:O	2.18	0.44
1:B:3132:LEU:O	1:B:3135:TYR:N	2.50	0.44
1:A:841:TYR:CE2	1:A:846:ASN:ND2	2.86	0.43
1:A:1089:THR:HG23	1:A:1092:GLN:OE1	2.18	0.43
1:A:1249:PRO:HG3	1:A:1354:MET:HG3	2.00	0.43
1:B:2928:ARG:HH12	1:B:3130:LYS:HA	1.82	0.43
1:B:3193:ALA:CB	5:B:2453:NAP:C5D	2.95	0.43
1:B:3359:LEU:HD23	1:B:3359:LEU:C	2.38	0.43
1:A:1027:TYR:CE1	1:A:1177:ILE:HG21	2.53	0.43
1:A:1331:LEU:O	1:A:1332:ALA:C	2.56	0.43
1:A:1142:LYS:O	1:A:1143:ASN:C	2.56	0.43
1:B:3110:GLN:CG	1:B:3111:GLN:N	2.81	0.43
1:B:3078:ASN:HB2	1:B:3080:LYS:HZ3	1.82	0.43
1:A:889:TYR:CD1	1:A:1352:VAL:HG21	2.54	0.43
1:A:1132:LEU:O	1:A:1136:GLU:HG2	2.18	0.43
1:B:2882:PHE:CD1	1:B:2915:ARG:HB3	2.53	0.43
1:A:813:ASP:HB3	1:A:814:PRO:CD	2.49	0.43
1:B:3242:VAL:CG1	1:B:3343:GLY:O	2.65	0.43
1:B:3250:GLY:O	1:B:3253:ILE:HG22	2.18	0.43
1:B:2845:PHE:CE2	1:B:2898:ALA:HA	2.54	0.43
1:A:1158:MET:HA	1:A:1159:PRO:HD3	1.81	0.43
1:A:1242:VAL:HG22	1:A:1243:PRO:HD2	2.00	0.43
1:B:3158:MET:HE2	1:B:3159:PRO:O	2.18	0.43
1:A:779:HIS:HB3	1:A:948:VAL:HG22	2.01	0.43
1:A:961:ASP:CG	1:A:962:ARG:N	2.72	0.43
1:B:3103:PRO:HA	1:B:3104:PRO:HD3	1.93	0.43
1:B:2877:VAL:HG12	1:B:2878:ARG:N	2.34	0.42
1:B:3220:ALA:O	1:B:3221:ASP:HB2	2.19	0.42
1:A:1056:PRO:C	1:A:1058:ASN:N	2.72	0.42
1:A:1385:ARG:HG2	1:A:1390:TYR:HB3	2.00	0.42
1:B:2912:LEU:HD23	1:B:2930:TRP:CD1	2.55	0.42
1:A:1039:ASN:O	1:A:1095:LYS:HD2	2.19	0.42
1:A:1113:ALA:C	1:A:1115:LEU:H	2.22	0.42
1:B:3019:THR:HG22	1:B:3022:ASN:CB	2.48	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1134:GLU:CD	1:A:1134:GLU:H	2.23	0.42
1:A:1143:ASN:N	1:A:1144:PRO:CD	2.82	0.42
1:B:3003:LEU:HD21	1:B:3014:PHE:HB2	2.02	0.42
1:A:1343:GLY:HA2	1:A:1389:ARG:NH2	2.34	0.42
1:B:2912:LEU:HD23	1:B:2934:VAL:CG2	2.47	0.42
1:B:3214:TRP:O	1:B:3218:ILE:HG23	2.18	0.42
1:A:762:GLU:HG3	1:A:809:PHE:CD1	2.55	0.42
1:A:936:LYS:HA	1:A:936:LYS:HD2	1.86	0.42
1:B:2789:GLU:C	1:B:2791:TYR:H	2.23	0.42
1:B:2823:CYS:HA	1:B:2826:MET:HB2	2.02	0.42
1:B:3050:ARG:O	1:B:3050:ARG:HG3	2.18	0.42
1:B:3130:LYS:O	1:B:3132:LEU:HG	2.19	0.42
1:A:1195:VAL:HA	5:A:1453:NAP:H5N	2.01	0.42
1:B:3121:GLU:O	1:B:3125:LEU:HG	2.20	0.42
1:B:3401:THR:O	1:B:3405:THR:HB	2.20	0.42
1:A:904:GLU:OE2	1:A:910:ARG:NH2	2.50	0.42
1:A:985:SER:HA	1:A:990:LYS:O	2.19	0.42
1:B:3309:TYR:CE1	1:B:3331:LEU:HD21	2.55	0.42
1:B:3409:ARG:O	1:B:3413:ILE:HG13	2.19	0.42
1:A:965:LYS:CD	1:A:968:LYS:HD2	2.43	0.42
1:B:3244:CYS:HA	1:B:3345:HIS:O	2.19	0.42
1:A:970:ARG:HD2	1:A:1079:TRP:CE3	2.55	0.41
1:A:784:LYS:HG2	1:B:2976:GLU:OE1	2.21	0.41
1:A:901:THR:O	1:A:905:GLU:HG3	2.20	0.41
1:B:2779:HIS:HB2	1:B:2935:PHE:HZ	1.86	0.41
1:B:3257:ARG:HA	1:B:3260:TRP:CD2	2.55	0.41
1:A:970:ARG:HD3	1:A:972:THR:CG2	2.50	0.41
1:A:1062:LYS:CE	1:A:1087:PRO:HG3	2.42	0.41
1:A:1133:GLN:O	1:A:1134:GLU:C	2.57	0.41
1:B:2936:LYS:HE3	1:B:2940:ASP:OD2	2.21	0.41
1:B:2964:TRP:CG	1:B:3162:LEU:HD13	2.55	0.41
1:B:3162:LEU:O	1:B:3166:GLN:HG2	2.19	0.41
1:A:998:LEU:HD21	1:A:1018:HIS:HB2	2.01	0.41
1:A:1318:ARG:CB	1:A:1319:PRO:CD	2.98	0.41
1:B:3146:MET:HE2	1:B:3167:LEU:HD21	2.01	0.41
1:A:996:ARG:HG3	6:A:5035:HOH:O	2.19	0.41
1:A:1054:ALA:HB2	1:A:1160:ALA:HB2	2.01	0.41
1:B:3040:HIS:O	1:B:3044:VAL:HG23	2.20	0.41
1:B:3109:LEU:O	1:B:3112:PHE:N	2.54	0.41
1:B:3371:LYS:HA	1:B:3371:LYS:HD3	1.62	0.41
1:A:810:GLY:HA2	6:A:5051:HOH:O	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2912:LEU:CD2	1:B:2934:VAL:CG2	2.94	0.41
1:A:1198:HIS:CE1	1:A:1206:VAL:HG22	2.54	0.41
1:A:1268:GLN:NE2	1:A:1302:LYS:CD	2.84	0.41
1:A:1324:GLN:CG	1:A:1357:ASP:HB3	2.45	0.41
1:B:2828:MET:HG2	1:B:2906:LEU:HD22	2.01	0.41
1:A:780:ALA:N	1:A:948:VAL:HG21	2.35	0.41
1:A:935:PHE:CE2	1:A:948:VAL:HG11	2.56	0.41
1:A:979:ASP:OD1	1:A:980:LEU:N	2.54	0.41
1:A:1263:ARG:HA	1:A:1263:ARG:HD3	1.81	0.41
1:B:2788:MET:HE2	1:B:2821:PHE:HB3	2.02	0.41
1:B:2793:ILE:HD13	1:B:2824:ALA:CB	2.51	0.41
1:B:2843:VAL:HG12	1:B:2844:ARG:N	2.36	0.41
1:B:3353:THR:CG2	5:B:2453:NAP:N6A	2.80	0.41
1:B:2773:LEU:O	1:B:2776:ILE:CG2	2.69	0.41
1:B:3158:MET:HA	1:B:3159:PRO:HD3	1.85	0.41
1:B:3347:TYR:CZ	1:B:3391:HIS:CD2	3.09	0.41
1:A:762:GLU:HG2	1:A:815:PRO:HB3	2.04	0.40
1:A:1013:ILE:HD13	1:A:1194:ILE:HD11	2.04	0.40
1:B:2928:ARG:O	1:B:2931:ALA:HB3	2.21	0.40
1:B:3109:LEU:O	1:B:3110:GLN:C	2.60	0.40
1:A:946:ASP:OD1	1:A:946:ASP:C	2.60	0.40
1:A:982:GLN:HA	1:A:982:GLN:OE1	2.20	0.40
1:A:1183:MET:HG2	1:A:1184:TYR:CE2	2.56	0.40
1:B:3266:ASP:HB3	1:B:3272:MET:HG3	2.02	0.40
1:B:3332:ALA:HB1	1:B:3365:ILE:HG23	2.02	0.40
1:A:1024:GLU:OE1	1:A:1024:GLU:HA	2.22	0.40
1:A:1317:ASP:C	1:A:1318:ARG:HG2	2.42	0.40
1:A:1328:GLN:HE21	1:A:1361:ALA:CB	2.31	0.40
1:B:2998:LEU:HD23	1:B:2998:LEU:HA	1.90	0.40
1:A:935:PHE:CZ	1:A:948:VAL:HG11	2.57	0.40
1:A:983:GLY:O	1:A:987:VAL:HG23	2.22	0.40
1:B:2756:THR:HG22	1:B:2758:LEU:HG	2.03	0.40
1:B:3055:PRO:O	1:B:3056:PRO:C	2.60	0.40
1:B:3062:LYS:HD2	1:B:3081:ASP:CG	2.42	0.40

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1133:GLN:OE1	1:B:3364:ARG:NE[1_654]	2.08	0.12

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	622/688 (90%)	569 (92%)	40 (6%)	13 (2%)	7 5
1	B	608/688 (88%)	548 (90%)	51 (8%)	9 (2%)	10 10
All	All	1230/1376 (89%)	1117 (91%)	91 (7%)	22 (2%)	8 7

