Full wwPDB EM Validation Report ⓘ

Mar 2, 2024 – 07:20 PM EST

PDB ID	:	5TAQ
EMDB ID	:	EMD-8382
Title	:	Structure of rabbit RyR1 (Caffeine/ATP/Ca2+ dataset, class 3&4)
Authors	:	Clarke, O.B.; des Georges, A.; Zalk, R.; Marks, A.R.; Hendrickson, W.A.; Frank, J.
Deposited on	:	2016-09-10
Resolution	:	4.10 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

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

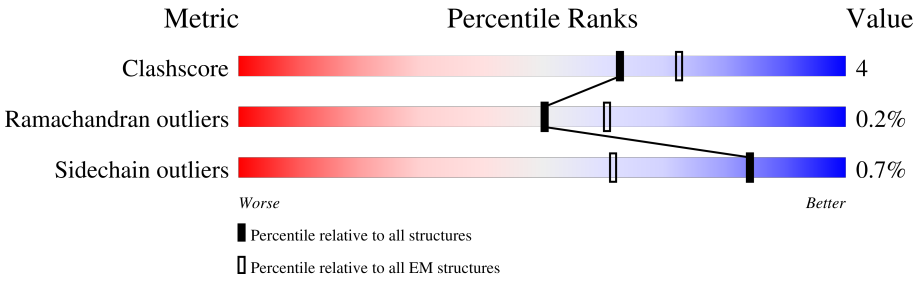
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 4.10 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)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	108	20% 81% 17% ••
1	F	108	19% 81% 17% ••
1	H	108	21% 80% 19% ••
1	J	108	19% 80% 19% ••
2	B	4416	24% 85% 10% 5%
2	E	4416	24% 85% 10% 5%
2	G	4416	24% 85% 10% 5%
2	I	4416	24% 85% 10% 5%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 121456 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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.

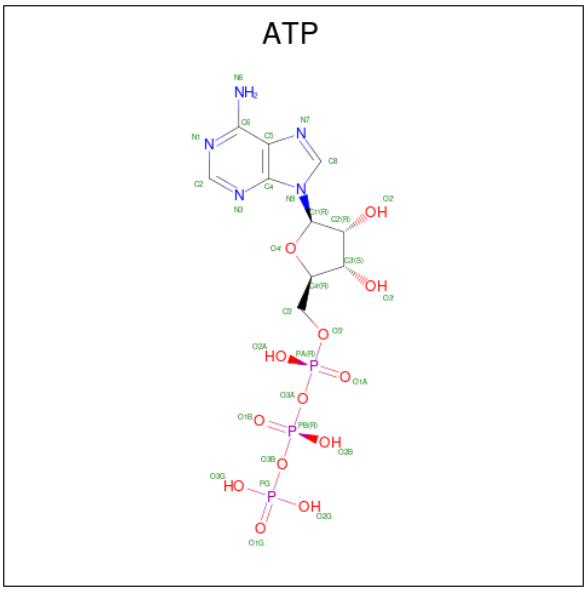
- Molecule 1 is a protein called Peptidyl-prolyl cis-trans isomerase FKBP1B.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	F	107	Total	C	N	O	S	0	0
			818	516	144	154	4		
1	A	107	Total	C	N	O	S	0	0
			818	516	144	154	4		
1	H	107	Total	C	N	O	S	0	0
			818	516	144	154	4		
1	J	107	Total	C	N	O	S	0	0
			818	516	144	154	4		

- Molecule 2 is a protein called Ryanodine receptor 1.

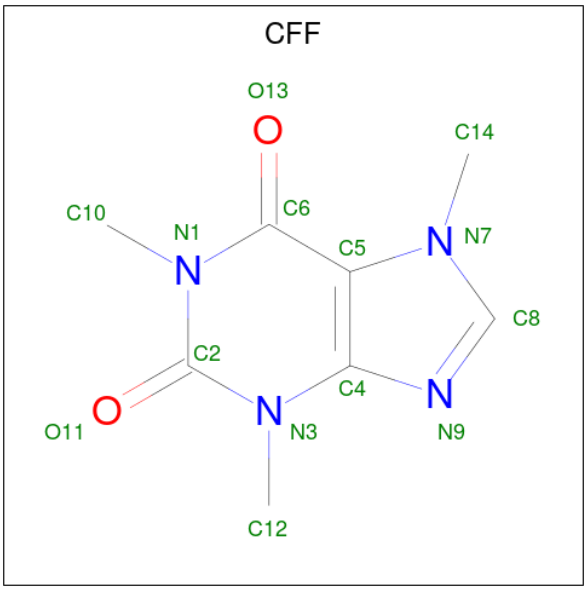
Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	4194	Total	C	N	O	S	0	0
			29499	18686	5228	5428	157		
2	E	4194	Total	C	N	O	S	0	0
			29499	18686	5228	5428	157		
2	I	4194	Total	C	N	O	S	0	0
			29499	18686	5228	5428	157		
2	G	4194	Total	C	N	O	S	0	0
			29499	18686	5228	5428	157		

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
3	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	E	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	I	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	G	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 4 is CAFFEINE (three-letter code: CFF) (formula: $C_8H_{10}N_4O_2$).



Mol	Chain	Residues	Atoms				AltConf
4	B	1	Total	C	N	O	0
			14	8	4	2	
4	E	1	Total	C	N	O	0
			14	8	4	2	
4	I	1	Total	C	N	O	0
			14	8	4	2	
4	G	1	Total	C	N	O	0
			14	8	4	2	

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
5	B	1	Total	Zn	0
			1	1	
5	E	1	Total	Zn	0
			1	1	
5	I	1	Total	Zn	0
			1	1	
5	G	1	Total	Zn	0
			1	1	

- Molecule 6 is CALCIUM ION (three-letter code: CA) (formula: Ca).

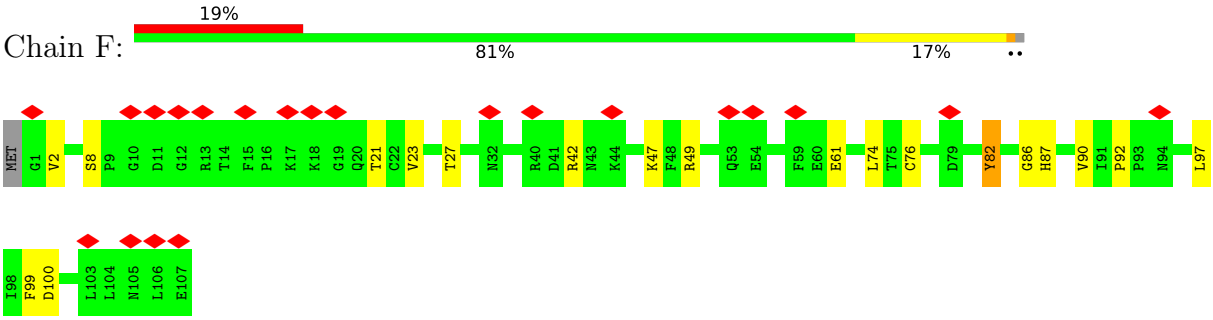
Mol	Chain	Residues	Atoms		AltConf
6	B	1	Total	Ca	0
			1	1	
6	E	1	Total	Ca	0
			1	1	
6	I	1	Total	Ca	0
			1	1	
6	G	1	Total	Ca	0
			1	1	

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

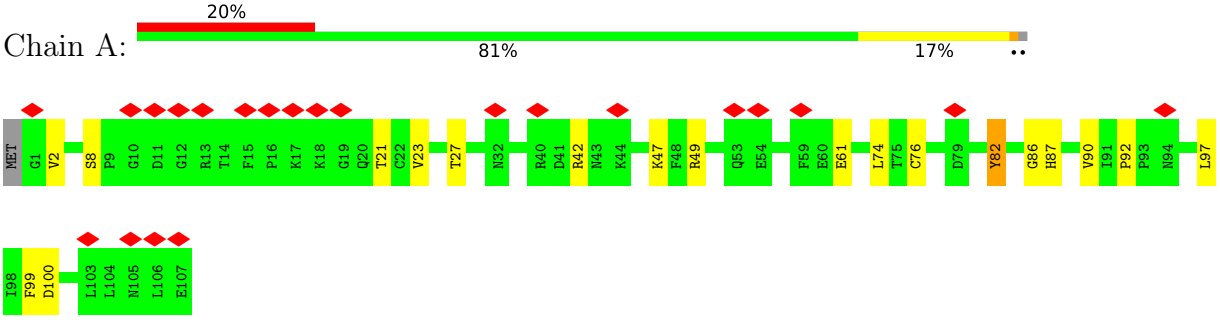
• Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

Chain F:



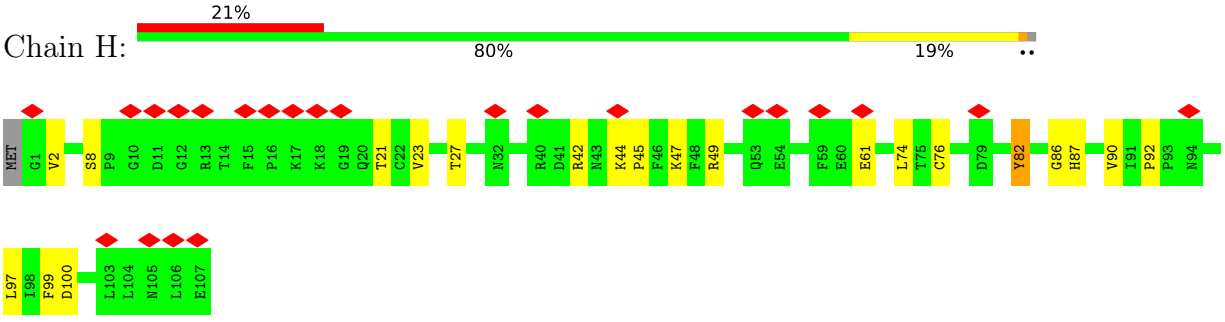
• Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

Chain A:



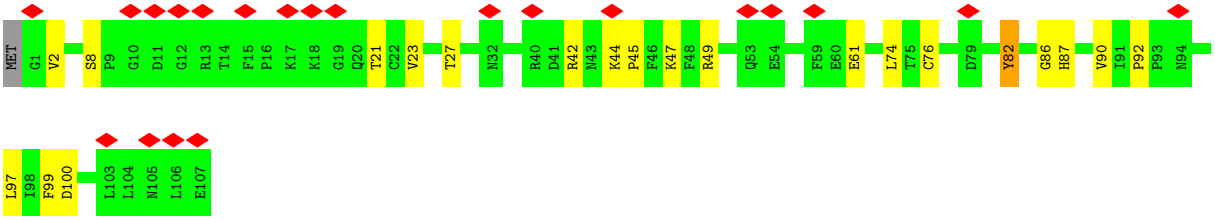
• Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

Chain H:



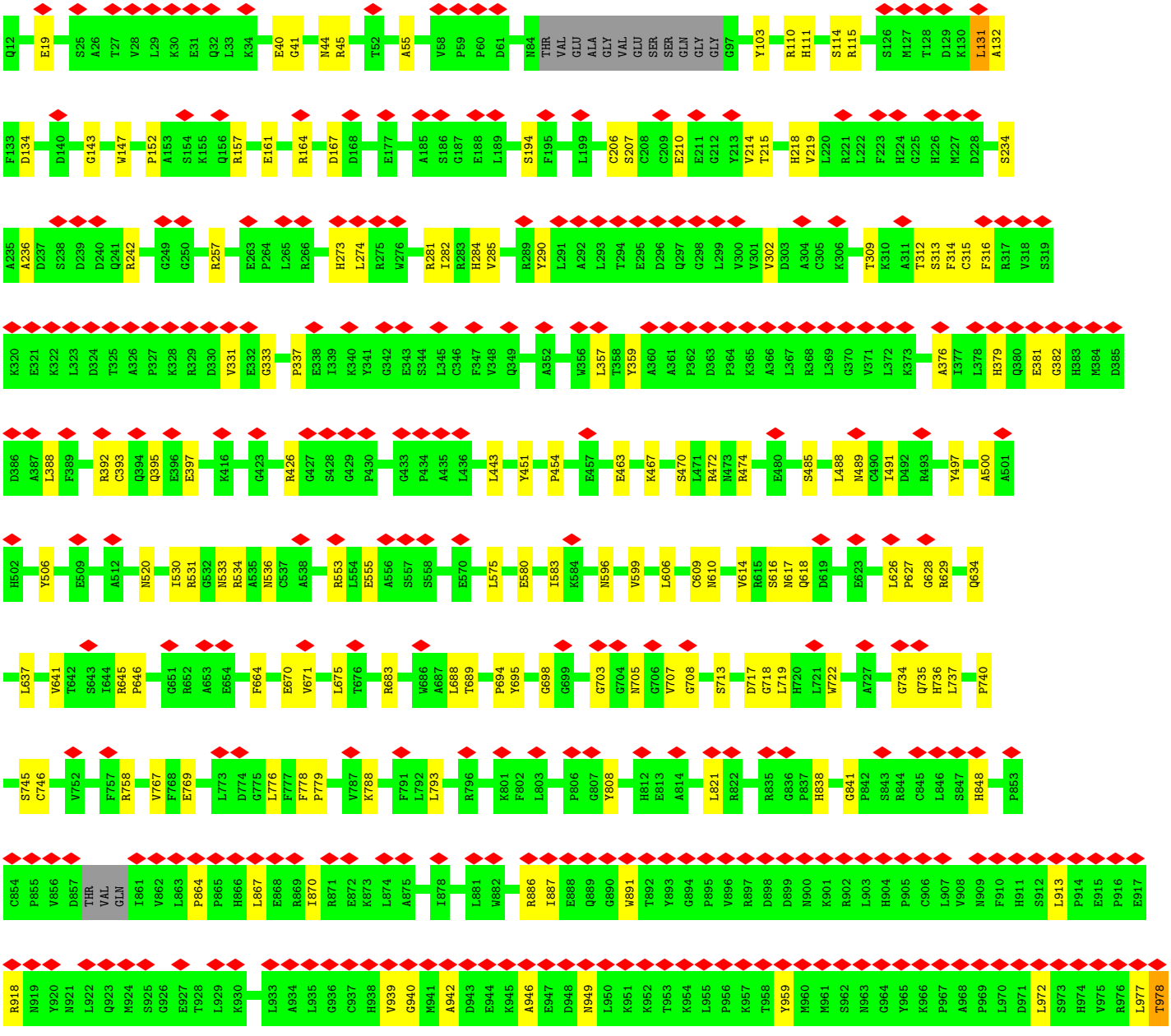
• Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