All (22) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	839	LYS
1	A	848	VAL
1	A	960	ASN
1	A	963	SER
1	A	1411	GLU
1	B	2948	VAL
1	B	3131	GLY
1	B	3133	GLN
1	A	838	ARG
1	A	962	ARG
1	A	1410	SER
1	B	2843	VAL
1	A	1370	GLY
1	B	3053	ASP
1	B	3114	SER
1	B	3286	SER
1	B	3374	GLU
1	A	1057	ALA
1	A	1069	ARG
1	B	3317	ASP
1	A	1055	PRO
1	A	978	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	543/601 (90%)	506 (93%)	37 (7%)	16	21
1	B	531/601 (88%)	496 (93%)	35 (7%)	16	22
All	All	1074/1202 (89%)	1002 (93%)	72 (7%)	16	21

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	751	LYS
1	A	752	ARG
1	A	787	SER
1	A	809	PHE
1	A	820	LYS
1	A	830	HIS
1	A	844	ARG
1	A	847	SER
1	A	876	ASN
1	A	890	PRO
1	A	912	LEU
1	A	915	ARG
1	A	946	ASP
1	A	949	ASN
1	A	950	ILE
1	A	970	ARG
1	A	979	ASP
1	A	991	ARG
1	A	1022	ASN
1	A	1055	PRO
1	A	1056	PRO
1	A	1058	ASN
1	A	1078	ASN
1	A	1161	THR
1	A	1165	THR
1	A	1239	ASN
1	A	1242	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	1260	TRP
1	A	1287	LYS
1	A	1297	LEU
1	A	1317	ASP
1	A	1318	ARG
1	A	1324	GLN
1	A	1333	GLU
1	A	1369	GLN
1	A	1371	LYS
1	A	1405	THR
1	B	2762	GLU
1	B	2792	ASP
1	B	2793	ILE
1	B	2840	SER
1	B	2890	PRO
1	B	2914	MET
1	B	2915	ARG
1	B	2919	GLU
1	B	2946	ASP
1	B	2947	ASP
1	B	2970	ARG
1	B	2996	ARG
1	B	3020	ASN
1	B	3022	ASN
1	B	3049	GLU
1	B	3053	ASP
1	B	3055	PRO
1	B	3056	PRO
1	B	3070	ASN
1	B	3078	ASN
1	B	3124	ARG
1	B	3140	TRP
1	B	3171	GLN
1	B	3221	ASP
1	B	3238	ARG
1	B	3260	TRP
1	B	3266	ASP
1	B	3272	MET
1	B	3287	LYS
1	B	3324	GLN
1	B	3369	GLN
1	B	3380	PHE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	3405	THR
1	B	3406	ASN
1	B	3411	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	798	HIS
1	A	876	ASN
1	A	949	ASN
1	A	986	ASN
1	A	988	HIS
1	A	1002	ASN
1	A	1004	GLN
1	A	1022	ASN
1	A	1070	ASN
1	A	1078	ASN
1	A	1110	GLN
1	A	1111	GLN
1	A	1123	GLN
1	A	1143	ASN
1	A	1166	GLN
1	A	1239	ASN
1	A	1241	GLN
1	A	1262	GLN
1	A	1264	GLN
1	A	1268	GLN
1	A	1290	HIS
1	A	1324	GLN
1	A	1328	GLN
1	A	1342	GLN
1	A	1369	GLN
1	B	2795	HIS
1	B	2798	HIS
1	B	2846	ASN
1	B	2986	ASN
1	B	3004	GLN
1	B	3020	ASN
1	B	3110	GLN
1	B	3123	GLN
1	B	3166	GLN
1	B	3241	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	3261	GLN
1	B	3262	GLN
1	B	3324	GLN
1	B	3363	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

8 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	FMN	B	2451	-	33,33,33	4.07	18 (54%)	48,50,50	2.41	17 (35%)
5	NAP	B	2453	-	45,52,52	2.90	10 (22%)	56,80,80	1.77	15 (26%)
2	SO3	A	1500	-	1,3,3	2.51	1 (100%)	0,3,3	-	-
3	FMN	A	1451	-	33,33,33	3.96	19 (57%)	48,50,50	2.48	20 (41%)
4	FAD	B	2452	-	53,58,58	5.62	34 (64%)	68,89,89	2.49	24 (35%)
5	NAP	A	1453	-	45,52,52	2.01	9 (20%)	56,80,80	1.55	12 (21%)
4	FAD	A	1452	-	53,58,58	5.63	39 (73%)	68,89,89	2.48	26 (38%)
2	SO3	B	2500	-	1,3,3	2.48	1 (100%)	0,3,3	-	-

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
3	FMN	B	2451	-	-	0/18/18/18	0/3/3/3
5	NAP	B	2453	-	-	12/31/67/67	0/5/5/5
3	FMN	A	1451	-	-	0/18/18/18	0/3/3/3
4	FAD	B	2452	-	-	4/30/50/50	0/6/6/6
5	NAP	A	1453	-	-	14/31/67/67	0/5/5/5
4	FAD	A	1452	-	-	4/30/50/50	0/6/6/6

All (131) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	2452	FAD	C4A-N3A	15.31	1.56	1.35
4	B	2452	FAD	C2B-C1B	-14.79	1.31	1.53
4	A	1452	FAD	C2B-C1B	-14.43	1.31	1.53
4	A	1452	FAD	C4A-N3A	14.30	1.55	1.35
4	B	2452	FAD	C2A-N1A	11.66	1.55	1.33
4	A	1452	FAD	C2A-N1A	11.31	1.55	1.33
4	A	1452	FAD	C9A-C5X	11.30	1.60	1.41
4	B	2452	FAD	C1'-C2'	11.25	1.68	1.52
3	B	2451	FMN	C9-C9A	11.23	1.57	1.39
3	A	1451	FMN	C9-C9A	11.15	1.57	1.39
5	B	2453	NAP	C2N-N1N	11.11	1.48	1.35
4	B	2452	FAD	C2A-N3A	11.07	1.50	1.32
4	A	1452	FAD	C2A-N3A	10.82	1.49	1.32
4	B	2452	FAD	C9A-C5X	10.42	1.58	1.41
5	B	2453	NAP	C2D-C1D	-10.32	1.38	1.53
4	A	1452	FAD	C1'-C2'	10.17	1.67	1.52
4	B	2452	FAD	C8A-N7A	-9.05	1.18	1.34
4	A	1452	FAD	C8A-N7A	-8.81	1.19	1.34
4	A	1452	FAD	C8-C7	8.00	1.60	1.40
3	B	2451	FMN	C9A-C5A	7.57	1.53	1.41
4	B	2452	FAD	C4'-C3'	-7.45	1.39	1.53
4	A	1452	FAD	O4'-C4'	7.41	1.59	1.43
5	A	1453	NAP	C2N-N1N	7.33	1.43	1.35
3	A	1451	FMN	C6-C7	7.24	1.50	1.39
4	B	2452	FAD	C8-C7	7.15	1.58	1.40
3	B	2451	FMN	C4-N3	6.90	1.51	1.38
3	B	2451	FMN	C6-C7	6.65	1.49	1.39
4	A	1452	FAD	C4'-C3'	-6.65	1.40	1.53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1451	FMN	C9A-C5A	6.56	1.52	1.41
4	B	2452	FAD	O4'-C4'	6.53	1.57	1.43
4	B	2452	FAD	C10-N10	6.33	1.51	1.37
4	B	2452	FAD	C9-C9A	6.32	1.49	1.39
4	A	1452	FAD	C3B-C4B	-6.31	1.36	1.53
4	A	1452	FAD	C9-C9A	6.29	1.49	1.39
4	A	1452	FAD	P-O2P	-6.16	1.26	1.55
3	B	2451	FMN	C4A-C10	6.00	1.61	1.44
3	B	2451	FMN	C2'-C3'	-5.92	1.42	1.53
3	A	1451	FMN	C2'-C3'	-5.90	1.42	1.53
4	A	1452	FAD	C4X-N5	5.89	1.42	1.30
4	B	2452	FAD	P-O2P	-5.87	1.27	1.55
4	A	1452	FAD	PA-O2A	-5.86	1.27	1.55
5	B	2453	NAP	O4D-C1D	5.84	1.49	1.41
4	A	1452	FAD	C2'-C3'	5.81	1.64	1.53
4	B	2452	FAD	C3B-C4B	-5.76	1.38	1.53
3	A	1451	FMN	C4-N3	5.75	1.49	1.38
4	B	2452	FAD	PA-O2A	-5.71	1.28	1.55
4	A	1452	FAD	O4-C4	-5.46	1.13	1.23
3	A	1451	FMN	C5A-N5	5.28	1.49	1.39
4	B	2452	FAD	O2'-C2'	-5.26	1.32	1.43
3	A	1451	FMN	C4A-C10	5.08	1.59	1.44
4	B	2452	FAD	C4X-N5	5.08	1.40	1.30
5	A	1453	NAP	P2B-O2B	5.01	1.68	1.59
4	A	1452	FAD	C8M-C8	-4.98	1.41	1.51
3	B	2451	FMN	C5A-N5	4.98	1.49	1.39
5	A	1453	NAP	C2D-C1D	-4.96	1.46	1.53
3	A	1451	FMN	C8-C7	4.85	1.53	1.40
4	A	1452	FAD	O2'-C2'	-4.83	1.33	1.43
3	B	2451	FMN	C8-C7	4.82	1.52	1.40
4	A	1452	FAD	C10-N10	4.74	1.47	1.37
4	B	2452	FAD	O4-C4	-4.68	1.14	1.23
4	A	1452	FAD	O5'-C5'	-4.62	1.27	1.44
4	B	2452	FAD	P-O1P	-4.51	1.34	1.50
3	B	2451	FMN	C9A-N10	4.48	1.49	1.41
3	A	1451	FMN	O3'-C3'	4.46	1.53	1.43
3	B	2451	FMN	C2-N3	4.45	1.49	1.39
4	B	2452	FAD	O4B-C1B	4.43	1.47	1.41
4	B	2452	FAD	C10-N1	4.37	1.42	1.33
5	B	2453	NAP	P2B-O2B	4.35	1.67	1.59
3	B	2451	FMN	C10-N10	4.31	1.46	1.37
4	B	2452	FAD	C2'-C3'	4.26	1.61	1.53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	2453	NAP	C6N-N1N	4.22	1.45	1.35
4	B	2452	FAD	C8M-C8	-4.21	1.42	1.51
4	A	1452	FAD	C5B-C4B	4.16	1.64	1.51
4	A	1452	FAD	C10-N1	4.15	1.41	1.33
4	A	1452	FAD	P-O1P	-4.15	1.36	1.50
3	A	1451	FMN	C10-N10	4.14	1.46	1.37
3	B	2451	FMN	O3'-C3'	4.11	1.52	1.43
3	A	1451	FMN	C6-C5A	4.10	1.46	1.40
4	A	1452	FAD	O2-C2	-4.00	1.16	1.24
4	A	1452	FAD	C1'-N10	3.97	1.58	1.48
3	B	2451	FMN	C6-C5A	3.94	1.46	1.40
4	A	1452	FAD	O3B-C3B	-3.93	1.33	1.43
4	B	2452	FAD	O3'-C3'	3.90	1.52	1.43
3	A	1451	FMN	C2-N3	3.81	1.47	1.39
4	B	2452	FAD	O5'-C5'	-3.78	1.30	1.44
5	A	1453	NAP	C6N-N1N	3.72	1.44	1.35
4	B	2452	FAD	O3B-C3B	-3.72	1.34	1.43
3	B	2451	FMN	O2'-C2'	-3.70	1.35	1.43
4	B	2452	FAD	C6A-C5A	3.70	1.57	1.43
3	A	1451	FMN	O2'-C2'	-3.69	1.35	1.43
4	B	2452	FAD	PA-O1A	-3.68	1.37	1.50
3	A	1451	FMN	C5'-C4'	3.68	1.57	1.51
4	A	1452	FAD	C6A-C5A	3.61	1.56	1.43
4	A	1452	FAD	O4B-C1B	3.58	1.46	1.41
3	A	1451	FMN	C9A-N10	3.51	1.47	1.41
3	B	2451	FMN	C5'-C4'	3.44	1.56	1.51
5	B	2453	NAP	C4N-C3N	3.43	1.45	1.39
4	B	2452	FAD	C1'-N10	3.43	1.56	1.48
5	A	1453	NAP	O4B-C1B	3.31	1.45	1.41
5	A	1453	NAP	O4D-C1D	3.31	1.45	1.41
4	A	1452	FAD	PA-O1A	-3.29	1.39	1.50
4	B	2452	FAD	C5B-C4B	3.25	1.61	1.51
5	B	2453	NAP	O4B-C1B	3.07	1.45	1.41
4	A	1452	FAD	C6-C5X	-3.01	1.35	1.40
4	A	1452	FAD	C5A-N7A	-2.98	1.28	1.39
4	B	2452	FAD	C6A-N6A	2.93	1.44	1.34
3	A	1451	FMN	C4A-C4	-2.89	1.33	1.44
4	B	2452	FAD	C5A-N7A	-2.78	1.29	1.39
5	B	2453	NAP	C2N-C3N	-2.73	1.34	1.39
4	B	2452	FAD	C9-C8	-2.70	1.35	1.39
3	A	1451	FMN	P-O1P	-2.64	1.42	1.50
4	A	1452	FAD	C4-N3	2.60	1.43	1.38

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1453	NAP	C3N-C7N	2.55	1.54	1.50
5	B	2453	NAP	O3D-C3D	2.55	1.49	1.43
2	A	1500	SO3	O1-S	2.51	1.55	1.44
4	A	1452	FAD	C6A-N6A	2.51	1.43	1.34
5	A	1453	NAP	C2D-C3D	-2.50	1.46	1.53
2	B	2500	SO3	O1-S	2.48	1.54	1.44
3	B	2451	FMN	C4A-C4	-2.44	1.35	1.44
4	A	1452	FAD	O3'-C3'	2.40	1.48	1.43
3	B	2451	FMN	P-O3P	-2.39	1.45	1.54
5	A	1453	NAP	C4N-C3N	2.38	1.43	1.39
4	A	1452	FAD	C9-C8	-2.31	1.36	1.39
3	B	2451	FMN	P-O1P	-2.28	1.43	1.50
4	A	1452	FAD	C6-C7	-2.24	1.36	1.39
3	A	1451	FMN	C7M-C7	-2.20	1.46	1.51
3	A	1451	FMN	P-O3P	-2.11	1.46	1.54
4	B	2452	FAD	C4-N3	2.11	1.42	1.38
5	B	2453	NAP	C3D-C4D	-2.09	1.47	1.53
4	A	1452	FAD	C2B-C3B	-2.05	1.47	1.53
4	A	1452	FAD	C4X-C10	-2.00	1.38	1.44

All (114) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1452	FAD	C1B-N9A-C4A	-7.13	114.12	126.64
4	B	2452	FAD	C1B-N9A-C4A	-6.92	114.48	126.64
4	A	1452	FAD	C5X-C9A-N10	-6.45	111.29	117.95
4	B	2452	FAD	C5X-C9A-N10	-6.31	111.44	117.95
3	A	1451	FMN	C7M-C7-C6	-6.26	107.92	119.49
3	B	2451	FMN	C7M-C7-C6	-6.23	107.98	119.49
4	B	2452	FAD	O5'-P-O1P	-5.70	86.79	109.07
4	A	1452	FAD	O5'-P-O1P	-5.68	86.89	109.07
4	B	2452	FAD	N3A-C2A-N1A	-5.43	120.18	128.68
4	B	2452	FAD	C3B-C2B-C1B	5.34	109.02	100.98
3	A	1451	FMN	C9A-C5A-N5	-5.22	116.76	122.43
4	A	1452	FAD	N3A-C2A-N1A	-5.06	120.77	128.68
5	B	2453	NAP	N3A-C2A-N1A	-5.01	120.85	128.68
4	A	1452	FAD	C3B-C2B-C1B	4.97	108.46	100.98
3	B	2451	FMN	C9A-C5A-N5	-4.93	117.08	122.43
3	A	1451	FMN	O2-C2-N1	4.90	129.95	121.83
4	A	1452	FAD	C4A-C5A-N7A	4.84	114.45	109.40
4	B	2452	FAD	C4A-C5A-N7A	4.83	114.43	109.40
3	B	2451	FMN	C10-N1-C2	4.82	126.54	116.90

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	1453	NAP	N3A-C2A-N1A	-4.73	121.29	128.68
4	A	1452	FAD	C9-C9A-N10	4.69	128.17	121.84
3	B	2451	FMN	C7M-C7-C8	4.66	130.29	120.74
3	A	1451	FMN	C10-N1-C2	4.65	126.21	116.90
4	B	2452	FAD	P-O3P-PA	-4.60	117.03	132.83
3	B	2451	FMN	C5A-C9A-N10	4.59	122.69	117.95
3	A	1451	FMN	C7M-C7-C8	4.59	130.15	120.74
3	A	1451	FMN	C5A-C9A-N10	4.50	122.60	117.95
3	B	2451	FMN	O2-C2-N1	4.40	129.12	121.83
4	A	1452	FAD	P-O3P-PA	-4.33	117.95	132.83
4	B	2452	FAD	O5B-PA-O1A	-4.32	92.19	109.07
4	B	2452	FAD	C9-C9A-N10	4.31	127.66	121.84
3	A	1451	FMN	O4-C4-N3	-4.04	112.37	120.12
4	A	1452	FAD	C2A-N1A-C6A	3.86	125.36	118.75
5	A	1453	NAP	O4D-C1D-C2D	3.86	112.56	106.93
3	B	2451	FMN	O4-C4-N3	-3.78	112.88	120.12
4	A	1452	FAD	O5B-PA-O1A	-3.69	94.63	109.07
4	B	2452	FAD	C2A-N1A-C6A	3.67	125.04	118.75
4	A	1452	FAD	O4B-C4B-C3B	-3.50	98.18	105.11
5	B	2453	NAP	C5N-C4N-C3N	3.44	124.42	120.34
3	B	2451	FMN	O3P-P-O2P	3.40	120.64	107.64
5	B	2453	NAP	C4A-C5A-N7A	3.34	112.88	109.40
3	A	1451	FMN	O3P-P-O2P	3.29	120.22	107.64
3	B	2451	FMN	C5A-N5-C4A	3.26	123.50	118.07
3	A	1451	FMN	C5A-N5-C4A	3.24	123.47	118.07
4	B	2452	FAD	O4B-C4B-C5B	-3.17	98.95	109.37
5	B	2453	NAP	N6A-C6A-N1A	3.16	125.13	118.57
4	A	1452	FAD	C9A-N10-C10	3.08	125.56	120.77
4	B	2452	FAD	O2'-C2'-C1'	3.04	117.15	109.80
4	B	2452	FAD	O3'-C3'-C2'	-3.00	101.57	108.81
4	B	2452	FAD	C9A-N10-C10	2.99	125.43	120.77
5	A	1453	NAP	C4A-C5A-N7A	2.98	112.50	109.40
4	A	1452	FAD	C10-N1-C2	2.94	122.78	116.90
4	A	1452	FAD	O4B-C4B-C5B	-2.93	99.73	109.37
5	A	1453	NAP	PN-O3-PA	2.89	142.75	132.83
4	B	2452	FAD	C1'-C2'-C3'	2.89	117.87	109.79
4	A	1452	FAD	O3'-C3'-C2'	-2.85	101.92	108.81
5	A	1453	NAP	N6A-C6A-N1A	2.84	124.47	118.57
3	A	1451	FMN	O5'-C5'-C4'	-2.83	101.80	109.36
5	B	2453	NAP	O7N-C7N-C3N	-2.82	116.25	119.63
3	A	1451	FMN	C6-C5A-N5	2.82	123.43	118.51
5	B	2453	NAP	O3D-C3D-C4D	2.81	119.19	111.05