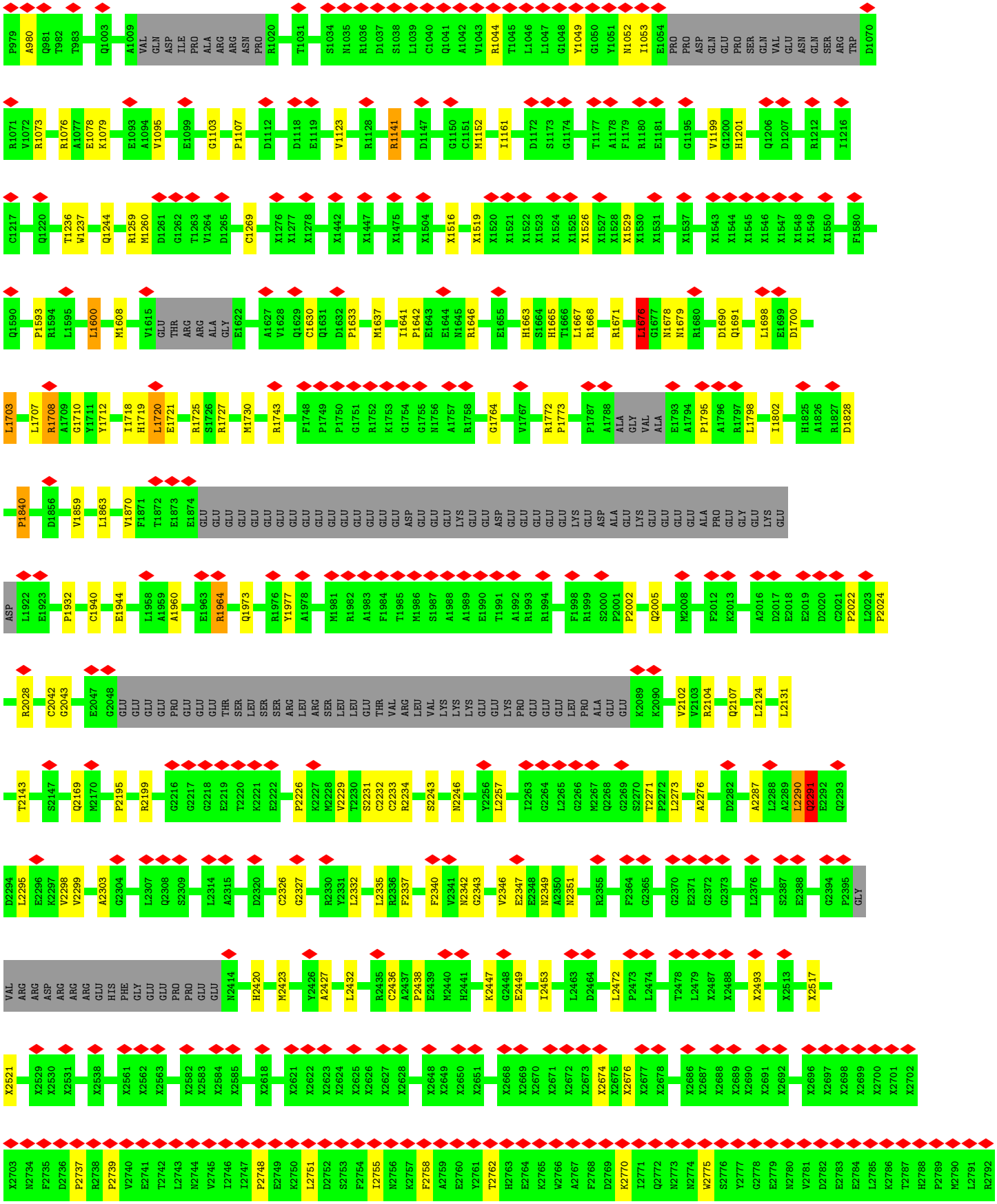
Chain J:



• Molecule 2: Ryanodine receptor 1

Chain B:

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R1071 V1072 R1073 R1076 A1077 E1078 K1079 E1093 A1094 V1095 E1099 G1103 P1107 D1112 D1118 E1119 V1123 R1128 R1141 D1147 G1150 C1151 M1152 I1161 D1172 S1173 G1174 T1177 A1178 F1179 R1180 E1181 G1195 V1199 G1200 H1201 Q1206 D1207 R1212 I1216
C1217 Q1220 T1236 W1237 Q1244 R1259 M1260 D1261 G1262 T1263 V1264 D1265 C1269 X1276 X1277 X1278 X1442 X1447 X1475 X1504 X1516 X1519 X1520 X1521 X1522 X1523 X1524 X1525 X1526 X1527 X1528 X1529 X1530 X1531 X1537 X1543 X1544 X1545 X1546 X1547 X1548 X1549 X1550 F1580
Q1590 P1593 R1594 L1595 L1600 M1608 V1615 GLU THR ARG ARG ALA GLY E1622 A1627 V1628 Q1629 C1630 Q1631 D1632 P1633 M1637 I1641 P1642 E1643 E1644 N1645 R1646 E1655 H1663 S1664 H1665 T1666 L1667 R1668 R1671 L1676 G1677 N1678 N1679 R1680 D1690 Q1691 L1698 E1699 D1700
L1703 L1707 R1708 A1709 G1710 Y1711 Y1712 I1718 H1719 L1720 E1721 R1725 S1726 R1727 M1730 R1743 F1748 P1749 P1750 G1751 R1752 K1753 G1754 G1755 N1756 A1757 R1758 G1764 V1767 R1772 P1773 P1787 A1788 ALA GLY VAL ALA E1793 A1794 P1795 A1796 R1797 L1798 I1802 H1825 A1826 R1827 D1828
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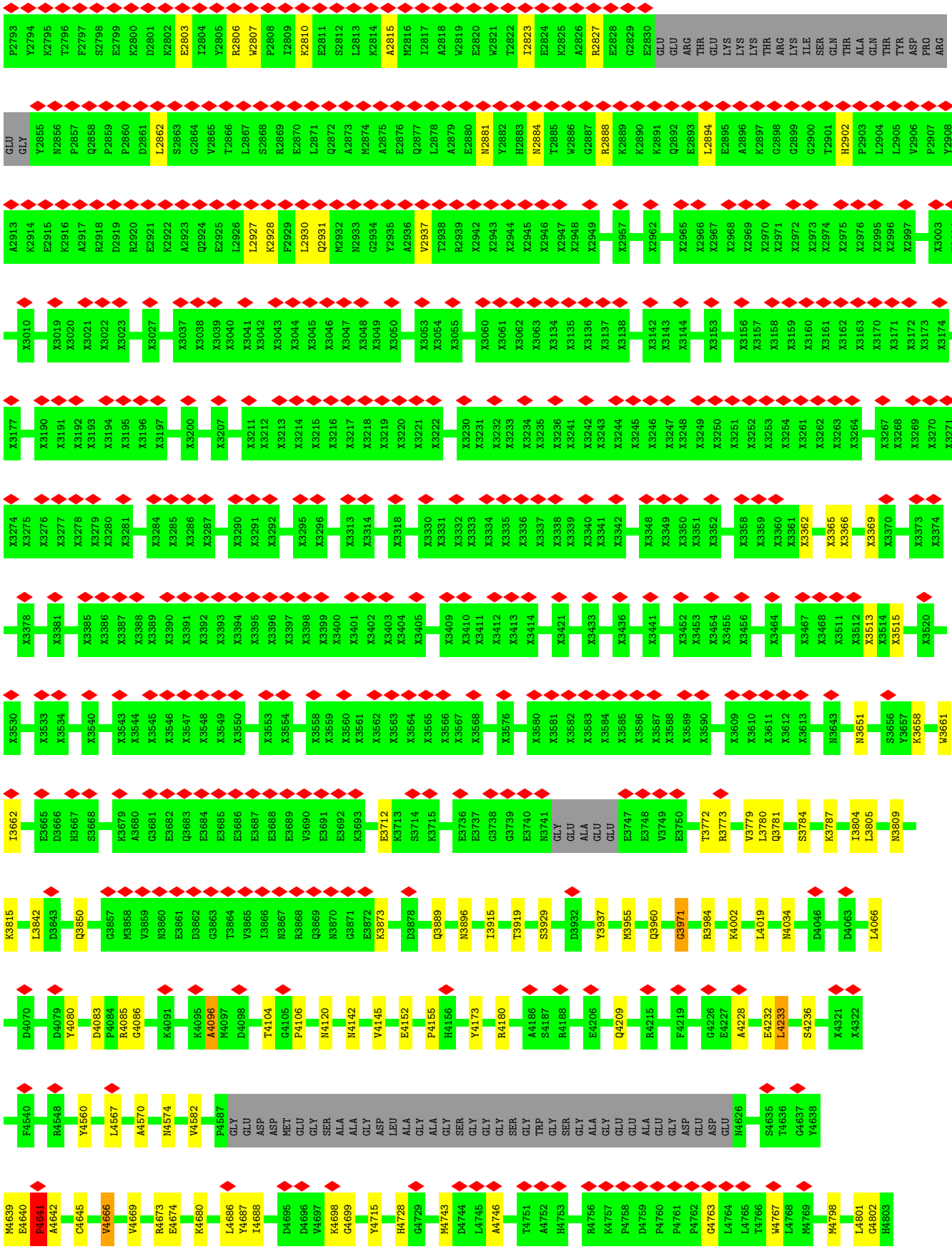
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GLU GLY Y2855 N2856 P2857 Q2858 P2859 P2860 D2861 L2862 S2863 G2864 V2865 T2866 L2867 S2868 R2869 E2870 L2871 Q2872 A2873 M2874 A2875 E2876 Q2877 L2878 A2879 E2880 N2881 Y2882 H2883 N2884 T2885 W2886 G2887 R2888 K2889 K2890 K2891 Q2892 E2893 L2894 E2895 A2896 K2897 G2898 G2899 G2900 T2901 H2902 P2903 L2904 L2905 V2906 P2907 Y2908 D2909 T2910 L2911 T2912
A2913 K2914 E2915 K2916 A2917 R2918 D2919 R2920 E2921 K2922 A2923 Q2924 E2925 L2926 L2927 K2928 F2929 L2930 Q2931 M2932 N2933 G2934 Y2935 A2936 V2937 T2938 R2939 X2942 X2943 X2944 X2945 X2946 X2947 X2948 X2949 X2957 X2962 X2965 X2966 X2967 X2968 X2969 X2970 X2971 X2972 X2973 X2974 X2975 X2976 X2995 X2996 X2997 X3003 X3004 X3005 X3006
X3010 X3019 X3020 X3021 X3022 X3023 X3027 X3037 X3038 X3039 X3040 X3041 X3042 X3043 X3044 X3045 X3046 X3047 X3048 X3049 X3050 X3053 X3054 X3055 X3060 X3061 X3062 X3063 X3134 X3135 X3136 X3137 X3138 X3142 X3143 X3144 X3153 X3156 X3157 X3158 X3159 X3160 X3161 X3162 X3163 X3170 X3171 X3172 X3173 X3174
X3177 X3190 X3191 X3192 X3193 X3194 X3195 X3196 X3197 X3200 X3207 X3211 X3212 X3213 X3214 X3215 X3216 X3217 X3218 X3219 X3220 X3221 X3222 X3230 X3231 X3232 X3233 X3234 X3235 X3236 X3241 X3242 X3243 X3244 X3245 X3246 X3247 X3248 X3249 X3250 X3251 X3252 X3253 X3254 X3261 X3262 X3263 X3264 X3267 X3268 X3269 X3270 X3271
X3274 X3275 X3276 X3277 X3278 X3279 X3280 X3281 X3284 X3285 X3286 X3287 X3290 X3291 X3292 X3295 X3296 X3313 X3314 X3318 X3330 X3331 X3332 X3333 X3334 X3335 X3336 X3337 X3338 X3339 X3340 X3341 X3342 X3348 X3349 X3350 X3351 X3352 X3358 X3359 X3360 X3361 X3362 X3365 X3366 X3369 X3370 X3373 X3374
X3378 X3381 X3385 X3386 X3387 X3388 X3389 X3390 X3391 X3392 X3393 X3394 X3395 X3396 X3397 X3398 X3399 X3400 X3401 X3402 X3403 X3404 X3405 X3409 X3410 X3411 X3412 X3413 X3414 X3421 X3433 X3436 X3441 X3452 X3453 X3454 X3455 X3456 X3464 X3467 X3468 X3511 X3512 X3513 X3514 X3515 X3520
X3530 X3533 X3534 X3540 X3543 X3544 X3545 X3546 X3547 X3548 X3549 X3550 X3553 X3554 X3558 X3559 X3560 X3561 X3562 X3563 X3564 X3565 X3566 X3567 X3568 X3576 X3580 X3581 X3582 X3583 X3584 X3585 X3586 X3587 X3588 X3589 X3590 X3609 X3610 X3611 X3612 X3613 N3643 N3651 S3656 Y3657 K3658 W3661
I3662 E3665 D3666 H3667 S3668 K3679 A3680 G3681 E3682 Q3683 E3684 E3685 E3686 E3687 E3688 E3689 V3690 E3691 E3692 K3693 E3712 K3713 S3714 K3715 E3736 E3737 G3738 G3739 E3740 N3741 GLY GLU ALA GLU GLU E3747 E3748 V3749 E3750 T3772 R3773 V3779 L3780 Q3781 S3784 K3787 I3804 L3805 N3809
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D4070 D4079 Y4080 D4083 P4084 R4085 G4086 K4091 K4095 A4096 M4097 D4098 T4104 G4105 P4106 N4120 N4142 V4145 E4152 P4155 H4156 Y4173 R4180 A4186 S4187 R4188 E4206 Q4209 R4215 F4219 G4226 E4227 A4228 E4232 L4233 S4236 X4321 X4322
F4540 R4548 Y4560 L4567 A4570 N4574 V4582 P4587 GLY GLU ASP ASP MET GLU GLY SER ALA ALA GLY ASP LEU ALA ALA GLY ALA GLY SER GLY GLY GLY SER GLY TRP GLY SER GLY ALA GLY GLU GLU ALA GLU GLY ASP GLU ASP GLU N4626 S4635 T4636 G4637 Y4638
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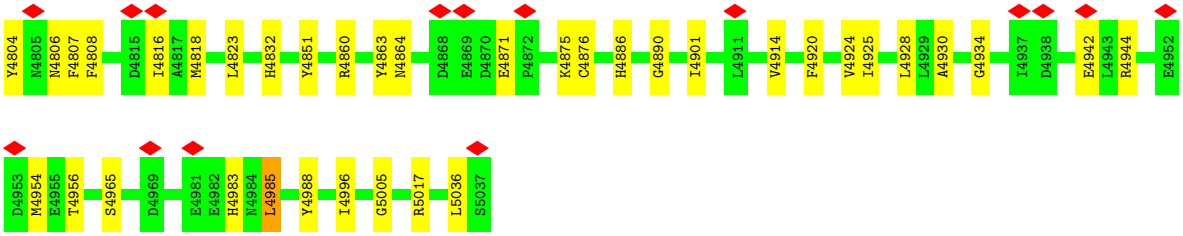
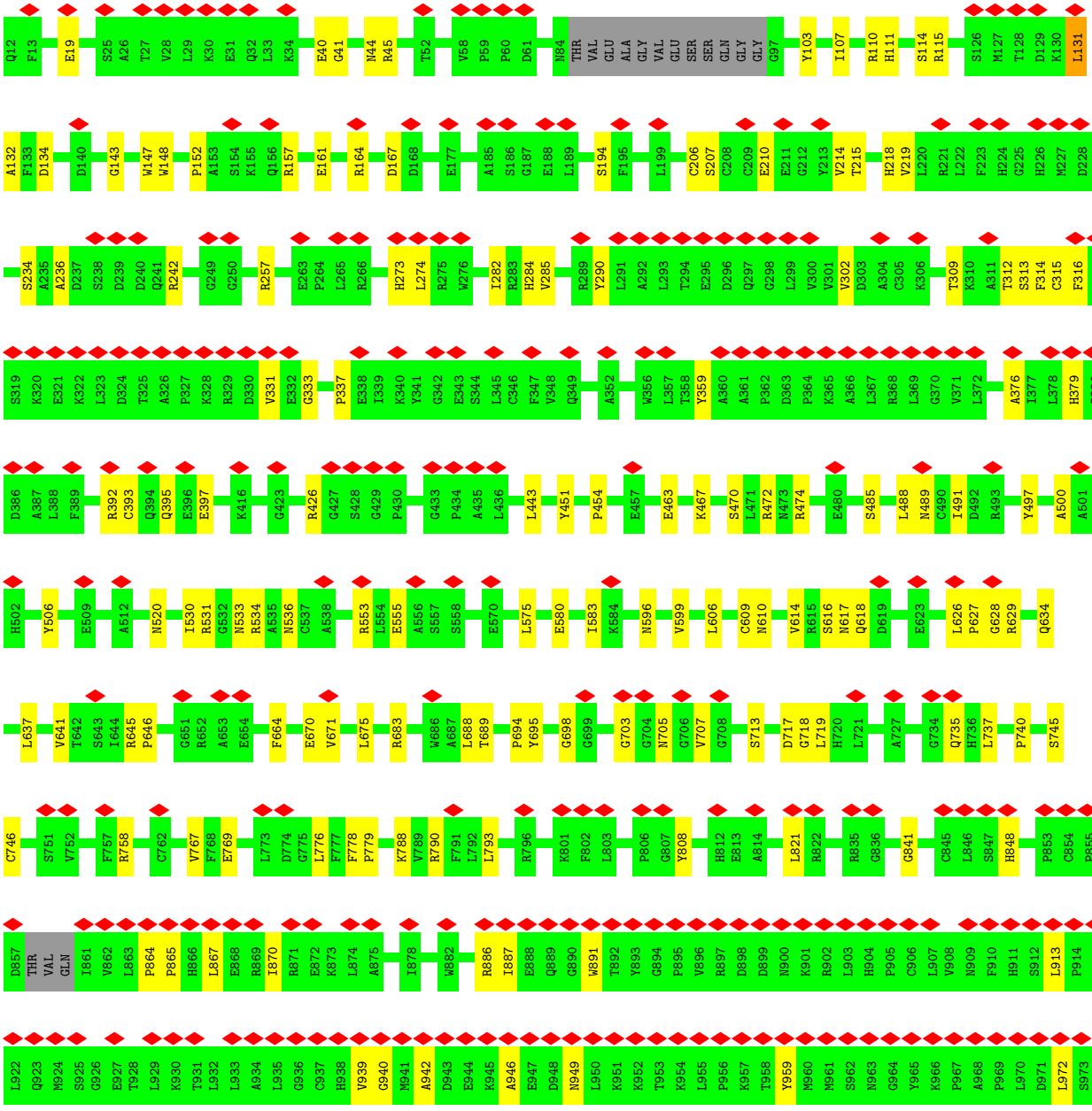
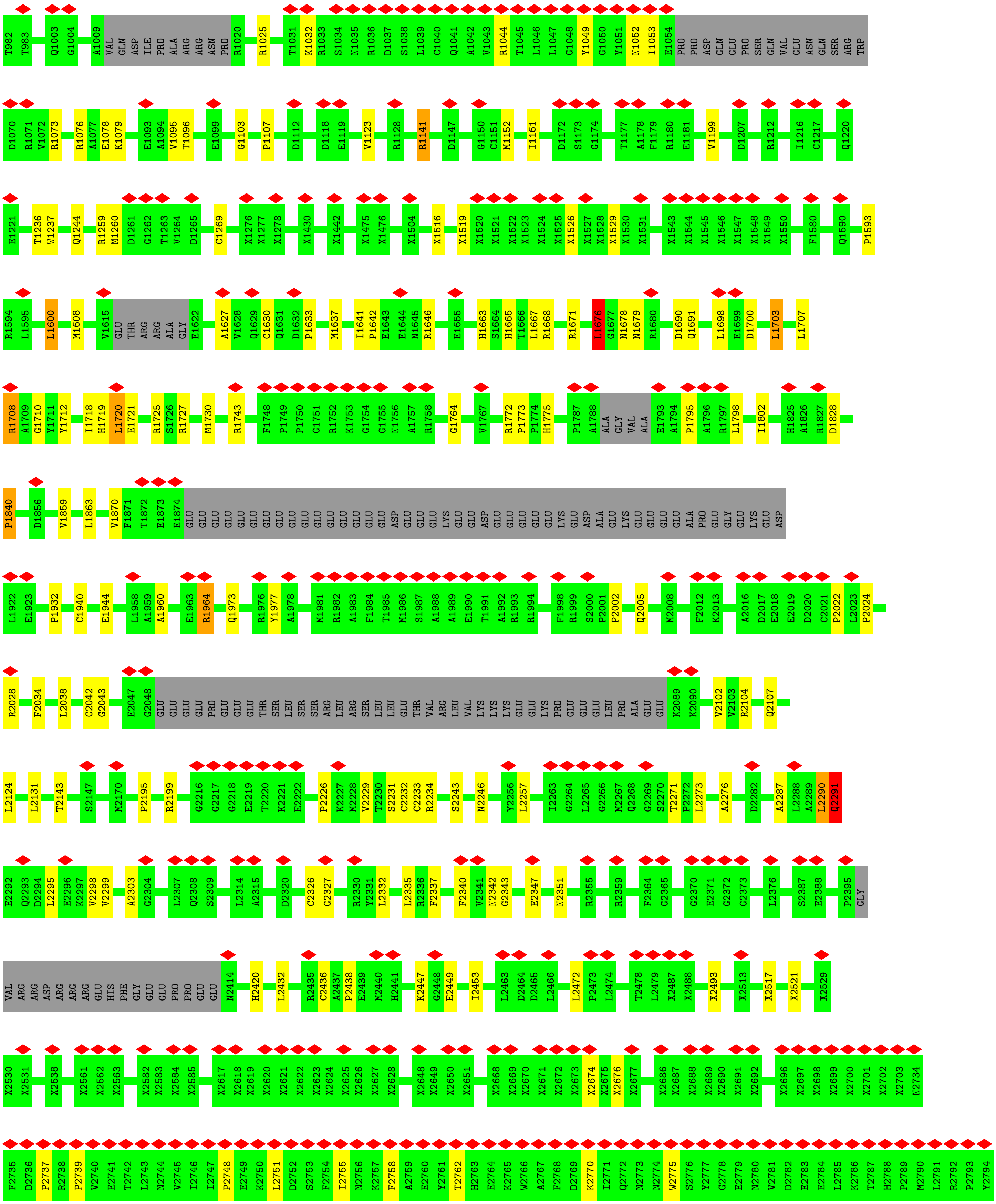


• Molecule 2: Ryanodine receptor 1

Chain E:

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D1070 R1071 V1072 R1073 R1076 A1077 E1078 K1079 E1093 A1094 V1095 T1096 E1099 G1103 P1107 D1112 D1118 E1119 V1123 R1128 R1141 D1147 G1150 C1151 M1152 I1161 D1172 S1173 G1174 T1177 A1178 F1179 R1180 E1181 V1199 D1207 R1212 I1216 C1217 Q1220
E1221 T1236 W1237 Q1244 R1259 M1260 D1261 G1262 T1263 V1264 D1265 C1269 X1276 X1277 X1278 X1430 X1442 X1475 X1476 X1504 X1516 X1519 X1520 X1521 X1522 X1523 X1524 X1525 X1526 X1527 X1528 X1529 X1530 X1531 X1543 X1544 X1545 X1546 X1547 X1548 X1549 X1550 F1580 Q1590 P1593
R1594 L1595 L1600 M1608 V1615 GLU THR ARG ARG ALA GLY E1622 A1627 V1628 Q1629 C1630 Q1631 D1632 P1633 M1637 I1641 P1642 E1643 E1644 N1645 R1646 E1655 H1663 S1664 H1665 T1666 L1667 R1668 R1671 L1676 G1677 N1678 N1679 R1680 D1690 Q1691 L1698 E1699 D1700 L1703 L1707
R1708 A1709 G1710 Y1711 Y1712 I1718 H1719 L1720 E1721 R1725 S1726 R1727 M1730 R1743 F1748 P1749 P1750 G1751 R1752 K1753 G1754 G1755 N1756 A1757 R1758 G1764 V1767 R1772 P1773 P1774 H1775 P1787 A1788 ALA GLY VAL ALA E1793 A1794 P1795 A1796 R1797 L1798 I1802 H1825 A1826 R1827 D1828
P1840 D1856 V1859 L1863 V1870 F1871 T1872 E1873 E1874 GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU GLU ASP GLU GLU GLU LYS GLU GLU ASP GLU GLU GLU GLU GLU LYS GLU ASP ALA GLU LYS GLU GLU GLU GLU ALA PRO GLU GLY GLU LYS GLU ASP
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R2028 F2034 L2038 C2042 G2043 E2047 G2048 GLU GLU GLU GLU PRO GLU GLU GLU THR SER LEU SER SER ARG LEU ARG SER LEU LEU GLU THR VAL ARG LEU VAL LYS LYS LYS GLU GLU LYS PRO GLU GLU GLU LEU PRO ALA GLU GLU K2089 K2090 V2102 V2103 R2104 Q2107
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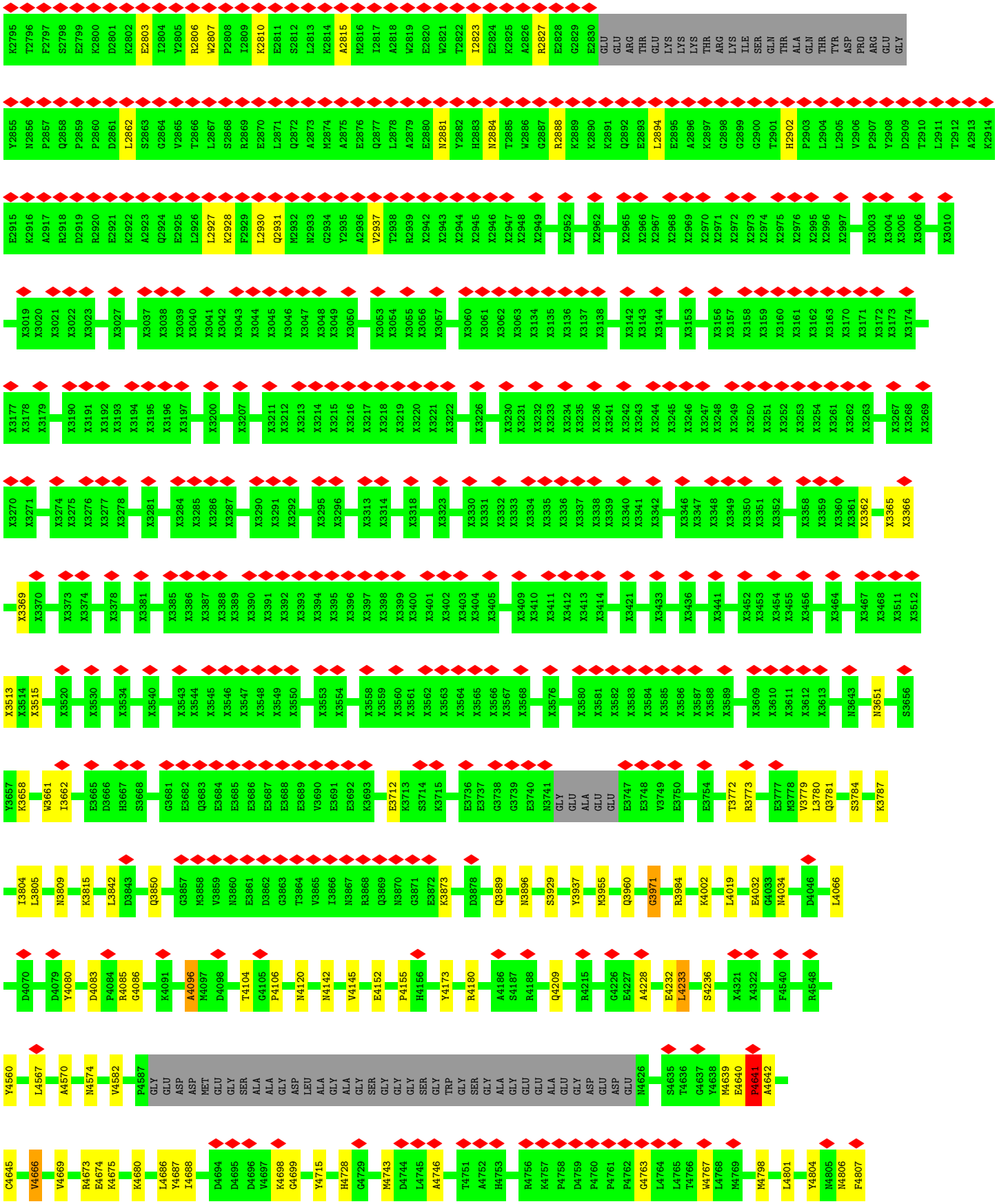
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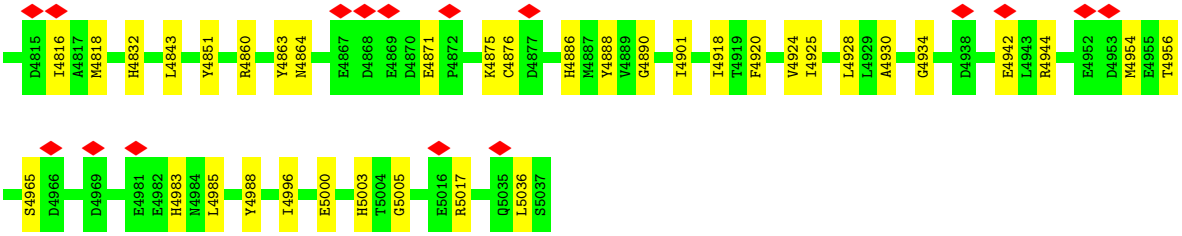

• Molecule 2: Ryanodine receptor 1

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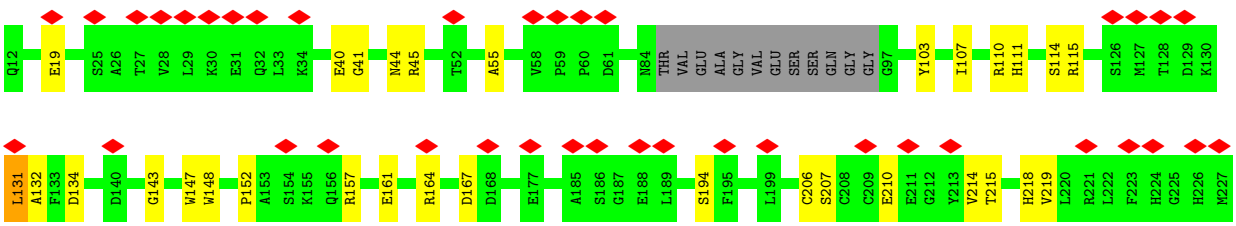