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1452	FAD	C7M-C7-C6	-2.80	114.32	119.49
5	B	2453	NAP	C3N-C2N-N1N	-2.79	117.70	120.43
3	B	2451	FMN	C4A-C10-N1	-2.79	118.27	124.73
3	B	2451	FMN	C9A-N10-C10	-2.77	116.45	120.77
5	B	2453	NAP	C5D-C4D-C3D	-2.77	104.80	115.18
4	B	2452	FAD	O4B-C4B-C3B	-2.75	99.67	105.11
4	B	2452	FAD	C2B-C3B-C4B	2.75	107.98	102.64
4	A	1452	FAD	C1'-C2'-C3'	2.74	117.44	109.79
3	A	1451	FMN	C4A-C10-N1	-2.64	118.60	124.73
5	A	1453	NAP	O4B-C4B-C5B	-2.64	100.69	109.37
4	B	2452	FAD	C8M-C8-C9	-2.62	114.64	119.49
4	B	2452	FAD	C10-N1-C2	2.56	122.01	116.90
4	A	1452	FAD	C4X-C4-N3	2.52	119.60	113.19
5	B	2453	NAP	O5B-C5B-C4B	-2.50	100.38	108.99
3	B	2451	FMN	C6-C5A-N5	2.50	122.87	118.51
4	A	1452	FAD	C8M-C8-C9	-2.49	114.89	119.49
5	B	2453	NAP	PN-O3-PA	2.48	141.33	132.83
3	B	2451	FMN	O5'-C5'-C4'	-2.47	102.76	109.36
4	B	2452	FAD	C7M-C7-C6	-2.47	114.93	119.49
5	B	2453	NAP	O2N-PN-O5D	2.42	118.99	107.75
3	A	1451	FMN	C9A-N10-C10	-2.42	117.00	120.77
5	A	1453	NAP	C3N-C2N-N1N	-2.41	118.08	120.43
5	B	2453	NAP	O3X-P2B-O2X	2.40	116.82	107.64
5	B	2453	NAP	O3D-C3D-C2D	2.39	119.55	111.82
5	A	1453	NAP	O2N-PN-O5D	2.38	118.79	107.75
4	A	1452	FAD	O2'-C2'-C1'	2.38	115.55	109.80
5	A	1453	NAP	O5B-C5B-C4B	-2.34	100.92	108.99
5	B	2453	NAP	C2D-C3D-C4D	-2.34	98.09	102.64
3	B	2451	FMN	C1'-N10-C9A	2.34	124.41	120.51
5	A	1453	NAP	C5N-C4N-C3N	2.33	123.11	120.34
3	A	1451	FMN	N3-C2-N1	-2.29	114.89	119.38
5	A	1453	NAP	C5D-C4D-C3D	-2.29	106.60	115.18
3	A	1451	FMN	C5'-C4'-C3'	2.28	116.61	112.20
4	A	1452	FAD	C2B-C3B-C4B	2.27	107.05	102.64
4	B	2452	FAD	C4X-C4-N3	2.26	118.92	113.19
4	A	1452	FAD	C4-N3-C2	-2.25	121.48	125.64
3	A	1451	FMN	C4'-C3'-C2'	2.25	118.04	113.36
4	A	1452	FAD	C7M-C7-C8	2.24	125.32	120.74
4	A	1452	FAD	O2P-P-O1P	2.22	123.22	112.24
3	A	1451	FMN	C4A-C10-N10	2.21	119.72	116.48
4	A	1452	FAD	C4X-C10-N1	-2.20	119.64	124.73
3	B	2451	FMN	C4A-C10-N10	2.19	119.68	116.48

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	2452	FAD	O2P-P-O5'	2.14	117.67	107.75
3	A	1451	FMN	C1'-N10-C9A	2.12	124.04	120.51
5	B	2453	NAP	O5D-C5D-C4D	2.12	116.27	108.99
5	A	1453	NAP	O7N-C7N-C3N	-2.10	117.12	119.63
3	A	1451	FMN	C10-C4A-N5	-2.10	120.41	124.86
3	B	2451	FMN	N3-C2-N1	-2.06	115.33	119.38
4	B	2452	FAD	C4X-C10-N1	-2.06	119.95	124.73
3	A	1451	FMN	O3'-C3'-C4'	-2.06	103.84	108.81
4	A	1452	FAD	O2P-P-O5'	2.02	117.13	107.75
3	B	2451	FMN	C10-C4A-N5	-2.01	120.59	124.86
4	B	2452	FAD	C7M-C7-C8	2.00	124.84	120.74

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1453	NAP	C5B-O5B-PA-O3
5	A	1453	NAP	C5D-O5D-PN-O1N
5	A	1453	NAP	C5D-O5D-PN-O2N
5	A	1453	NAP	O4D-C1D-N1N-C6N
5	B	2453	NAP	C5B-O5B-PA-O1A
5	B	2453	NAP	C5B-O5B-PA-O2A
5	B	2453	NAP	C5B-O5B-PA-O3
5	B	2453	NAP	C5D-O5D-PN-O3
5	B	2453	NAP	O4D-C4D-C5D-O5D
5	A	1453	NAP	C3B-C4B-C5B-O5B
5	A	1453	NAP	O4D-C4D-C5D-O5D
5	B	2453	NAP	C3B-C4B-C5B-O5B
5	A	1453	NAP	O4B-C4B-C5B-O5B
5	A	1453	NAP	C3D-C4D-C5D-O5D
5	B	2453	NAP	O4B-C4B-C5B-O5B
5	B	2453	NAP	C3D-C4D-C5D-O5D
4	A	1452	FAD	O2'-C2'-C3'-O3'
4	B	2452	FAD	O2'-C2'-C3'-O3'
4	A	1452	FAD	O2'-C2'-C3'-C4'
4	B	2452	FAD	O4B-C4B-C5B-O5B
4	B	2452	FAD	O2'-C2'-C3'-C4'
5	A	1453	NAP	PA-O3-PN-O5D
5	B	2453	NAP	PA-O3-PN-O5D
4	B	2452	FAD	C3B-C4B-C5B-O5B
5	A	1453	NAP	C5B-O5B-PA-O1A
5	A	1453	NAP	C5B-O5B-PA-O2A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
5	B	2453	NAP	C5D-O5D-PN-O1N
4	A	1452	FAD	P-O3P-PA-O1A
4	A	1452	FAD	O4B-C4B-C5B-O5B
5	A	1453	NAP	C5D-O5D-PN-O3
5	A	1453	NAP	C2D-C1D-N1N-C2N
5	B	2453	NAP	C2D-C1D-N1N-C2N
5	A	1453	NAP	C4D-C5D-O5D-PN
5	B	2453	NAP	C4D-C5D-O5D-PN

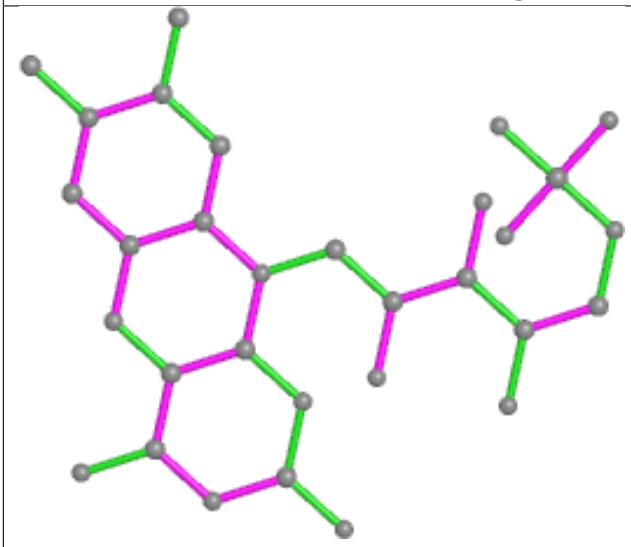
There are no ring outliers.

2 monomers are involved in 22 short contacts:

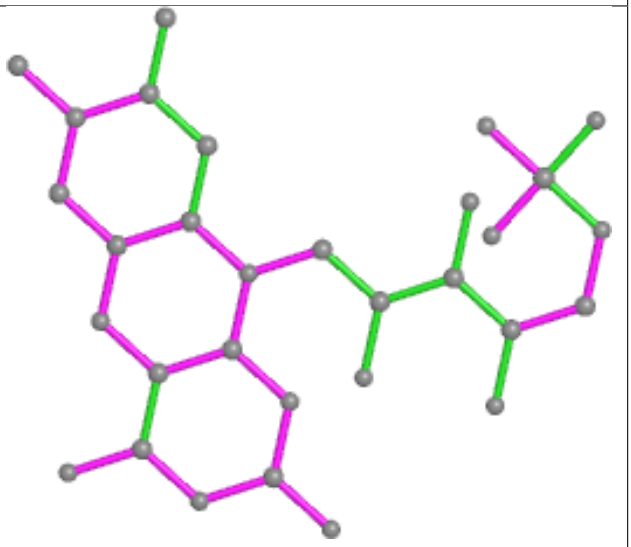
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	2453	NAP	13	0
5	A	1453	NAP	9	0