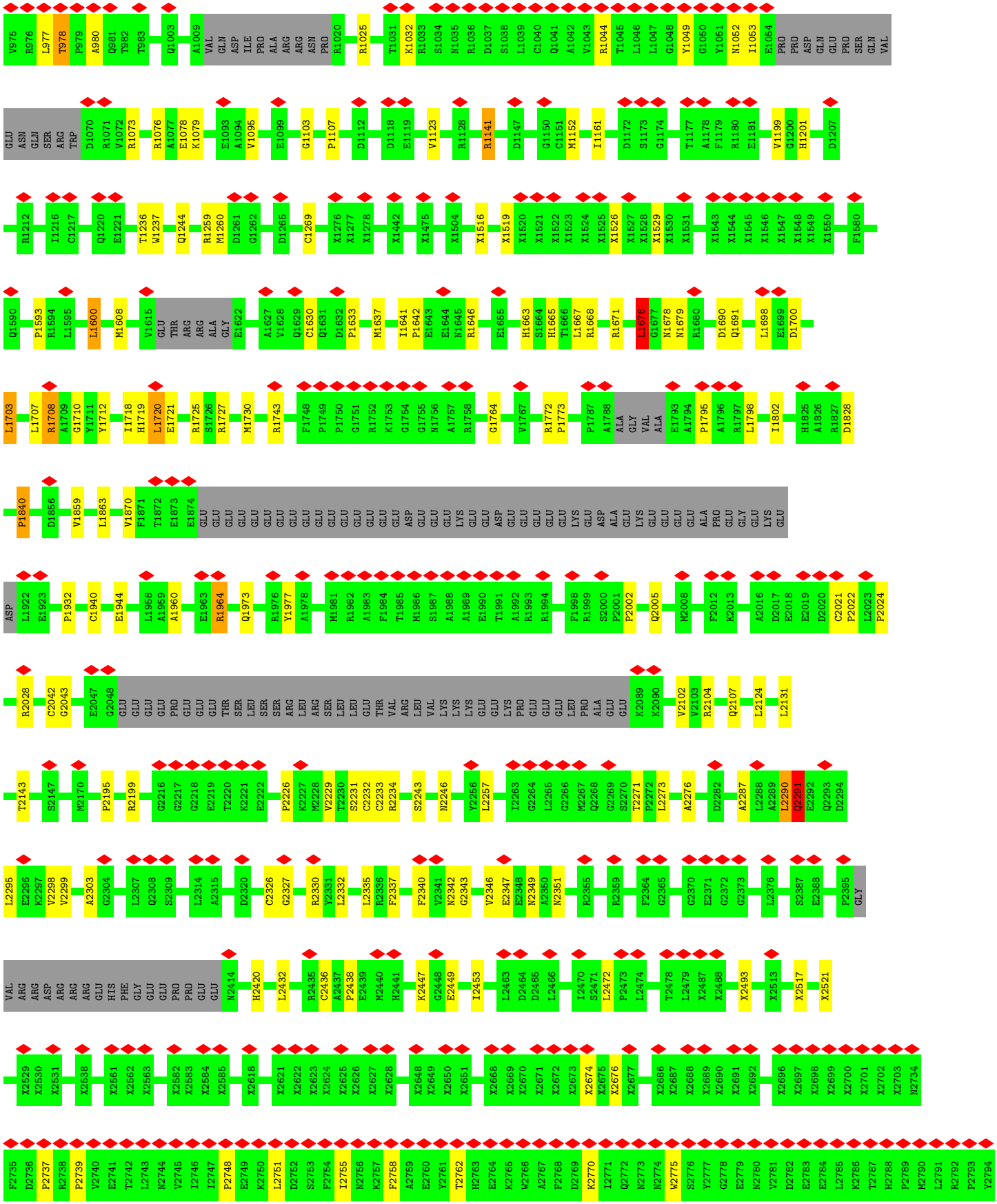
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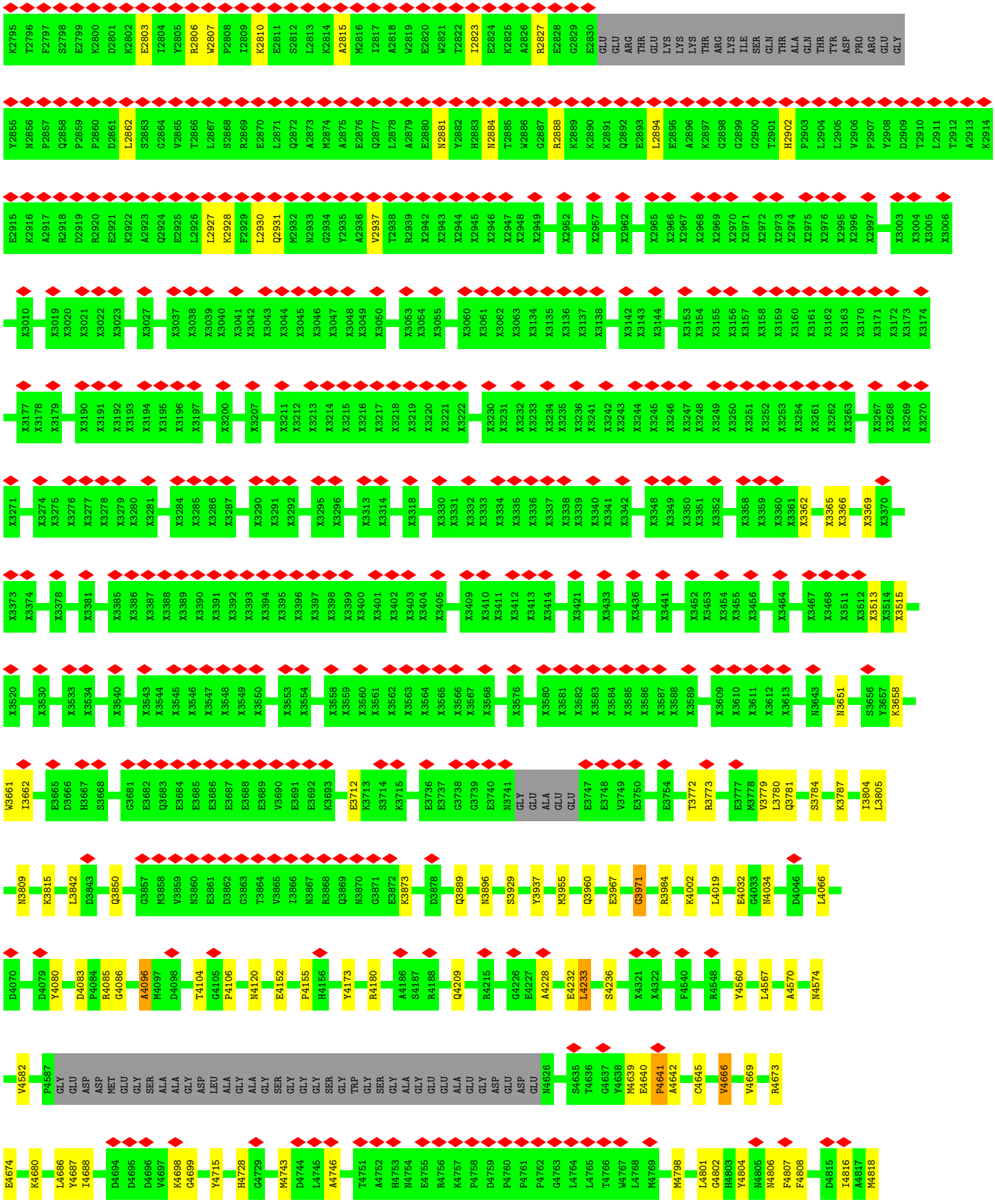
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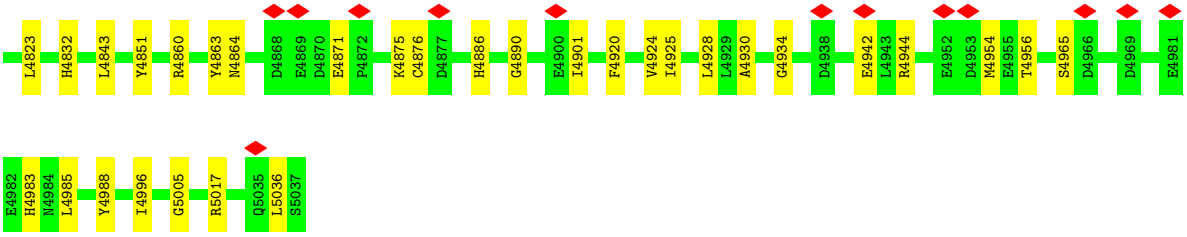
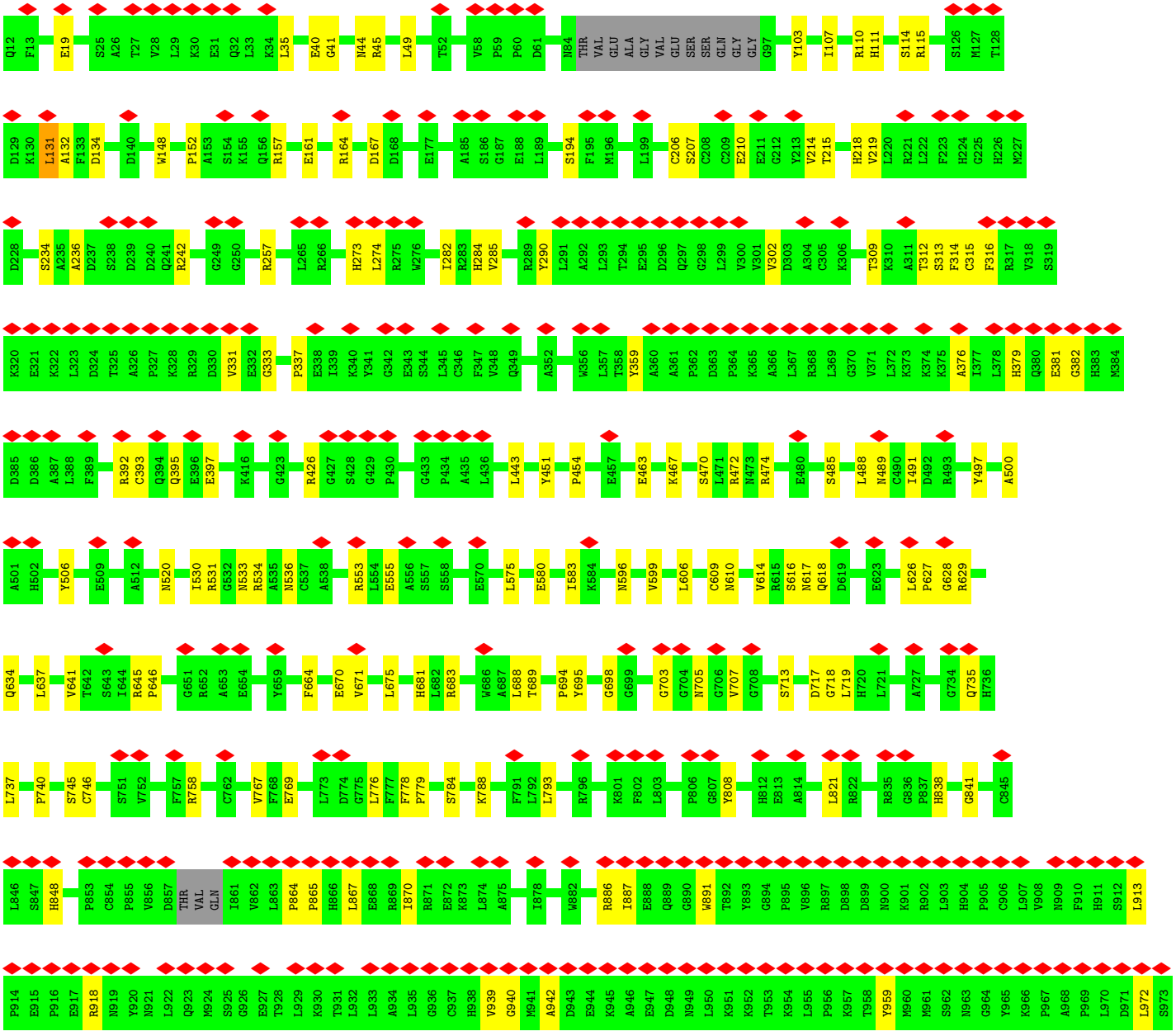
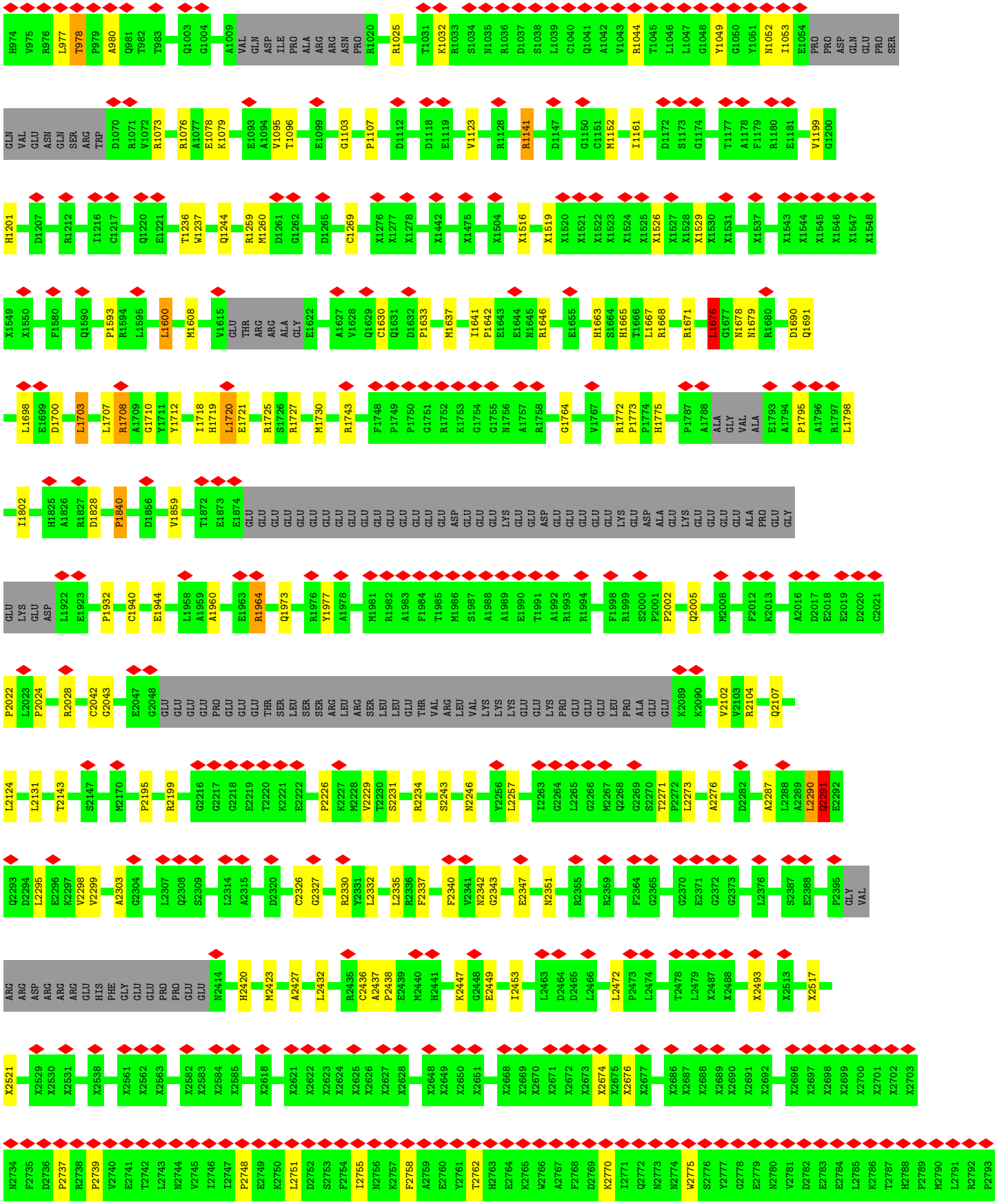
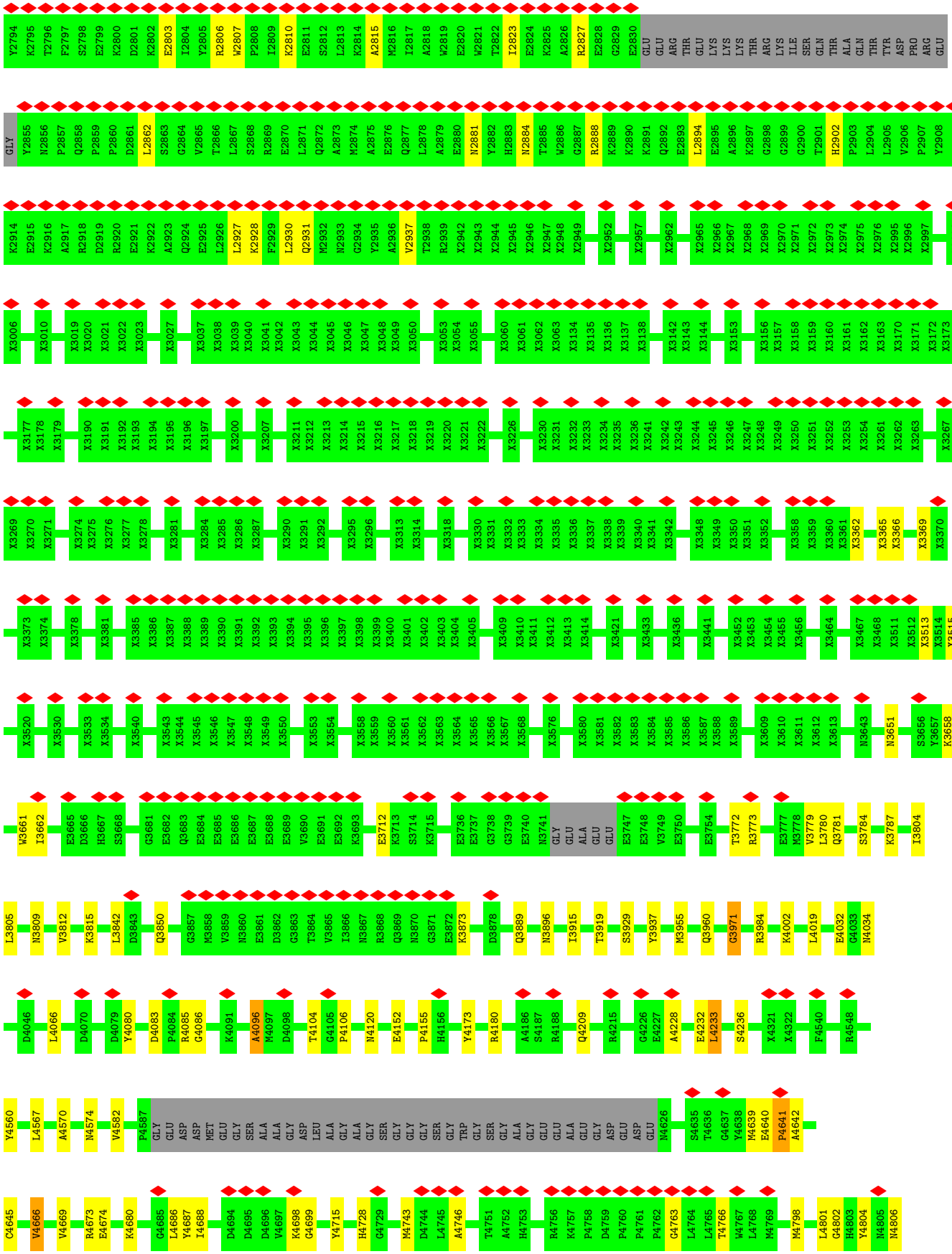


• Molecule 2: Ryanodine receptor 1

Chain G:



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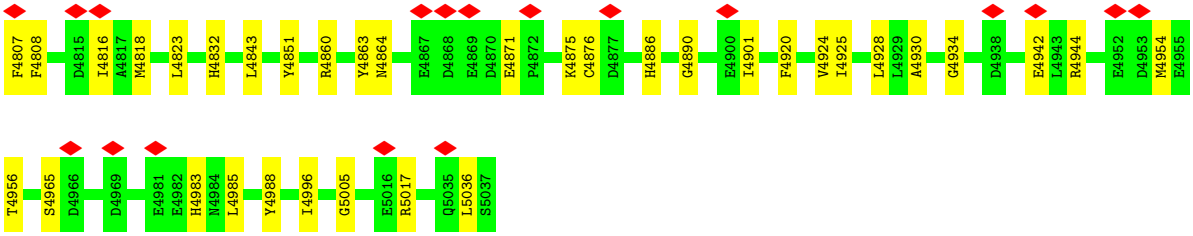
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M4818
L4823
H4832
L4843
Y4851
R4860
Y4863
N4864
E4867
D4868
E4869
D4870
E4871
P4872
K4875
C4876
D4877
H4886
G4890
E4900
I4901
F4920
V4924
I4925
L4928
L4929
A4930
G4934
D4938
E4942
L4943
R4944
E4952
D4953
M4954
E4955

T4956
S4965
D4966
D4969
E4981
E4982
H4983
N4984
L4985
Y4988
I4996
G5005
E5016
R5017
Q5035
L5036
S5037

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	55564	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.114	Depositor
Minimum map value	-0.070	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	502.0, 502.0, 502.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.255, 1.255, 1.255	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CA, CFF, ZN, ATP

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	0.32	0/834	0.54	0/1123
1	F	0.32	0/834	0.54	0/1123
1	H	0.32	0/834	0.54	0/1123
1	J	0.32	0/834	0.54	0/1123
2	B	0.32	0/25428	0.57	13/34534 (0.0%)
2	E	0.32	0/25428	0.57	13/34534 (0.0%)
2	G	0.32	0/25428	0.57	13/34534 (0.0%)
2	I	0.32	0/25428	0.57	13/34534 (0.0%)
All	All	0.32	0/105048	0.57	52/142628 (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	A	0	2
1	F	0	2
1	H	0	2
1	J	0	2
2	B	0	18
2	E	0	18
2	G	0	18
2	I	0	18
All	All	0	80

There are no bond length outliers.

All (52) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	131	LEU	CA-CB-CG	8.14	134.03	115.30
2	B	131	LEU	CA-CB-CG	8.13	134.00	115.30
2	E	131	LEU	CA-CB-CG	8.13	134.00	115.30
2	I	131	LEU	CA-CB-CG	8.13	134.00	115.30
2	E	4639	MET	C-N-CA	6.84	138.79	121.70
2	B	4639	MET	C-N-CA	6.82	138.75	121.70
2	E	1676	LEU	CA-CB-CG	6.81	130.97	115.30
2	I	4639	MET	C-N-CA	6.81	138.73	121.70
2	G	4639	MET	C-N-CA	6.81	138.72	121.70
2	B	1676	LEU	CA-CB-CG	6.81	130.95	115.30
2	I	1676	LEU	CA-CB-CG	6.80	130.94	115.30
2	G	1676	LEU	CA-CB-CG	6.80	130.94	115.30
2	G	1600	LEU	CA-CB-CG	6.27	129.73	115.30
2	E	1600	LEU	CA-CB-CG	6.26	129.71	115.30
2	B	1600	LEU	CA-CB-CG	6.25	129.69	115.30
2	I	1600	LEU	CA-CB-CG	6.25	129.68	115.30
2	B	2290	LEU	CA-CB-CG	6.02	129.15	115.30
2	E	2290	LEU	CA-CB-CG	6.01	129.13	115.30
2	I	2290	LEU	CA-CB-CG	6.00	129.11	115.30
2	G	2290	LEU	CA-CB-CG	6.00	129.09	115.30
2	G	1667	LEU	CA-CB-CG	5.85	128.75	115.30
2	E	1667	LEU	CA-CB-CG	5.85	128.75	115.30
2	B	1667	LEU	CA-CB-CG	5.84	128.74	115.30
2	I	1667	LEU	CA-CB-CG	5.83	128.71	115.30
2	B	4985	LEU	CA-CB-CG	5.66	128.31	115.30
2	I	4985	LEU	CA-CB-CG	5.65	128.29	115.30
2	E	4985	LEU	CA-CB-CG	5.65	128.29	115.30
2	G	4985	LEU	CA-CB-CG	5.62	128.23	115.30
2	B	2291	GLN	C-N-CA	5.47	135.38	121.70
2	E	2291	GLN	C-N-CA	5.45	135.34	121.70
2	G	2291	GLN	C-N-CA	5.44	135.29	121.70
2	I	2291	GLN	C-N-CA	5.42	135.25	121.70
2	B	977	LEU	CA-CB-CG	5.26	127.41	115.30
2	E	977	LEU	CA-CB-CG	5.26	127.39	115.30
2	I	977	LEU	CA-CB-CG	5.25	127.38	115.30
2	G	977	LEU	CA-CB-CG	5.24	127.36	115.30
2	E	688	LEU	CA-CB-CG	5.23	127.34	115.30
2	I	688	LEU	CA-CB-CG	5.23	127.33	115.30
2	G	688	LEU	CA-CB-CG	5.22	127.31	115.30
2	B	688	LEU	CA-CB-CG	5.22	127.30	115.30
2	G	1703	LEU	CA-CB-CG	5.19	127.24	115.30
2	B	4233	LEU	CA-CB-CG	5.19	127.23	115.30
2	E	1703	LEU	CA-CB-CG	5.19	127.23	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	4233	LEU	CA-CB-CG	5.18	127.22	115.30
2	I	1703	LEU	CA-CB-CG	5.18	127.22	115.30
2	B	1703	LEU	CA-CB-CG	5.18	127.21	115.30
2	E	4233	LEU	CA-CB-CG	5.18	127.21	115.30
2	I	4233	LEU	CA-CB-CG	5.17	127.20	115.30
2	G	4901	ILE	CG1-CB-CG2	-5.04	100.32	111.40
2	B	4901	ILE	CG1-CB-CG2	-5.04	100.32	111.40
2	I	4901	ILE	CG1-CB-CG2	-5.02	100.36	111.40
2	E	4901	ILE	CG1-CB-CG2	-5.01	100.38	111.40

There are no chirality outliers.

All (80) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	8	SER	Peptide
1	A	82	TYR	Peptide
2	B	1676	LEU	Peptide
2	B	1690	ASP	Peptide
2	B	1720	LEU	Peptide
2	B	1795	PRO	Peptide
2	B	1828	ASP	Peptide
2	B	1840	PRO	Peptide
2	B	2291	GLN	Peptide
2	B	2343	GLY	Peptide
2	B	2472	LEU	Peptide
2	B	2807	TRP	Peptide
2	B	312	THR	Peptide
2	B	3971	GLY	Peptide
2	B	4096	ALA	Peptide
2	B	4641	PRO	Peptide
2	B	4666	VAL	Peptide
2	B	4807	PHE	Peptide
2	B	694	PRO	Peptide
2	B	808	TYR	Peptide
2	E	1676	LEU	Peptide
2	E	1690	ASP	Peptide
2	E	1720	LEU	Peptide
2	E	1795	PRO	Peptide
2	E	1828	ASP	Peptide
2	E	1840	PRO	Peptide
2	E	2291	GLN	Peptide
2	E	2343	GLY	Peptide

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Mol	Chain	Res	Type	Group
2	E	2472	LEU	Peptide
2	E	2807	TRP	Peptide
2	E	312	THR	Peptide
2	E	3971	GLY	Peptide
2	E	4096	ALA	Peptide
2	E	4641	PRO	Peptide
2	E	4666	VAL	Peptide
2	E	4807	PHE	Peptide
2	E	694	PRO	Peptide
2	E	808	TYR	Peptide
1	F	8	SER	Peptide
1	F	82	TYR	Peptide
2	G	1676	LEU	Peptide
2	G	1690	ASP	Peptide
2	G	1720	LEU	Peptide
2	G	1795	PRO	Peptide
2	G	1828	ASP	Peptide
2	G	1840	PRO	Peptide
2	G	2291	GLN	Peptide
2	G	2343	GLY	Peptide
2	G	2472	LEU	Peptide
2	G	2807	TRP	Peptide
2	G	312	THR	Peptide
2	G	3971	GLY	Peptide
2	G	4096	ALA	Peptide
2	G	4641	PRO	Peptide
2	G	4666	VAL	Peptide
2	G	4807	PHE	Peptide
2	G	694	PRO	Peptide
2	G	808	TYR	Peptide
1	H	8	SER	Peptide
1	H	82	TYR	Peptide
2	I	1676	LEU	Peptide
2	I	1690	ASP	Peptide
2	I	1720	LEU	Peptide
2	I	1795	PRO	Peptide
2	I	1828	ASP	Peptide
2	I	1840	PRO	Peptide
2	I	2291	GLN	Peptide
2	I	2343	GLY	Peptide
2	I	2472	LEU	Peptide
2	I	2807	TRP	Peptide

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Mol	Chain	Res	Type	Group
2	I	312	THR	Peptide
2	I	3971	GLY	Peptide
2	I	4096	ALA	Peptide
2	I	4641	PRO	Peptide
2	I	4666	VAL	Peptide
2	I	4807	PHE	Peptide
2	I	694	PRO	Peptide
2	I	808	TYR	Peptide
1	J	8	SER	Peptide
1	J	82	TYR	Peptide

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	818	0	824	10	0
1	F	818	0	824	10	0
1	H	818	0	824	11	0
1	J	818	0	824	11	0
2	B	29499	0	24752	242	0
2	E	29499	0	24752	242	0
2	G	29499	0	24752	241	0
2	I	29499	0	24752	243	0
3	B	31	0	12	1	0
3	E	31	0	12	0	0
3	G	31	0	12	0	0
3	I	31	0	12	0	0
4	B	14	0	10	1	0
4	E	14	0	10	1	0
4	G	14	0	10	1	0
4	I	14	0	10	1	0
5	B	1	0	0	0	0
5	E	1	0	0	0	0
5	G	1	0	0	0	0
5	I	1	0	0	0	0
6	B	1	0	0	0	0
6	E	1	0	0	0	0
6	G	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	I	1	0	0	0	0
All	All	121456	0	102392	986	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 4.