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

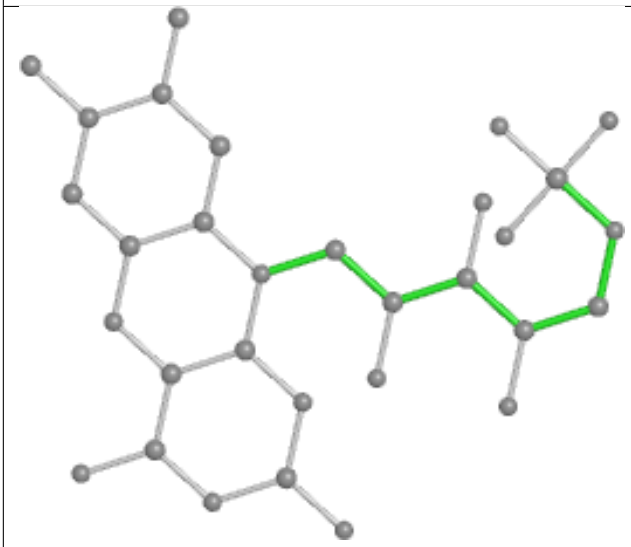
Ligand FMN B 2451



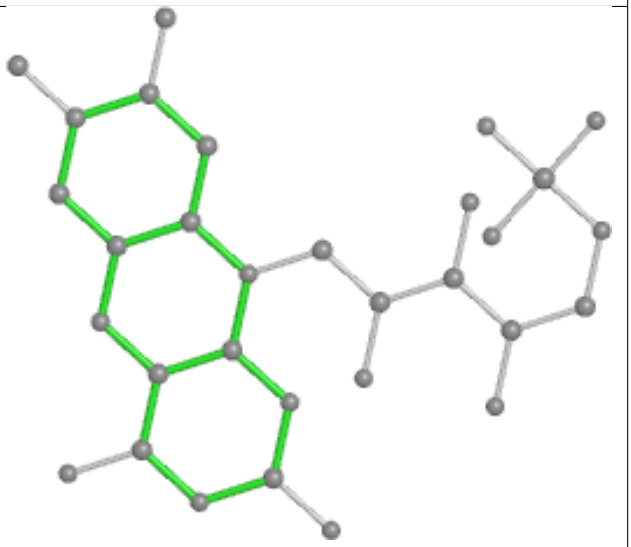
Bond lengths



Bond angles

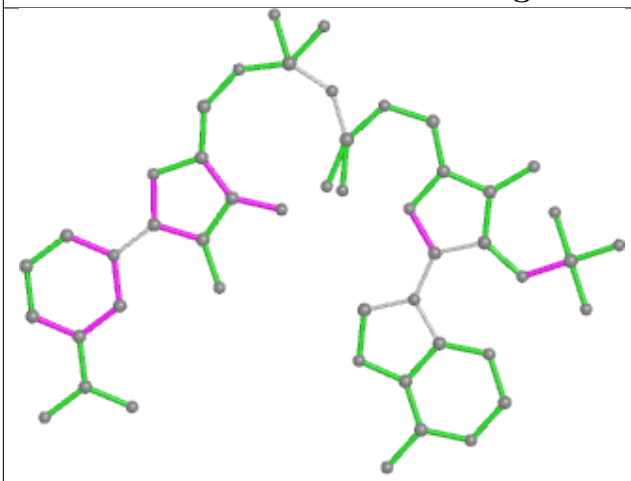


Torsions

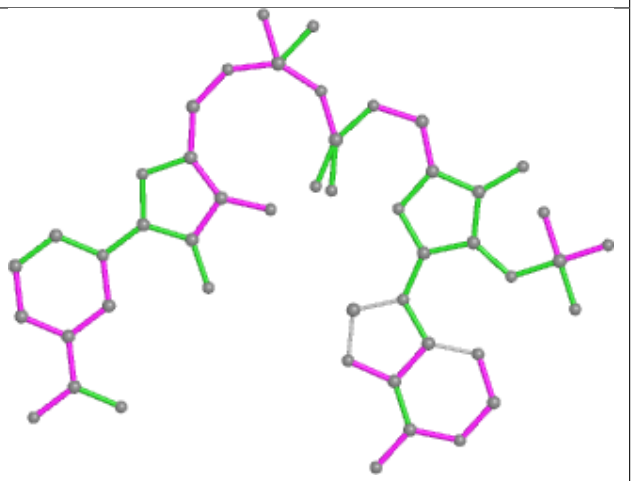


Rings

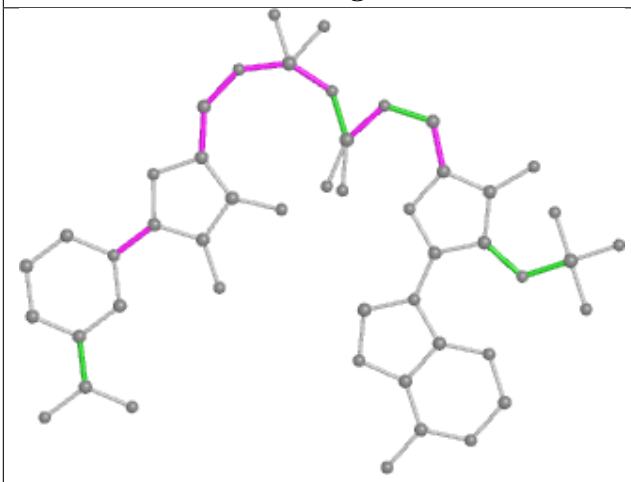
Ligand NAP B 2453



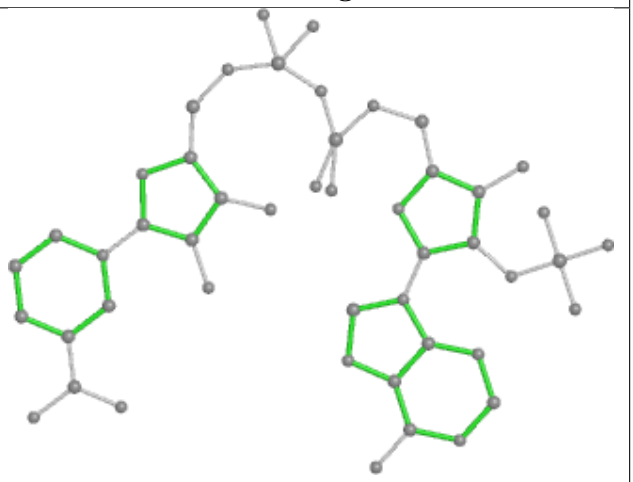
Bond lengths



Bond angles

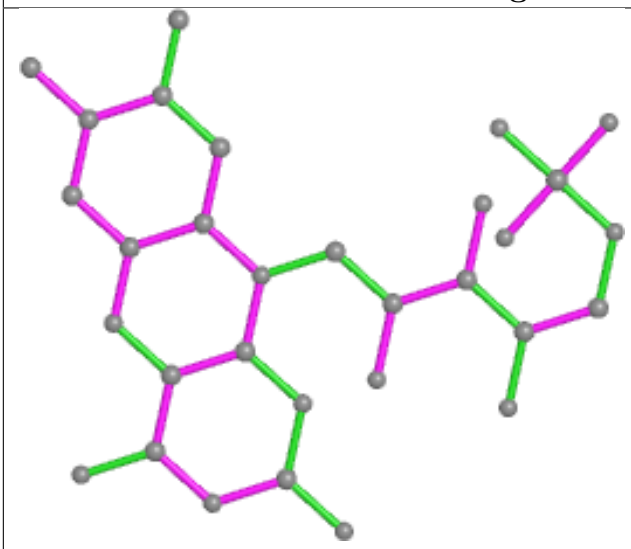


Torsions

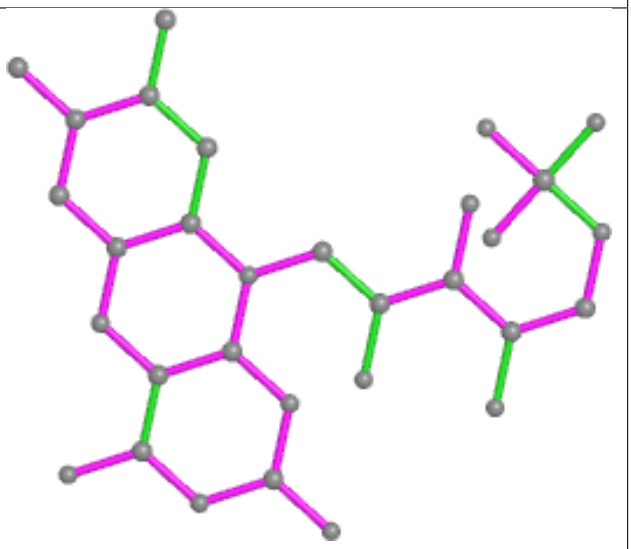


Rings

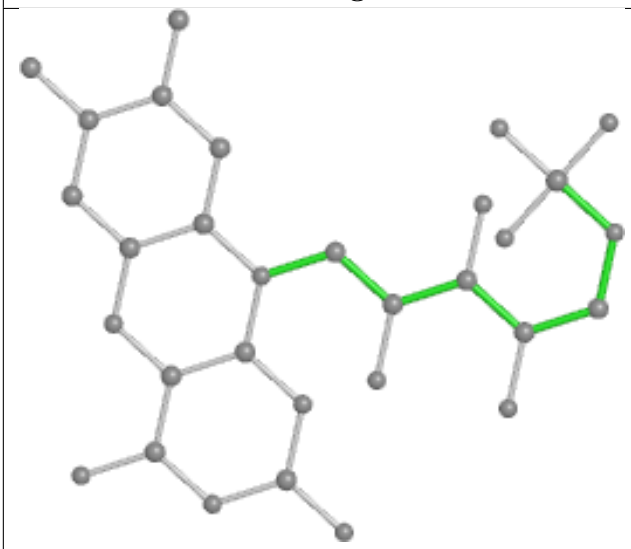
Ligand FMN A 1451



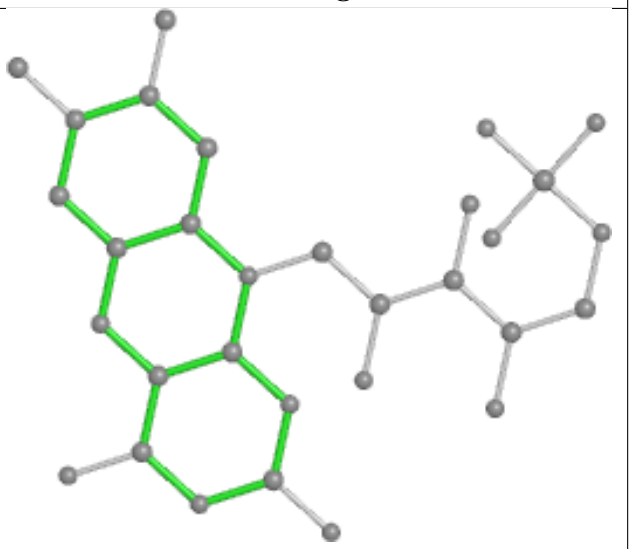
Bond lengths



Bond angles

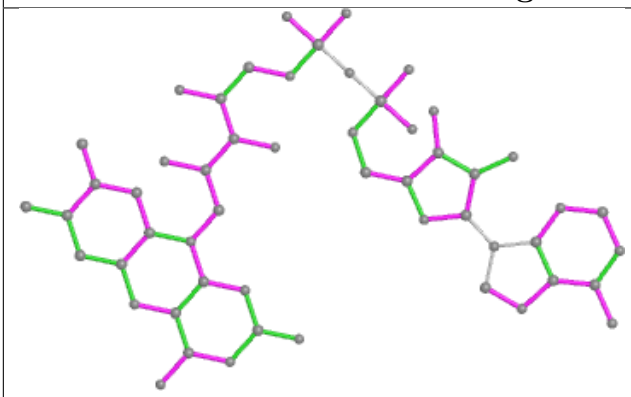


Torsions

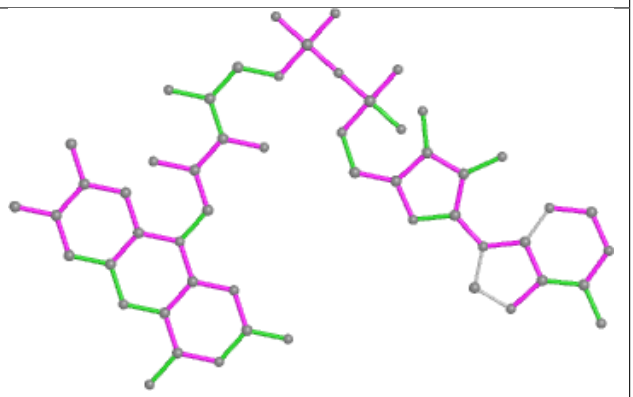