All (986) 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)
2:G:646:PRO:HD2	2:G:779:PRO:HB2	1.73	0.70
2:I:379:HIS:HD2	2:I:382:GLY:H	1.40	0.69
2:G:379:HIS:HD2	2:G:382:GLY:H	1.40	0.69
2:B:646:PRO:HD2	2:B:779:PRO:HB2	1.73	0.69
2:G:641:VAL:HG21	2:G:705:ASN:HA	1.75	0.69
2:I:641:VAL:HG21	2:I:705:ASN:HA	1.75	0.69
2:I:646:PRO:HD2	2:I:779:PRO:HB2	1.74	0.68
2:E:646:PRO:HD2	2:E:779:PRO:HB2	1.73	0.68
2:B:745:SER:HB2	2:B:758:ARG:HB3	1.76	0.67
2:I:745:SER:HB2	2:I:758:ARG:HB3	1.76	0.67
2:G:745:SER:HB2	2:G:758:ARG:HB3	1.76	0.67
2:B:641:VAL:HG21	2:B:705:ASN:HA	1.75	0.67
2:E:745:SER:HB2	2:E:758:ARG:HB3	1.76	0.67
2:B:379:HIS:HD2	2:B:382:GLY:H	1.40	0.67
2:E:641:VAL:HG21	2:E:705:ASN:HA	1.75	0.67
2:G:1691:GLN:HE22	2:G:1802:ILE:HG12	1.60	0.67
2:E:379:HIS:HD2	2:E:382:GLY:H	1.40	0.66
2:G:219:VAL:HG13	2:G:285:VAL:HG21	1.78	0.66
2:B:3984:ARG:HH22	2:I:161:GLU:HA	1.59	0.66
2:E:219:VAL:HG13	2:E:285:VAL:HG21	1.78	0.66
2:E:1691:GLN:HE22	2:E:1802:ILE:HG12	1.61	0.65
2:I:1691:GLN:HE22	2:I:1802:ILE:HG12	1.60	0.65
2:B:1691:GLN:HE22	2:B:1802:ILE:HG12	1.60	0.64
2:B:219:VAL:HG13	2:B:285:VAL:HG21	1.78	0.64
2:I:219:VAL:HG13	2:I:285:VAL:HG21	1.78	0.64
2:I:3937:TYR:O	2:I:4002:LYS:NZ	2.31	0.64
2:E:3937:TYR:O	2:E:4002:LYS:NZ	2.31	0.63
2:G:3937:TYR:O	2:G:4002:LYS:NZ	2.31	0.63
2:E:683:ARG:HG2	2:E:717:ASP:HB3	1.81	0.62
2:B:3937:TYR:O	2:B:4002:LYS:NZ	2.31	0.62
2:I:683:ARG:HG2	2:I:717:ASP:HB3	1.81	0.62
2:I:1260:MET:HB2	2:I:1269:CYS:H	1.64	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:1260:MET:HB2	2:G:1269:CYS:H	1.64	0.62
2:B:1260:MET:HB2	2:B:1269:CYS:H	1.64	0.61
2:B:1703:LEU:HD12	2:B:1708:ARG:HB2	1.83	0.61
2:I:1703:LEU:HD12	2:I:1708:ARG:HB2	1.83	0.61
2:B:683:ARG:HG2	2:B:717:ASP:HB3	1.81	0.61
2:E:1703:LEU:HD12	2:E:1708:ARG:HB2	1.83	0.61
2:G:683:ARG:HG2	2:G:717:ASP:HB3	1.81	0.61
2:G:1703:LEU:HD12	2:G:1708:ARG:HB2	1.82	0.60
2:E:1260:MET:HB2	2:E:1269:CYS:H	1.64	0.60
2:B:2347:GLU:O	2:B:2351:ASN:N	2.31	0.60
2:I:331:VAL:HG12	2:I:333:GLY:H	1.66	0.60
2:G:331:VAL:HG12	2:G:333:GLY:H	1.66	0.60
2:B:331:VAL:HG12	2:B:333:GLY:H	1.67	0.60
2:E:2770:LYS:HB3	2:E:2775:TRP:HB2	1.84	0.59
2:G:788:LYS:HG2	2:G:1630:CYS:H	1.68	0.59
2:B:2770:LYS:HB3	2:B:2775:TRP:HB2	1.84	0.59
2:E:331:VAL:HG12	2:E:333:GLY:H	1.67	0.59
2:E:609:CYS:SG	2:E:610:ASN:N	2.76	0.59
2:B:1519:UNK:HA	2:B:1526:UNK:HA	1.85	0.59
2:I:788:LYS:HG2	2:I:1630:CYS:H	1.68	0.59
2:G:2347:GLU:O	2:G:2351:ASN:N	2.31	0.59
2:B:1721:GLU:OE2	2:B:1725:ARG:NH2	2.36	0.59
2:E:788:LYS:HG2	2:E:1630:CYS:H	1.68	0.58
2:I:2755:ILE:HD13	2:I:2810:LYS:HG2	1.85	0.58
2:G:609:CYS:SG	2:G:610:ASN:N	2.76	0.58
2:G:2770:LYS:HB3	2:G:2775:TRP:HB2	1.84	0.58
2:B:2755:ILE:HD13	2:B:2810:LYS:HG2	1.85	0.58
2:B:664:PHE:HB2	2:B:746:CYS:HB2	1.85	0.58
2:G:309:THR:O	2:G:313:SER:OG	2.22	0.58
2:B:626:LEU:HG	2:B:628:GLY:H	1.68	0.58
2:E:1671:ARG:NH2	2:E:1710:GLY:O	2.37	0.58
2:E:2755:ILE:HD13	2:E:2810:LYS:HG2	1.85	0.58
2:E:1519:UNK:HA	2:E:1526:UNK:HA	1.85	0.58
2:I:2748:PRO:HD2	2:I:2751:LEU:HD12	1.86	0.58
2:G:2755:ILE:HD13	2:G:2810:LYS:HG2	1.85	0.58
2:E:309:THR:O	2:E:313:SER:OG	2.22	0.58
2:I:609:CYS:SG	2:I:610:ASN:N	2.76	0.58
2:I:2770:LYS:HB3	2:I:2775:TRP:HB2	1.84	0.58
2:G:2748:PRO:HD2	2:G:2751:LEU:HD12	1.86	0.58
2:B:609:CYS:SG	2:B:610:ASN:N	2.76	0.58
2:B:1671:ARG:NH2	2:B:1710:GLY:O	2.37	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:1671:ARG:NH2	2:G:1710:GLY:O	2.37	0.58
2:E:2748:PRO:HD2	2:E:2751:LEU:HD12	1.86	0.58
2:I:664:PHE:HB2	2:I:746:CYS:HB2	1.85	0.58
2:I:3850:GLN:HB3	2:I:3873:LYS:HD3	1.86	0.58
2:B:3850:GLN:HB3	2:B:3873:LYS:HD3	1.86	0.58
2:E:1721:GLU:OE2	2:E:1725:ARG:NH2	2.36	0.58
2:I:1671:ARG:NH2	2:I:1710:GLY:O	2.37	0.58
2:G:664:PHE:HB2	2:G:746:CYS:HB2	1.85	0.58
2:G:671:VAL:HG22	2:G:740:PRO:HG3	1.86	0.57
2:I:626:LEU:HG	2:I:628:GLY:H	1.69	0.57
2:B:671:VAL:HG22	2:B:740:PRO:HG3	1.86	0.57
2:I:1721:GLU:OE2	2:I:1725:ARG:NH2	2.36	0.57
2:G:1519:UNK:HA	2:G:1526:UNK:HA	1.84	0.57
2:G:1721:GLU:OE2	2:G:1725:ARG:NH2	2.36	0.57
2:B:2287:ALA:HA	2:B:2290:LEU:HD13	1.87	0.57
2:I:1519:UNK:HA	2:I:1526:UNK:HA	1.85	0.57
2:I:2347:GLU:O	2:I:2351:ASN:N	2.31	0.57
2:B:788:LYS:HG2	2:B:1630:CYS:H	1.68	0.57
2:B:309:THR:O	2:B:313:SER:OG	2.22	0.57
2:E:2347:GLU:O	2:E:2351:ASN:N	2.31	0.57
2:G:4864:ASN:ND2	2:G:4871:GLU:OE1	2.38	0.57
2:B:1743:ARG:O	2:B:1964:ARG:NH2	2.38	0.57
2:E:671:VAL:HG22	2:E:740:PRO:HG3	1.86	0.57
2:B:4864:ASN:ND2	2:B:4871:GLU:OE1	2.38	0.57
2:I:1700:ASP:OD2	2:I:1708:ARG:NH2	2.38	0.57
2:G:2287:ALA:HA	2:G:2290:LEU:HD13	1.87	0.57
2:B:2748:PRO:HD2	2:B:2751:LEU:HD12	1.86	0.57
2:E:1700:ASP:OD2	2:E:1708:ARG:NH2	2.38	0.57
2:I:309:THR:O	2:I:313:SER:OG	2.22	0.57
2:I:1743:ARG:O	2:I:1964:ARG:NH2	2.38	0.57
2:G:257:ARG:O	2:G:284:HIS:NE2	2.38	0.57
2:G:1700:ASP:OD2	2:G:1708:ARG:NH2	2.38	0.57
2:G:3850:GLN:HB3	2:G:3873:LYS:HD3	1.86	0.57
2:B:257:ARG:O	2:B:284:HIS:NE2	2.37	0.56
2:I:1079:LYS:NZ	2:I:1107:PRO:O	2.38	0.56
2:E:664:PHE:HB2	2:E:746:CYS:HB2	1.85	0.56
2:E:1743:ARG:O	2:E:1964:ARG:NH2	2.38	0.56
2:G:626:LEU:HG	2:G:628:GLY:H	1.68	0.56
2:B:1700:ASP:OD2	2:B:1708:ARG:NH2	2.38	0.56
2:E:626:LEU:HG	2:E:628:GLY:H	1.69	0.56
2:E:3850:GLN:HB3	2:E:3873:LYS:HD3	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:2737:PRO:O	2:I:2888:ARG:NH2	2.38	0.56
2:B:1079:LYS:NZ	2:B:1107:PRO:O	2.38	0.56
2:B:2737:PRO:O	2:B:2888:ARG:NH2	2.39	0.56
2:E:718:GLY:HA3	2:E:737:LEU:HA	1.88	0.56
2:I:257:ARG:O	2:I:284:HIS:NE2	2.38	0.56
2:I:315:CYS:SG	2:I:316:PHE:N	2.79	0.56
2:I:675:LEU:HD11	2:I:1633:PRO:HB3	1.88	0.56
2:G:614:VAL:HG22	2:G:616:SER:H	1.70	0.56
2:G:2737:PRO:O	2:G:2888:ARG:NH2	2.38	0.56
2:B:2326:CYS:SG	2:B:2327:GLY:N	2.79	0.56
2:I:4743:MET:HB3	2:I:4746:ALA:HB3	1.88	0.56
2:G:315:CYS:SG	2:G:316:PHE:N	2.79	0.56
2:B:4996:ILE:HG12	4:B:5102:CFF:H123	1.87	0.56
2:I:2287:ALA:HA	2:I:2290:LEU:HD13	1.87	0.56
2:I:2326:CYS:SG	2:I:2327:GLY:N	2.79	0.56
1:H:27:THR:HB	1:H:100:ASP:HB3	1.88	0.56
1:J:42:ARG:HG2	2:I:1691:GLN:HG2	1.86	0.56
2:I:671:VAL:HG22	2:I:740:PRO:HG3	1.86	0.56
2:G:675:LEU:HD11	2:G:1633:PRO:HB3	1.88	0.56
2:G:718:GLY:HA3	2:G:737:LEU:HA	1.88	0.56
2:G:4743:MET:HB3	2:G:4746:ALA:HB3	1.88	0.56
2:E:2287:ALA:HA	2:E:2290:LEU:HD13	1.87	0.56
2:I:614:VAL:HG22	2:I:616:SER:H	1.70	0.56
2:G:132:ALA:HA	2:G:194:SER:HB2	1.88	0.56
2:E:2737:PRO:O	2:E:2888:ARG:NH2	2.38	0.56
2:E:4673:ARG:HH22	2:E:4698:LYS:HB2	1.71	0.56
2:E:4996:ILE:HG12	4:E:5102:CFF:H123	1.88	0.56
2:I:533:ASN:ND2	2:I:536:ASN:OD1	2.38	0.56
2:I:4673:ARG:HH22	2:I:4698:LYS:HB2	1.71	0.56
1:A:27:THR:HB	1:A:100:ASP:HB3	1.88	0.55
2:E:2326:CYS:SG	2:E:2327:GLY:N	2.79	0.55
2:E:4864:ASN:ND2	2:E:4871:GLU:OE1	2.38	0.55
2:I:4864:ASN:ND2	2:I:4871:GLU:OE1	2.38	0.55
2:E:315:CYS:SG	2:E:316:PHE:N	2.79	0.55
2:E:3971:GLY:H	2:E:5005:GLY:HA3	1.71	0.55
2:G:1743:ARG:O	2:G:1964:ARG:NH2	2.38	0.55
2:G:2326:CYS:SG	2:G:2327:GLY:N	2.79	0.55
2:B:2827:ARG:HH21	2:B:2931:GLN:HG3	1.72	0.55
2:I:3984:ARG:HH22	2:G:161:GLU:HA	1.71	0.55
2:B:675:LEU:HD11	2:B:1633:PRO:HB3	1.88	0.55
2:E:161:GLU:HA	2:G:3984:ARG:HH22	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1079:LYS:NZ	2:E:1107:PRO:O	2.38	0.55
2:I:132:ALA:HA	2:I:194:SER:HB2	1.88	0.55
2:I:4996:ILE:HG12	4:I:5102:CFF:H123	1.89	0.55
2:G:4996:ILE:HG12	4:G:5102:CFF:H123	1.88	0.55
2:B:488:LEU:HD23	2:B:491:ILE:HD12	1.89	0.55
2:B:3971:GLY:H	2:B:5005:GLY:HA3	1.71	0.55
2:E:257:ARG:O	2:E:284:HIS:NE2	2.38	0.55
2:E:2739:PRO:HB3	2:E:2884:ASN:HB3	1.89	0.55
2:E:3773:ARG:HG3	2:E:3815:LYS:HZ3	1.71	0.55
2:B:315:CYS:SG	2:B:316:PHE:N	2.79	0.55
2:E:2827:ARG:HH21	2:E:2931:GLN:HG3	1.72	0.55
2:I:2827:ARG:HH21	2:I:2931:GLN:HG3	1.72	0.55
2:G:1079:LYS:NZ	2:G:1107:PRO:O	2.38	0.55
2:G:2827:ARG:HH21	2:G:2931:GLN:HG3	1.72	0.55
2:I:488:LEU:HD23	2:I:491:ILE:HD12	1.89	0.55
2:I:2739:PRO:HB3	2:I:2884:ASN:HB3	1.89	0.55
2:G:4673:ARG:HH22	2:G:4698:LYS:HB2	1.71	0.55
2:E:4743:MET:HB3	2:E:4746:ALA:HB3	1.88	0.55
2:E:4860:ARG:HD2	2:G:4582:VAL:HG11	1.89	0.55
2:I:4232:GLU:OE2	2:I:5017:ARG:NH1	2.40	0.55
2:G:488:LEU:HD23	2:G:491:ILE:HD12	1.89	0.55
2:B:614:VAL:HG22	2:B:616:SER:H	1.71	0.55
2:B:4743:MET:HB3	2:B:4746:ALA:HB3	1.88	0.55
2:I:4582:VAL:HG11	2:G:4860:ARG:HD2	1.88	0.55
1:F:42:ARG:HG2	2:E:1691:GLN:HG2	1.88	0.55
2:B:2739:PRO:HB3	2:B:2884:ASN:HB3	1.89	0.55
1:F:27:THR:HB	1:F:100:ASP:HB3	1.88	0.54
2:E:132:ALA:HA	2:E:194:SER:HB2	1.88	0.54
2:I:3971:GLY:H	2:I:5005:GLY:HA3	1.71	0.54
2:G:4232:GLU:OE2	2:G:5017:ARG:NH1	2.40	0.54
2:B:161:GLU:HA	2:E:3984:ARG:HH22	1.73	0.54
2:B:718:GLY:HA3	2:B:737:LEU:HA	1.88	0.54
2:E:4232:GLU:OE2	2:E:5017:ARG:NH1	2.40	0.54
2:B:4232:GLU:OE2	2:B:5017:ARG:NH1	2.40	0.54
2:E:675:LEU:HD11	2:E:1633:PRO:HB3	1.88	0.54
2:I:718:GLY:HA3	2:I:737:LEU:HA	1.88	0.54
2:B:111:HIS:CD2	2:B:114:SER:H	2.26	0.54
2:E:488:LEU:HD23	2:E:491:ILE:HD12	1.89	0.54
2:I:111:HIS:CD2	2:I:114:SER:H	2.26	0.54
2:G:2739:PRO:HB3	2:G:2884:ASN:HB3	1.89	0.54
2:G:3971:GLY:H	2:G:5005:GLY:HA3	1.71	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:27:THR:HB	1:J:100:ASP:HB3	1.88	0.54
1:J:76:CYS:HB2	1:J:97:LEU:HB2	1.90	0.54
2:B:497:TYR:HB3	2:B:500:ALA:HB2	1.89	0.54
2:E:614:VAL:HG22	2:E:616:SER:H	1.71	0.54
2:E:4924:VAL:HG23	2:E:4925:ILE:HG12	1.90	0.54
2:B:132:ALA:HA	2:B:194:SER:HB2	1.88	0.54
2:E:111:HIS:HD2	2:E:114:SER:H	1.56	0.54
2:E:111:HIS:CD2	2:E:114:SER:H	2.26	0.54
2:G:4924:VAL:HG23	2:G:4925:ILE:HG12	1.90	0.54
2:B:111:HIS:HD2	2:B:114:SER:H	1.56	0.54
2:I:2143:THR:O	2:I:3651:ASN:ND2	2.38	0.54