Rings

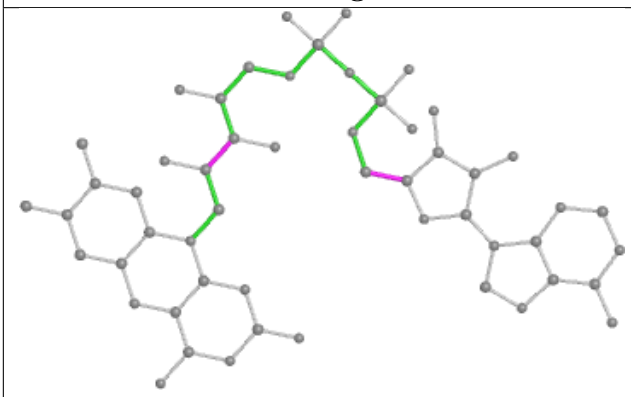
Ligand FAD B 2452



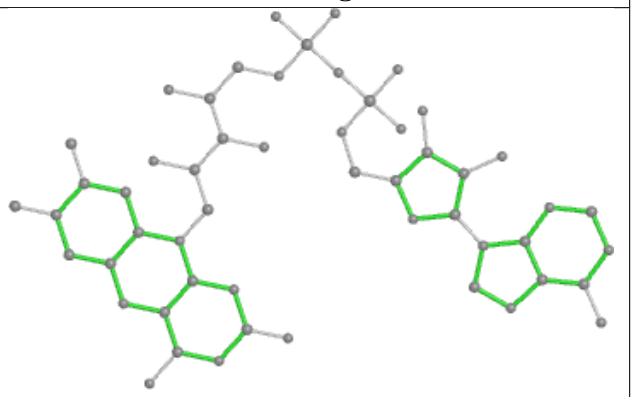
Bond lengths



Bond angles

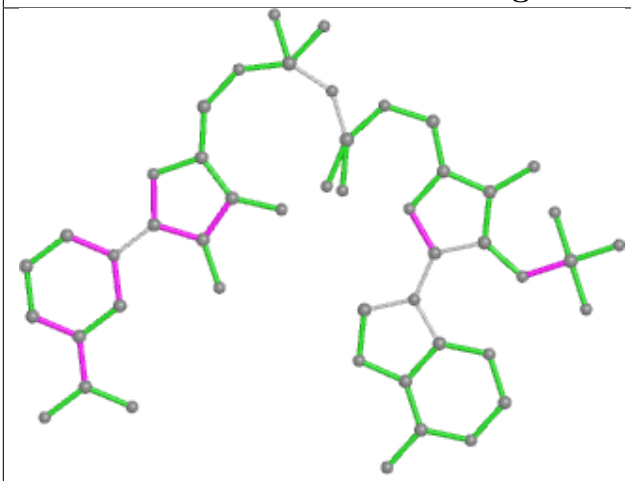


Torsions

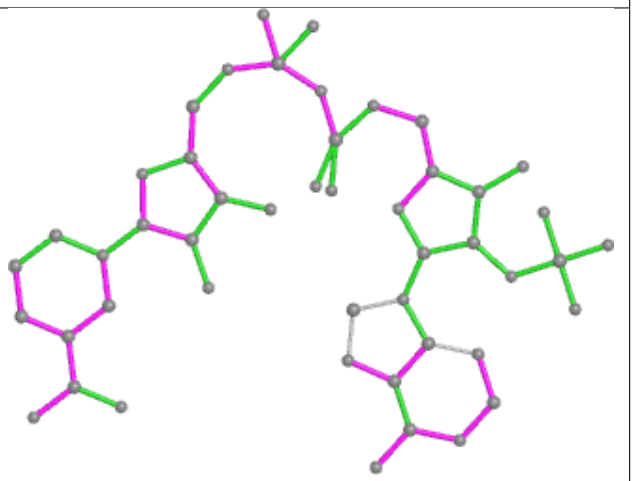


Rings

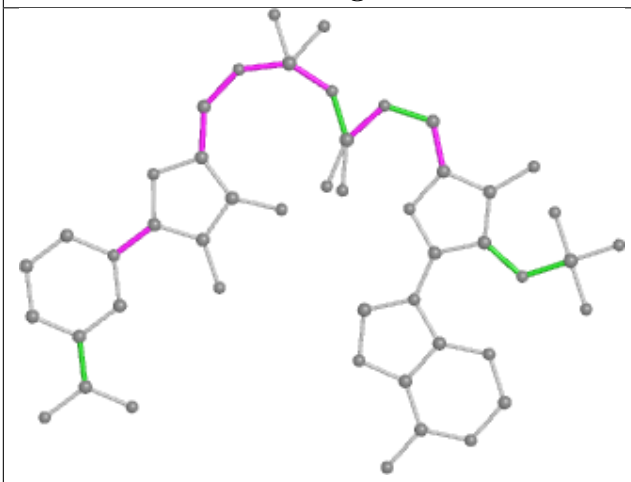
Ligand NAP A 1453



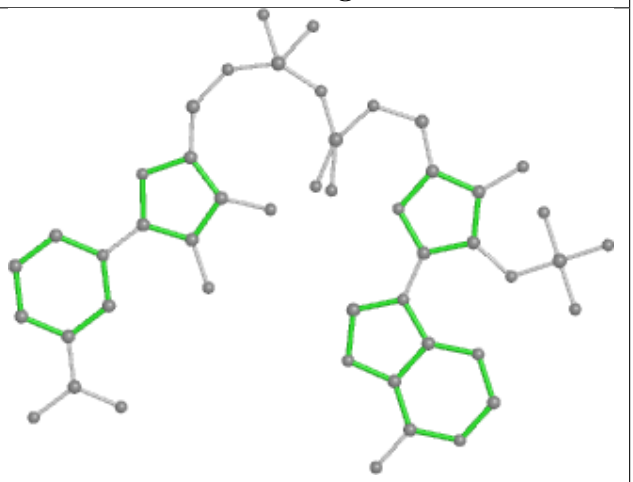
Bond lengths



Bond angles

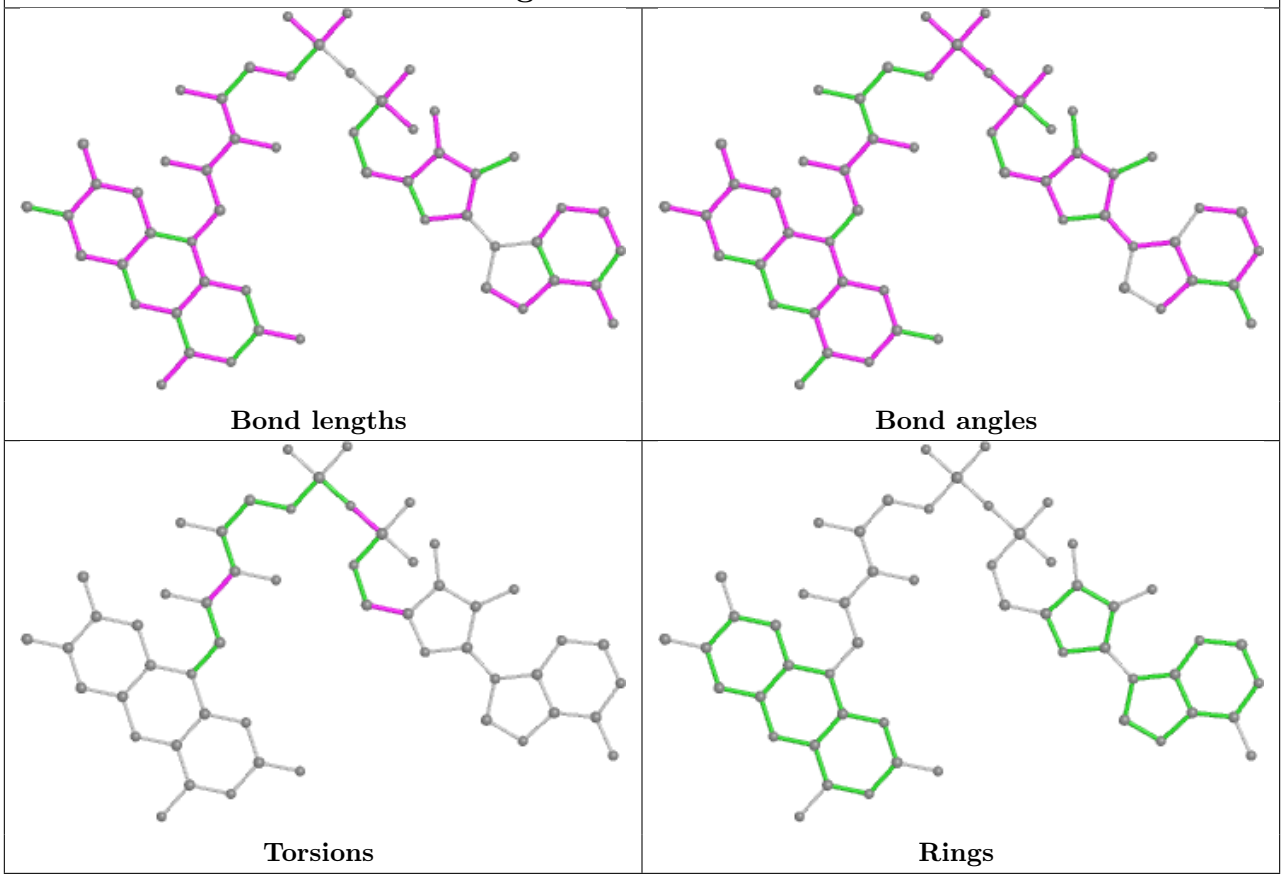


Torsions



Rings

Ligand FAD A 1452



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^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	630/688 (91%)	0.61	52 (8%) 11 15	28, 52, 88, 99	0
1	B	616/688 (89%)	0.84	84 (13%) 3 4	24, 61, 93, 100	0
All	All	1246/1376 (90%)	0.73	136 (10%) 5 8	24, 56, 92, 100	0