2:I:497:TYR:HB3	2:I:500:ALA:HB2	1.89	0.54
2:B:4673:ARG:HH22	2:B:4698:LYS:HB2	1.71	0.54
1:H:76:CYS:HB2	1:H:97:LEU:HB2	1.90	0.53
2:E:359:TYR:HA	2:E:376:ALA:HA	1.90	0.53
1:A:76:CYS:HB2	1:A:97:LEU:HB2	1.90	0.53
2:B:4924:VAL:HG23	2:B:4925:ILE:HG12	1.90	0.53
2:I:111:HIS:HD2	2:I:114:SER:H	1.56	0.53
2:I:4924:VAL:HG23	2:I:4925:ILE:HG12	1.90	0.53
2:G:111:HIS:CD2	2:G:114:SER:H	2.26	0.53
2:G:359:TYR:HA	2:G:376:ALA:HA	1.90	0.53
2:G:533:ASN:ND2	2:G:536:ASN:OD1	2.38	0.53
2:B:19:GLU:HB2	2:B:206:CYS:HB3	1.91	0.53
2:B:1663:HIS:HD2	2:B:1707:LEU:HD11	1.74	0.53
2:G:111:HIS:HD2	2:G:114:SER:H	1.56	0.53
2:G:3781:GLN:HA	2:G:3784:SER:HB3	1.91	0.53
2:B:2803:GLU:OE2	2:B:2806:ARG:NH1	2.42	0.53
2:E:776:LEU:HG	2:E:848:HIS:HA	1.91	0.53
2:I:470:SER:O	2:I:474:ARG:NE	2.38	0.53
2:E:707:VAL:HG23	2:E:713:SER:HB2	1.91	0.53
2:B:533:ASN:ND2	2:B:536:ASN:OD1	2.38	0.53
2:E:497:TYR:HB3	2:E:500:ALA:HB2	1.89	0.53
2:E:3781:GLN:HA	2:E:3784:SER:HB3	1.91	0.53
2:I:19:GLU:HB2	2:I:206:CYS:HB3	1.91	0.53
2:B:4944:ARG:HH12	2:I:4942:GLU:HB2	1.74	0.53
2:E:1663:HIS:HD2	2:E:1707:LEU:HD11	1.74	0.53
2:G:497:TYR:HB3	2:G:500:ALA:HB2	1.89	0.53
1:F:76:CYS:HB2	1:F:97:LEU:HB2	1.90	0.53
2:E:2803:GLU:OE2	2:E:2806:ARG:NH1	2.42	0.53
2:I:1663:HIS:HD2	2:I:1707:LEU:HD11	1.74	0.53
2:G:2803:GLU:OE2	2:G:2806:ARG:NH1	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:110:ARG:HH21	2:E:115:ARG:HB3	1.74	0.52
2:I:2803:GLU:OE2	2:I:2806:ARG:NH1	2.42	0.52
2:G:4924:VAL:HA	2:G:4928:LEU:HB2	1.91	0.52
2:B:776:LEU:HG	2:B:848:HIS:HA	1.91	0.52
2:E:533:ASN:ND2	2:E:536:ASN:OD1	2.38	0.52
2:I:3781:GLN:HA	2:I:3784:SER:HB3	1.91	0.52
2:B:707:VAL:HG23	2:B:713:SER:HB2	1.91	0.52
2:B:110:ARG:HH21	2:B:115:ARG:HB3	1.74	0.52
2:B:359:TYR:HA	2:B:376:ALA:HA	1.90	0.52
2:G:1663:HIS:HD2	2:G:1707:LEU:HD11	1.74	0.52
2:B:2420:HIS:ND1	2:B:2493:UNK:O	2.42	0.52
2:E:4924:VAL:HA	2:E:4928:LEU:HB2	1.91	0.52
2:I:359:TYR:HA	2:I:376:ALA:HA	1.90	0.52
2:B:4924:VAL:HA	2:B:4928:LEU:HB2	1.91	0.52
2:G:19:GLU:HB2	2:G:206:CYS:HB3	1.91	0.52
2:E:19:GLU:HB2	2:E:206:CYS:HB3	1.91	0.52
2:I:707:VAL:HG23	2:I:713:SER:HB2	1.91	0.52
2:I:4924:VAL:HA	2:I:4928:LEU:HB2	1.91	0.52
2:B:3781:GLN:HA	2:B:3784:SER:HB3	1.91	0.52
2:E:426:ARG:HB2	2:E:506:TYR:HA	1.92	0.52
2:E:2420:HIS:ND1	2:E:2493:UNK:O	2.43	0.52
2:I:776:LEU:HG	2:I:848:HIS:HA	1.91	0.52
2:B:1764:GLY:HA3	2:B:1859:VAL:HG11	1.93	0.51
2:I:719:LEU:HD22	2:I:735:GLN:HG2	1.92	0.51
2:I:1707:LEU:HG	2:I:1708:ARG:HG3	1.92	0.51
2:I:1764:GLY:HA3	2:I:1859:VAL:HG11	1.93	0.51
2:I:282:ILE:HD12	2:I:314:PHE:HD2	1.76	0.51
2:G:1707:LEU:HG	2:G:1708:ARG:HG3	1.92	0.51
2:G:282:ILE:HD12	2:G:314:PHE:HD2	1.76	0.51
2:G:426:ARG:HB2	2:G:506:TYR:HA	1.92	0.51
2:G:776:LEU:HG	2:G:848:HIS:HA	1.91	0.51
2:E:282:ILE:HD12	2:E:314:PHE:HD2	1.76	0.51
2:E:4843:LEU:HD12	2:G:4823:LEU:HD23	1.92	0.51
2:I:1078:GLU:HG3	2:I:1237:TRP:HE1	1.76	0.51
2:I:1259:ARG:HH12	2:I:1593:PRO:HA	1.76	0.51
2:I:4674:GLU:HB3	2:I:4715:TYR:HB2	1.93	0.51
2:G:707:VAL:HG23	2:G:713:SER:HB2	1.91	0.51
2:I:2226:PRO:HA	2:I:2229:VAL:HG12	1.93	0.51
2:G:1259:ARG:HH12	2:G:1593:PRO:HA	1.76	0.51
2:B:1259:ARG:HH12	2:B:1593:PRO:HA	1.76	0.51
2:B:2226:PRO:HA	2:B:2229:VAL:HG12	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:637:LEU:HD23	2:E:1637:MET:HB3	1.93	0.51
2:I:2420:HIS:ND1	2:I:2493:UNK:O	2.43	0.51
2:B:637:LEU:HD23	2:B:1637:MET:HB3	1.93	0.51
2:E:1259:ARG:HH12	2:E:1593:PRO:HA	1.76	0.51
2:E:1764:GLY:HA3	2:E:1859:VAL:HG11	1.93	0.51
2:I:110:ARG:HH21	2:I:115:ARG:HB3	1.74	0.51
2:G:719:LEU:HD22	2:G:735:GLN:HG2	1.92	0.51
1:H:42:ARG:HG2	2:G:1691:GLN:HG2	1.91	0.51
2:G:110:ARG:HH21	2:G:115:ARG:HB3	1.74	0.51
1:F:87:HIS:HD2	1:F:90:VAL:HB	1.76	0.51
2:E:719:LEU:HD22	2:E:735:GLN:HG2	1.92	0.51
2:E:2226:PRO:HA	2:E:2229:VAL:HG12	1.93	0.51
2:G:637:LEU:HD23	2:G:1637:MET:HB3	1.93	0.51
2:B:426:ARG:HB2	2:B:506:TYR:HA	1.92	0.50
2:B:4674:GLU:HB3	2:B:4715:TYR:HB2	1.92	0.50
2:E:4674:GLU:HB3	2:E:4715:TYR:HB2	1.92	0.50
2:G:1764:GLY:HA3	2:G:1859:VAL:HG11	1.93	0.50
2:G:2042:CYS:SG	2:G:2043:GLY:N	2.84	0.50
2:B:282:ILE:HD12	2:B:314:PHE:HD2	1.76	0.50
2:B:886:ARG:HB3	2:B:891:TRP:HB2	1.94	0.50
2:B:1078:GLU:HG3	2:B:1237:TRP:HE1	1.76	0.50
2:E:2131:LEU:HB3	2:E:3662:ILE:HD13	1.93	0.50
2:I:637:LEU:HD23	2:I:1637:MET:HB3	1.93	0.50
2:G:886:ARG:HB3	2:G:891:TRP:HB2	1.94	0.50
2:B:1707:LEU:HG	2:B:1708:ARG:HG3	1.92	0.50
2:I:2131:LEU:HB3	2:I:3662:ILE:HD13	1.93	0.50
2:B:470:SER:O	2:B:474:ARG:NE	2.38	0.50
2:B:520:ASN:ND2	2:B:555:GLU:OE2	2.45	0.50
2:E:520:ASN:ND2	2:E:555:GLU:OE2	2.45	0.50
2:I:426:ARG:HB2	2:I:506:TYR:HA	1.92	0.50
2:G:520:ASN:ND2	2:G:555:GLU:OE2	2.45	0.50
1:F:2:VAL:HG21	1:F:61:GLU:HB2	1.94	0.50
2:E:1078:GLU:HG3	2:E:1237:TRP:HE1	1.76	0.50
2:E:1707:LEU:HG	2:E:1708:ARG:HG3	1.92	0.50
2:I:942:ALA:HB2	2:I:1052:ASN:HB2	1.94	0.50
2:I:4228:ALA:O	2:I:4232:GLU:N	2.43	0.50
2:G:1078:GLU:HG3	2:G:1237:TRP:HE1	1.76	0.50
2:G:2131:LEU:HB3	2:G:3662:ILE:HD13	1.93	0.50
2:G:2226:PRO:HA	2:G:2229:VAL:HG12	1.93	0.50
2:G:2420:HIS:ND1	2:G:2493:UNK:O	2.43	0.50
2:B:1718:ILE:HG13	2:B:1719:HIS:CD2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:886:ARG:HB3	2:E:891:TRP:HB2	1.94	0.50
2:I:451:TYR:O	2:I:474:ARG:NH1	2.39	0.50
2:I:520:ASN:ND2	2:I:555:GLU:OE2	2.45	0.50
2:I:886:ARG:HB3	2:I:891:TRP:HB2	1.93	0.50
2:I:3772:THR:OG1	2:I:3815:LYS:NZ	2.36	0.50
2:G:1718:ILE:HG13	2:G:1719:HIS:CD2	2.46	0.50
1:A:42:ARG:HG2	2:B:1691:GLN:HG2	1.93	0.50
2:B:485:SER:O	2:B:489:ASN:N	2.37	0.50
2:E:2042:CYS:SG	2:E:2043:GLY:N	2.84	0.50
2:B:2131:LEU:HB3	2:B:3662:ILE:HD13	1.93	0.50
2:E:698:GLY:HA2	2:E:703:GLY:HA2	1.94	0.50
2:E:3772:THR:OG1	2:E:3815:LYS:NZ	2.36	0.50
2:I:1718:ILE:HG13	2:I:1719:HIS:CD2	2.46	0.50
1:J:87:HIS:HD2	1:J:90:VAL:HB	1.76	0.50
2:B:4582:VAL:HG11	2:I:4860:ARG:HD2	1.94	0.50
2:I:4886:HIS:O	2:I:4890:GLY:N	2.45	0.50
2:G:4674:GLU:HB3	2:G:4715:TYR:HB2	1.92	0.50
2:B:698:GLY:HA2	2:B:703:GLY:HA2	1.94	0.49
2:B:3772:THR:OG1	2:B:3815:LYS:NZ	2.36	0.49
2:I:2042:CYS:SG	2:I:2043:GLY:N	2.84	0.49
2:I:2231:SER:HA	2:I:2234:ARG:HG2	1.94	0.49
2:G:2199:ARG:NH2	2:G:2246:ASN:OD1	2.45	0.49
1:H:2:VAL:HG21	1:H:61:GLU:HB2	1.94	0.49
2:B:2231:SER:HA	2:B:2234:ARG:HG2	1.94	0.49
2:B:3955:MET:HG3	2:B:4019:LEU:HD22	1.93	0.49
2:E:219:VAL:O	2:E:392:ARG:NH1	2.45	0.49
2:E:1718:ILE:HG13	2:E:1719:HIS:CD2	2.46	0.49
2:I:219:VAL:O	2:I:392:ARG:NH1	2.45	0.49
2:G:2143:THR:O	2:G:3651:ASN:ND2	2.38	0.49
1:A:87:HIS:HD2	1:A:90:VAL:HB	1.76	0.49
2:E:4798:MET:HA	2:E:4801:LEU:HB2	1.95	0.49
2:I:2199:ARG:NH2	2:I:2246:ASN:OD1	2.45	0.49
2:B:942:ALA:HB2	2:B:1052:ASN:HB2	1.94	0.49
1:H:87:HIS:HD2	1:H:90:VAL:HB	1.76	0.49
1:J:21:THR:HA	1:J:49:ARG:HA	1.94	0.49
2:B:719:LEU:HD22	2:B:735:GLN:HG2	1.93	0.49
2:B:2199:ARG:NH2	2:B:2246:ASN:OD1	2.45	0.49
2:B:2758:PHE:O	2:B:2762:THR:N	2.44	0.49
2:E:1152:MET:HB2	2:E:1161:ILE:HB	1.95	0.49
2:E:2231:SER:HA	2:E:2234:ARG:HG2	1.94	0.49
2:E:3955:MET:HG3	2:E:4019:LEU:HD22	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:210:GLU:HG3	2:I:337:PRO:HG3	1.94	0.49
2:I:596:ASN:HB3	2:I:599:VAL:HG22	1.95	0.49
2:I:4823:LEU:HD23	2:G:4843:LEU:HD12	1.95	0.49
2:G:1516:UNK:N	2:G:1529:UNK:O	2.46	0.49
2:G:2231:SER:HA	2:G:2234:ARG:HG2	1.94	0.49
2:B:978:THR:HB	2:B:980:ALA:H	1.77	0.49
2:I:2104:ARG:HA	2:I:2107:GLN:HB3	1.95	0.49
2:G:219:VAL:O	2:G:392:ARG:NH1	2.45	0.49
1:F:23:VAL:HG22	1:F:47:LYS:HG2	1.95	0.49
1:A:2:VAL:HG21	1:A:61:GLU:HB2	1.94	0.49
2:G:1727:ARG:NH2	2:G:1773:PRO:O	2.43	0.49
2:G:4228:ALA:O	2:G:4232:GLU:N	2.43	0.49
2:B:1516:UNK:N	2:B:1529:UNK:O	2.46	0.49
2:E:3842:LEU:O	2:E:3929:SER:OG	2.30	0.49
1:F:21:THR:HA	1:F:49:ARG:HA	1.94	0.49
1:H:23:VAL:HG22	1:H:47:LYS:HG2	1.95	0.49
1:J:23:VAL:HG22	1:J:47:LYS:HG2	1.95	0.49
2:B:1152:MET:HB2	2:B:1161:ILE:HB	1.95	0.49
2:E:1516:UNK:N	2:E:1529:UNK:O	2.46	0.49
2:I:3955:MET:HG3	2:I:4019:LEU:HD22	1.93	0.49
2:G:4798:MET:HA	2:G:4801:LEU:HB2	1.95	0.49
1:H:21:THR:HA	1:H:49:ARG:HA	1.94	0.49
2:B:596:ASN:HB3	2:B:599:VAL:HG22	1.95	0.49
2:E:2199:ARG:NH2	2:E:2246:ASN:OD1	2.45	0.49
2:I:1516:UNK:N	2:I:1529:UNK:O	2.46	0.49
2:G:210:GLU:HG3	2:G:337:PRO:HG3	1.94	0.49
2:B:210:GLU:HG3	2:B:337:PRO:HG3	1.94	0.48
2:B:219:VAL:O	2:B:392:ARG:NH1	2.45	0.48
2:B:2143:THR:O	2:B:3651:ASN:ND2	2.38	0.48
2:E:210:GLU:HG3	2:E:337:PRO:HG3	1.94	0.48
2:E:2337:PHE:HA	2:E:2340:PHE:HB2	1.95	0.48
2:G:942:ALA:HB2	2:G:1052:ASN:HB2	1.94	0.48
1:A:23:VAL:HG22	1:A:47:LYS:HG2	1.95	0.48
1:J:2:VAL:HG21	1:J:61:GLU:HB2	1.94	0.48
2:I:4152:GLU:OE2	2:I:4180:ARG:NH1	2.46	0.48
2:G:1152:MET:HB2	2:G:1161:ILE:HB	1.95	0.48
2:G:2104:ARG:HA	2:G:2107:GLN:HB3	1.95	0.48
2:G:3955:MET:HG3	2:G:4019:LEU:HD22	1.93	0.48
2:B:4228:ALA:O	2:B:4232:GLU:N	2.43	0.48
2:E:942:ALA:HB2	2:E:1052:ASN:HB2	1.94	0.48
1:A:21:THR:HA	1:A:49:ARG:HA	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1973:GLN:O	2:B:1977:TYR:N	2.44	0.48
2:B:4798:MET:HA	2:B:4801:LEU:HB2	1.95	0.48
2:I:698:GLY:HA2	2:I:703:GLY:HA2	1.94	0.48
2:G:395:GLN:HG3	2:G:397:GLU:H	1.79	0.48
2:G:596:ASN:HB3	2:G:599:VAL:HG22	1.95	0.48
2:G:2337:PHE:HA	2:G:2340:PHE:HB2	1.95	0.48
2:B:645:ARG:HH11	2:B:778:PHE:HE1	1.62	0.48
2:B:1727:ARG:NH2	2:B:1773:PRO:O	2.43	0.48
2:B:3842:LEU:O	2:B:3929:SER:OG	2.30	0.48
2:B:4152:GLU:OE2	2:B:4180:ARG:NH1	2.46	0.48
2:E:1727:ARG:NH2	2:E:1773:PRO:O	2.43	0.48
2:I:645:ARG:HH11	2:I:778:PHE:HE1	1.62	0.48
2:G:164:ARG:N	2:G:167:ASP:OD2	2.42	0.48
2:G:698:GLY:HA2	2:G:703:GLY:HA2	1.94	0.48
2:G:1973:GLN:O	2:G:1977:TYR:N	2.44	0.48