All (136) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	830	HIS	9.8
1	B	2902	LEU	8.7
1	B	3316	PRO	8.0
1	B	2845	PHE	7.5
1	A	950	ILE	7.2
1	B	3413	ILE	7.1
1	B	2843	VAL	6.9
1	B	2948	VAL	6.0
1	A	948	VAL	5.9
1	B	3371	LYS	5.7
1	B	2967	ASN	5.6
1	A	1073	LEU	5.6
1	B	3073	LEU	5.4
1	B	3411	GLU	5.2
1	A	1413	ILE	5.0
1	B	2794	VAL	4.8
1	B	2947	ASP	4.7
1	B	2752	ARG	4.7
1	B	2906	LEU	4.7
1	B	3402	TYR	4.6
1	A	838	ARG	4.5
1	A	1057	ALA	4.4
1	B	2779	HIS	4.3
1	B	2949	ASN	4.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	2826	MET	4.3
1	A	837	GLU	4.2
1	A	839	LYS	4.2
1	B	2793	ILE	4.2
1	B	3373	SER	4.2
1	A	1157	GLN	4.1
1	B	3408	LEU	4.1
1	A	843	VAL	4.0
1	B	2825	LEU	4.0
1	A	946	ASP	3.9
1	A	966	ARG	3.9
1	B	2961	ASP	3.9
1	A	959	SER	3.8
1	A	973	TYR	3.8
1	B	3366	MET	3.8
1	B	3412	SER	3.7
1	B	3318	ARG	3.7
1	A	1374	GLU	3.7
1	A	1071	THR	3.7
1	B	2822	GLY	3.6
1	B	3317	ASP	3.6
1	B	3407	ARG	3.6
1	B	2944	VAL	3.5
1	B	3372	LEU	3.5
1	B	2791	TYR	3.5
1	A	750	ALA	3.4
1	A	1116	ALA	3.4
1	B	2909	GLU	3.4
1	A	1317	ASP	3.4
1	B	3410	SER	3.4
1	B	2784	LYS	3.4
1	A	849	SER	3.3
1	B	2780	ALA	3.3
1	B	2894	ALA	3.3
1	A	1383	ARG	3.3
1	A	836	GLU	3.2
1	B	2877	VAL	3.1
1	B	3076	ILE	3.1
1	A	1079	TRP	3.0
1	B	2846	ASN	3.0
1	B	2898	ALA	3.0
1	A	842	LYS	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	1117	THR	2.9
1	B	2842	LYS	2.9
1	B	2905	GLU	2.9
1	A	1375	GLU	2.9
1	B	2796	LEU	2.9
1	A	1121	GLU	2.8
1	B	2828	MET	2.8
1	B	2844	ARG	2.7
1	B	2920	LEU	2.7
1	A	1318	ARG	2.7
1	A	945	GLY	2.7
1	A	1254	ALA	2.6
1	B	3072	ALA	2.6
1	B	2819	GLU	2.6
1	B	2827	GLU	2.6
1	A	1076	ILE	2.6
1	B	2915	ARG	2.6
1	A	1119	GLU	2.6
1	A	1132	LEU	2.5
1	B	3120	LYS	2.5
1	A	1364	ARG	2.5
1	B	3253	ILE	2.5
1	A	847	SER	2.5
1	B	2765	LYS	2.5
1	B	3376	ASP	2.5
1	B	3140	TRP	2.5
1	B	2766	SER	2.5
1	B	2841	TYR	2.5
1	B	3119	GLU	2.5
1	B	3383	ARG	2.4
1	B	2753	VAL	2.4
1	A	846	ASN	2.4
1	A	1054	ALA	2.4
1	A	751	LYS	2.4
1	A	1120	LYS	2.4
1	B	3127	VAL	2.3
1	A	1058	ASN	2.3
1	B	3378	GLY	2.3
1	A	1403	GLU	2.3
1	B	2950	ILE	2.3
1	B	2903	LEU	2.2
1	B	3201	ASP	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	3285	GLN	2.2
1	A	976	GLU	2.2
1	B	3287	LYS	2.2
1	A	964	TRP	2.2
1	B	3068	GLU	2.2
1	B	3246	LEU	2.2
1	A	1130	LYS	2.2
1	A	1246	LEU	2.2
1	A	963	SER	2.2
1	B	3130	LYS	2.1
1	B	3116	ALA	2.1
1	B	2976	GLU	2.1
1	A	1280	VAL	2.1
1	B	3066	LEU	2.1
1	B	3379	VAL	2.1
1	A	1175	TYR	2.1
1	B	2789	GLU	2.1
1	B	3349	CYS	2.1
1	A	960	ASN	2.1
1	B	2817	ASN	2.1
1	B	2946	ASP	2.1
1	A	1072	ALA	2.1
1	B	3176	SER	2.0
1	B	3377	ALA	2.0
1	A	1407	ARG	2.0
1	B	3053	ASP	2.0
1	B	3058	ASN	2.0
1	B	3174	TYR	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,

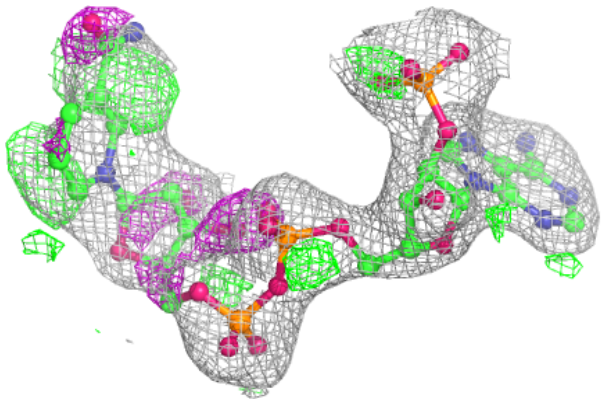
median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

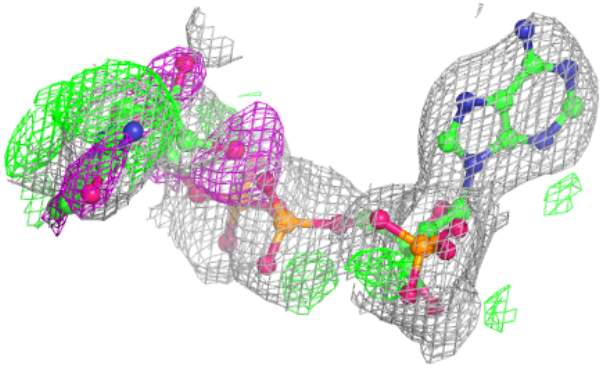
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	SO3	A	1500	4/4	0.83	0.22	67,68,68,68	4
5	NAP	B	2453	48/48	0.87	0.18	40,47,59,61	0
5	NAP	A	1453	48/48	0.92	0.17	27,44,54,56	0
2	SO3	B	2500	4/4	0.92	0.13	79,80,81,82	0
4	FAD	B	2452	53/53	0.96	0.16	17,29,59,59	0
3	FMN	A	1451	31/31	0.96	0.17	32,35,38,41	0
3	FMN	B	2451	31/31	0.96	0.18	45,49,53,54	0
4	FAD	A	1452	53/53	0.97	0.17	17,30,51,53	0

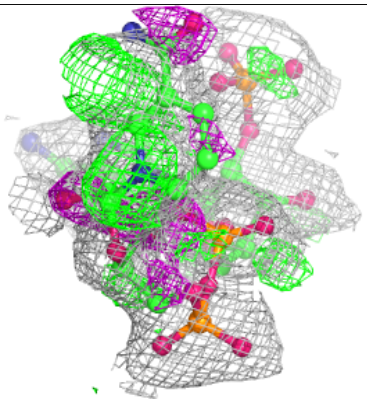
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around NAP B 2453:

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

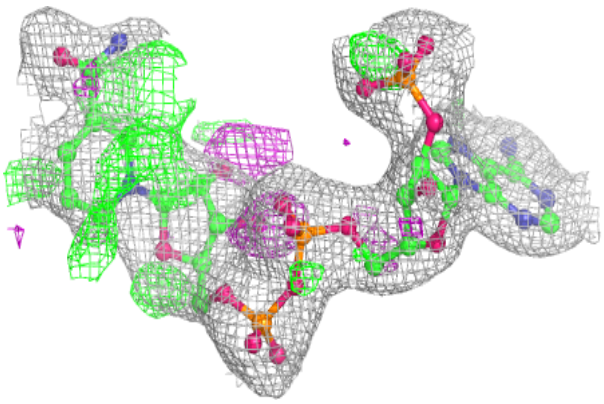


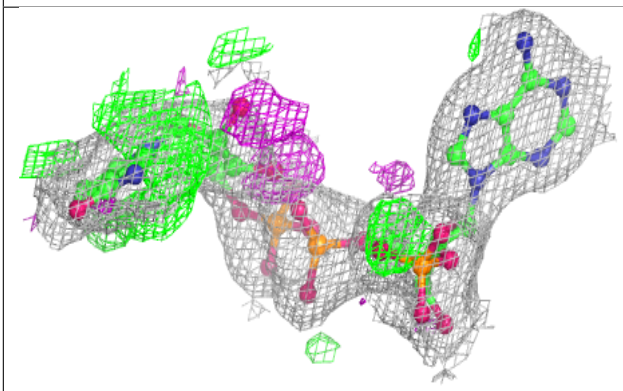


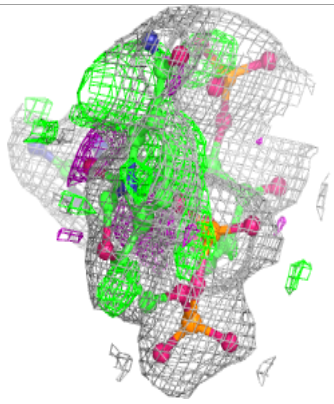


Electron density around NAP A 1453:

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

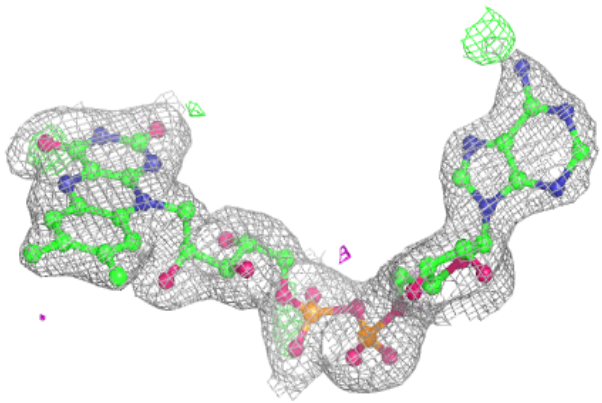


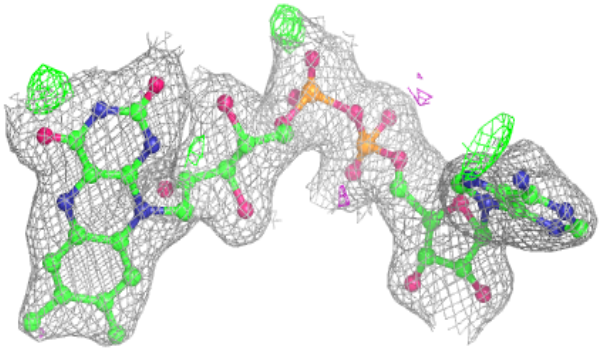


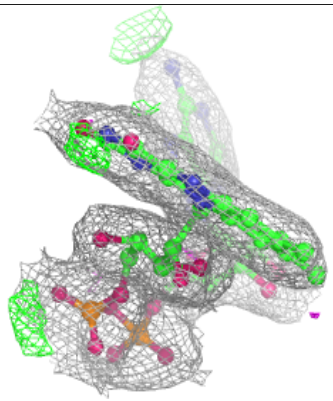


Electron density around FAD B 2452:

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

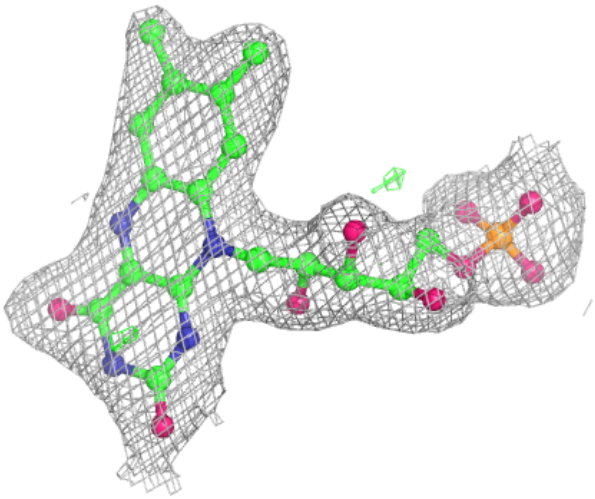


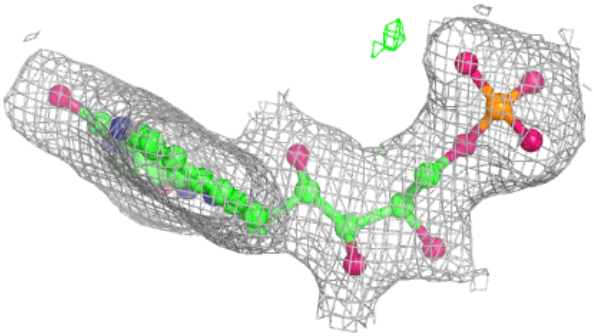


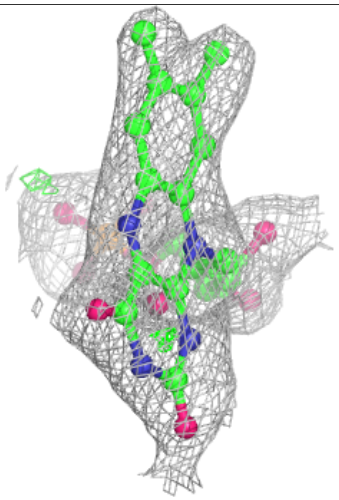


Electron density around FMN A 1451:

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

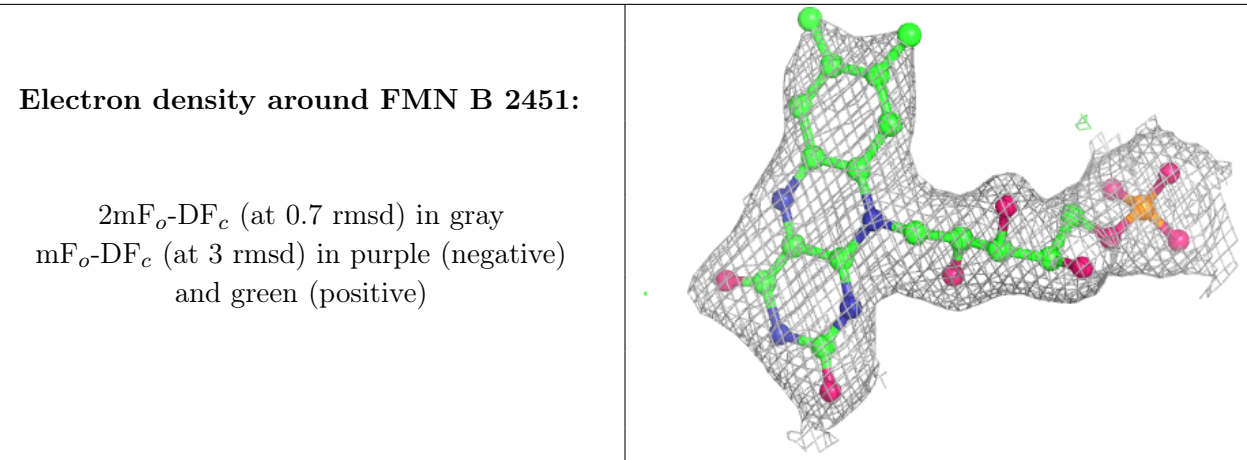






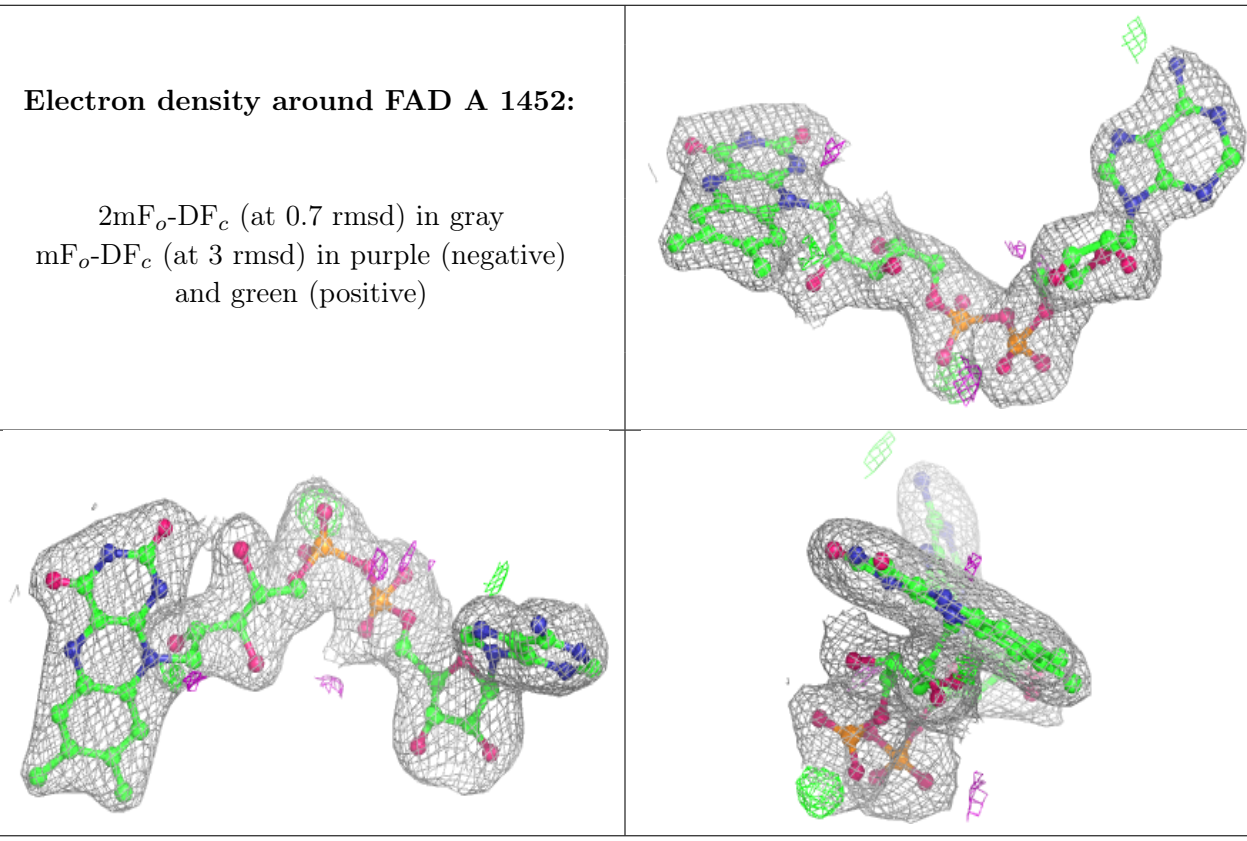
Electron density around FMN B 2451:

$2mF_o$-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 1452:

$2mF_o$-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.