2:B:3365:UNK:O	2:B:3369:UNK:N	2.47	0.48
2:E:596:ASN:HB3	2:E:599:VAL:HG22	1.95	0.48
2:E:2104:ARG:HA	2:E:2107:GLN:HB3	1.95	0.48
2:I:2337:PHE:HA	2:I:2340:PHE:HB2	1.95	0.48
2:I:3365:UNK:O	2:I:3369:UNK:N	2.47	0.48
2:E:3365:UNK:O	2:E:3369:UNK:N	2.47	0.48
2:I:1152:MET:HB2	2:I:1161:ILE:HB	1.95	0.48
2:G:972:LEU:O	2:G:1044:ARG:NH2	2.47	0.48
2:B:395:GLN:HG3	2:B:397:GLU:H	1.78	0.48
2:B:1960:ALA:O	2:B:1964:ARG:NE	2.46	0.48
2:E:451:TYR:O	2:E:474:ARG:NH1	2.39	0.48
2:E:978:THR:HB	2:E:980:ALA:H	1.77	0.48
2:E:3889:GLN:OE1	2:E:3960:GLN:NE2	2.46	0.48
2:B:3889:GLN:OE1	2:B:3960:GLN:NE2	2.46	0.48
2:I:978:THR:HB	2:I:980:ALA:H	1.77	0.48
2:I:4798:MET:HA	2:I:4801:LEU:HB2	1.95	0.48
2:G:2862:LEU:HB3	2:G:2928:LYS:HB3	1.96	0.48
2:I:3889:GLN:OE1	2:I:3960:GLN:NE2	2.46	0.48
2:G:978:THR:HB	2:G:980:ALA:H	1.77	0.48
2:B:2862:LEU:HB3	2:B:2928:LYS:HB3	1.96	0.47
2:G:1730:MET:O	2:G:1772:ARG:NH1	2.46	0.47
2:B:451:TYR:O	2:B:474:ARG:NH1	2.39	0.47
2:E:395:GLN:HG3	2:E:397:GLU:H	1.78	0.47
2:E:645:ARG:HH11	2:E:778:PHE:HE1	1.62	0.47
2:E:972:LEU:O	2:E:1044:ARG:NH2	2.47	0.47
2:E:1960:ALA:O	2:E:1964:ARG:NE	2.46	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1973:GLN:O	2:E:1977:TYR:N	2.44	0.47
2:E:4930:ALA:O	2:E:4934:GLY:N	2.47	0.47
2:G:4886:HIS:O	2:G:4890:GLY:N	2.45	0.47
2:B:2104:ARG:HA	2:B:2107:GLN:HB3	1.95	0.47
2:E:463:GLU:OE2	2:E:467:LYS:NZ	2.47	0.47
2:I:1973:GLN:O	2:I:1977:TYR:N	2.44	0.47
2:G:645:ARG:HH11	2:G:778:PHE:HE1	1.62	0.47
2:G:3365:UNK:O	2:G:3369:UNK:N	2.47	0.47
2:G:3889:GLN:OE1	2:G:3960:GLN:NE2	2.46	0.47
1:J:82:TYR:O	1:J:86:GLY:N	2.45	0.47
2:E:2131:LEU:HD23	2:E:3662:ILE:HB	1.97	0.47
2:I:606:LEU:O	2:I:617:ASN:ND2	2.48	0.47
2:G:606:LEU:O	2:G:617:ASN:ND2	2.48	0.47
2:G:4930:ALA:O	2:G:4934:GLY:N	2.47	0.47
2:B:2337:PHE:HA	2:B:2340:PHE:HB2	1.95	0.47
2:B:4930:ALA:O	2:B:4934:GLY:N	2.47	0.47
2:E:3362:UNK:O	2:E:3366:UNK:N	2.48	0.47
2:E:3804:ILE:O	2:E:3809:ASN:ND2	2.48	0.47
2:I:2862:LEU:HB3	2:I:2928:LYS:HB3	1.96	0.47
2:I:4155:PRO:HD2	2:I:5036:LEU:HD23	1.96	0.47
2:G:1960:ALA:O	2:G:1964:ARG:NE	2.46	0.47
2:G:3842:LEU:O	2:G:3929:SER:OG	2.30	0.47
2:G:4152:GLU:OE2	2:G:4180:ARG:NH1	2.47	0.47
2:E:606:LEU:O	2:E:617:ASN:ND2	2.48	0.47
2:E:2143:THR:O	2:E:3651:ASN:ND2	2.38	0.47
2:E:3658:LYS:HA	2:E:3661:TRP:CD2	2.50	0.47
2:I:395:GLN:HG3	2:I:397:GLU:H	1.78	0.47
2:I:3842:LEU:O	2:I:3929:SER:OG	2.30	0.47
2:I:4930:ALA:O	2:I:4934:GLY:N	2.47	0.47
1:J:92:PRO:HD3	2:I:627:PRO:HB2	1.96	0.47
2:B:606:LEU:O	2:B:617:ASN:ND2	2.48	0.47
2:B:2131:LEU:HD23	2:B:3662:ILE:HB	1.96	0.47
2:G:3362:UNK:O	2:G:3366:UNK:N	2.48	0.47
2:G:3658:LYS:HA	2:G:3661:TRP:CD2	2.50	0.47
2:G:3773:ARG:HG3	2:G:3815:LYS:HZ3	1.80	0.47
2:B:290:TYR:O	2:B:302:VAL:N	2.48	0.47
2:E:4152:GLU:OE2	2:E:4180:ARG:NH1	2.47	0.47
2:E:4236:SER:HG	2:E:4675:LYS:HZ1	1.58	0.47
2:I:1095:VAL:HB	2:I:1199:VAL:HG23	1.97	0.47
2:G:157:ARG:HH21	2:G:164:ARG:HD2	1.80	0.47
2:G:913:LEU:O	2:G:918:ARG:NH2	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:2131:LEU:HD23	2:G:3662:ILE:HB	1.96	0.47
2:G:4155:PRO:HD2	2:G:5036:LEU:HD23	1.96	0.47
2:B:972:LEU:O	2:B:1044:ARG:NH2	2.47	0.47
2:B:1095:VAL:HB	2:B:1199:VAL:HG23	1.97	0.47
2:B:4155:PRO:HD2	2:B:5036:LEU:HD23	1.96	0.47
2:E:470:SER:O	2:E:474:ARG:NE	2.39	0.47
2:E:913:LEU:O	2:E:918:ARG:NH2	2.48	0.47
2:E:2862:LEU:HB3	2:E:2928:LYS:HB3	1.96	0.47
2:I:157:ARG:HH21	2:I:164:ARG:HD2	1.80	0.47
2:I:463:GLU:OE2	2:I:467:LYS:NZ	2.47	0.47
2:I:695:TYR:OH	2:I:1073:ARG:NH1	2.45	0.47
2:I:3362:UNK:O	2:I:3366:UNK:N	2.48	0.47
2:G:1698:LEU:N	2:G:1712:TYR:OH	2.48	0.47
2:B:3773:ARG:HG3	2:B:3815:LYS:HZ3	1.80	0.47
2:I:2927:LEU:HD23	2:I:2930:LEU:HD12	1.97	0.47
2:E:290:TYR:O	2:E:302:VAL:N	2.48	0.46
2:E:2002:PRO:HA	2:E:2005:GLN:HB3	1.97	0.46
2:E:4209:GLN:HE22	2:E:4560:TYR:HE2	1.63	0.46
2:E:4860:ARG:HG3	2:E:4876:CYS:HB3	1.98	0.46
2:I:1960:ALA:O	2:I:1964:ARG:NE	2.46	0.46
2:G:463:GLU:OE2	2:G:467:LYS:NZ	2.47	0.46
2:G:4209:GLN:HE22	2:G:4560:TYR:HE2	1.63	0.46
2:B:164:ARG:N	2:B:167:ASP:OD2	2.42	0.46
2:B:463:GLU:OE2	2:B:467:LYS:NZ	2.47	0.46
2:B:3658:LYS:HA	2:B:3661:TRP:CD2	2.50	0.46
2:E:887:ILE:HG21	2:E:959:TYR:HA	1.97	0.46
2:E:4228:ALA:O	2:E:4232:GLU:N	2.43	0.46
2:I:290:TYR:O	2:I:302:VAL:N	2.48	0.46
2:G:887:ILE:HG21	2:G:959:TYR:HA	1.97	0.46
1:H:82:TYR:O	1:H:86:GLY:N	2.45	0.46
2:B:2002:PRO:HA	2:B:2005:GLN:HB3	1.97	0.46
2:E:164:ARG:N	2:E:167:ASP:OD2	2.42	0.46
2:E:236:ALA:HA	2:E:242:ARG:HD2	1.98	0.46
2:E:695:TYR:OH	2:E:1073:ARG:NH1	2.45	0.46
2:E:2299:VAL:O	2:E:2303:ALA:N	2.48	0.46
2:I:887:ILE:HG21	2:I:959:TYR:HA	1.97	0.46
2:I:972:LEU:O	2:I:1044:ARG:NH2	2.47	0.46
2:I:1727:ARG:NH2	2:I:1773:PRO:O	2.42	0.46
2:G:3804:ILE:O	2:G:3809:ASN:ND2	2.48	0.46
2:B:3362:UNK:O	2:B:3366:UNK:N	2.48	0.46
2:B:3804:ILE:O	2:B:3809:ASN:ND2	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:4886:HIS:O	2:E:4890:GLY:N	2.45	0.46
2:I:913:LEU:O	2:I:918:ARG:NH2	2.48	0.46
2:I:1730:MET:O	2:I:1772:ARG:NH1	2.46	0.46
2:I:3804:ILE:O	2:I:3809:ASN:ND2	2.48	0.46
2:I:4687:TYR:OH	2:I:4699:GLY:O	2.33	0.46
2:B:157:ARG:HH21	2:B:164:ARG:HD2	1.80	0.46
2:B:2295:LEU:HA	2:B:2298:VAL:HG22	1.97	0.46
2:E:1698:LEU:N	2:E:1712:TYR:OH	2.48	0.46
2:E:1730:MET:O	2:E:1772:ARG:NH1	2.46	0.46
2:E:4687:TYR:OH	2:E:4699:GLY:O	2.33	0.46
2:I:1698:LEU:N	2:I:1712:TYR:OH	2.48	0.46
2:G:4860:ARG:HG3	2:G:4876:CYS:HB3	1.98	0.46
2:B:887:ILE:HG21	2:B:959:TYR:HA	1.97	0.46
2:B:913:LEU:O	2:B:918:ARG:NH2	2.48	0.46
2:B:4832:HIS:NE2	2:B:4942:GLU:OE2	2.48	0.46
2:B:1698:LEU:N	2:B:1712:TYR:OH	2.48	0.46
2:B:2022:PRO:HB2	2:B:2024:PRO:HD2	1.97	0.46
2:B:4860:ARG:HG3	2:B:4876:CYS:HB3	1.98	0.46
2:E:157:ARG:HH21	2:E:164:ARG:HD2	1.80	0.46
2:E:4155:PRO:HD2	2:E:5036:LEU:HD23	1.96	0.46
2:I:2758:PHE:O	2:I:2762:THR:N	2.44	0.46
2:G:4832:HIS:NE2	2:G:4942:GLU:OE2	2.48	0.46
2:B:236:ALA:HA	2:B:242:ARG:HD2	1.98	0.46
2:B:2432:LEU:O	2:B:2436:CYS:N	2.49	0.46
2:E:689:THR:H	2:E:778:PHE:HE2	1.64	0.46
2:I:2131:LEU:HD23	2:I:3662:ILE:HB	1.96	0.46
2:I:3658:LYS:HA	2:I:3661:TRP:CD2	2.50	0.46
2:G:2927:LEU:HD23	2:G:2930:LEU:HD12	1.97	0.46
2:B:4080:TYR:CZ	2:B:4096:ALA:HB3	2.51	0.46
2:E:4832:HIS:NE2	2:E:4942:GLU:OE2	2.48	0.46
2:I:485:SER:O	2:I:489:ASN:N	2.37	0.46
2:I:670:GLU:HG3	2:I:788:LYS:H	1.81	0.46
2:I:2432:LEU:O	2:I:2436:CYS:N	2.49	0.46
2:B:689:THR:H	2:B:778:PHE:HE2	1.64	0.46
2:B:2299:VAL:O	2:B:2303:ALA:N	2.49	0.46
2:E:472:ARG:NH2	2:E:3712:GLU:OE2	2.49	0.46
2:E:2758:PHE:O	2:E:2762:THR:N	2.44	0.46
2:I:2002:PRO:HA	2:I:2005:GLN:HB3	1.97	0.46
2:G:290:TYR:O	2:G:302:VAL:N	2.48	0.46
2:B:1103:GLY:HA3	2:B:1123:VAL:HA	1.99	0.45
2:B:4209:GLN:HE22	2:B:4560:TYR:HE2	1.63	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:2295:LEU:HA	2:E:2298:VAL:HG22	1.97	0.45
2:I:236:ALA:HA	2:I:242:ARG:HD2	1.98	0.45
2:I:4209:GLN:HE22	2:I:4560:TYR:HE2	1.63	0.45
2:G:472:ARG:NH2	2:G:3712:GLU:OE2	2.49	0.45
2:G:695:TYR:OH	2:G:1073:ARG:NH1	2.45	0.45
2:G:841:GLY:HA2	2:G:1073:ARG:HD2	1.98	0.45
2:G:1095:VAL:HB	2:G:1199:VAL:HG23	1.97	0.45
2:G:3772:THR:OG1	2:G:3815:LYS:NZ	2.36	0.45
2:E:1095:VAL:HB	2:E:1199:VAL:HG23	1.97	0.45
2:G:2022:PRO:HB2	2:G:2024:PRO:HD2	1.97	0.45
2:B:670:GLU:HG3	2:B:788:LYS:H	1.81	0.45
2:E:670:GLU:HG3	2:E:788:LYS:H	1.81	0.45
2:I:841:GLY:HA2	2:I:1073:ARG:HD2	1.98	0.45
2:I:4860:ARG:HG3	2:I:4876:CYS:HB3	1.98	0.45
1:H:92:PRO:HD3	2:G:627:PRO:HB2	1.97	0.45
2:B:841:GLY:HA2	2:B:1073:ARG:HD2	1.98	0.45
2:B:2042:CYS:SG	2:B:2043:GLY:N	2.84	0.45
2:G:215:THR:HG22	2:G:273:HIS:HA	1.98	0.45
2:G:2002:PRO:HA	2:G:2005:GLN:HB3	1.97	0.45
2:G:2447:LYS:HG3	2:G:2449:GLU:H	1.82	0.45
2:G:4863:TYR:HD2	2:G:4875:LYS:HB2	1.82	0.45
2:B:695:TYR:OH	2:B:1073:ARG:NH1	2.45	0.45
2:B:4642:ALA:HA	2:B:4645:CYS:HB2	1.98	0.45
2:E:2022:PRO:HB2	2:E:2024:PRO:HD2	1.97	0.45
2:G:670:GLU:HG3	2:G:788:LYS:H	1.81	0.45
2:B:4886:HIS:O	2:B:4890:GLY:N	2.45	0.45
2:E:841:GLY:HA2	2:E:1073:ARG:HD2	1.98	0.45
2:I:2022:PRO:HB2	2:I:2024:PRO:HD2	1.97	0.45
2:I:2447:LYS:HG3	2:I:2449:GLU:H	1.82	0.45
2:I:4863:TYR:HD2	2:I:4875:LYS:HB2	1.82	0.45
2:G:1103:GLY:HA3	2:G:1123:VAL:HA	1.99	0.45
2:G:2295:LEU:HA	2:G:2298:VAL:HG22	1.97	0.45
2:B:215:THR:HG22	2:B:273:HIS:HA	1.98	0.45
2:B:472:ARG:NH2	2:B:3712:GLU:OE2	2.50	0.45
2:B:4863:TYR:HD2	2:B:4875:LYS:HB2	1.82	0.45
2:I:2295:LEU:HA	2:I:2298:VAL:HG22	1.97	0.45
2:I:2299:VAL:O	2:I:2303:ALA:N	2.49	0.45
2:I:4642:ALA:HA	2:I:4645:CYS:HB2	1.98	0.45
2:G:2290:LEU:HG	2:G:2291:GLN:H	1.82	0.45
2:G:4687:TYR:OH	2:G:4699:GLY:O	2.33	0.45
2:B:2290:LEU:HG	2:B:2291:GLN:H	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:4863:TYR:HD2	2:E:4875:LYS:HB2	1.82	0.45
2:I:2290:LEU:HG	2:I:2291:GLN:H	1.82	0.45
2:G:236:ALA:HA	2:G:242:ARG:HD2	1.98	0.45
2:I:939:VAL:HG22	2:I:1053:ILE:HG23	1.99	0.45
2:I:4688:ILE:HG21	2:I:4728:HIS:HB3	1.99	0.45
2:B:2927:LEU:HD23	2:B:2930:LEU:HD12	1.97	0.45
2:B:4942:GLU:HB2	2:E:4944:ARG:HH12	1.81	0.45
2:E:2927:LEU:HD23	2:E:2930:LEU:HD12	1.97	0.45
2:I:689:THR:H	2:I:778:PHE:HE2	1.64	0.45
2:I:4851:TYR:HD2	2:I:4920:PHE:HD1	1.65	0.45
2:G:2758:PHE:O	2:G:2762:THR:N	2.44	0.45
2:G:4642:ALA:HA	2:G:4645:CYS:HB2	1.98	0.45
1:A:82:TYR:O	1:A:86:GLY:N	2.45	0.44
2:E:2290:LEU:HG	2:E:2291:GLN:H	1.82	0.44
2:E:2342:ASN:OD1	2:E:2342:ASN:N	2.50	0.44
2:E:4080:TYR:CZ	2:E:4096:ALA:HB3	2.51	0.44
2:I:210:GLU:H	2:I:273:HIS:HE1	1.66	0.44
2:I:1103:GLY:HA3	2:I:1123:VAL:HA	1.99	0.44
2:G:470:SER:O	2:G:474:ARG:NE	2.38	0.44
2:G:4688:ILE:HG21	2:G:4728:HIS:HB3	1.99	0.44
2:I:472:ARG:NH2	2:I:3712:GLU:OE2	2.49	0.44
2:I:618:GLN:OE1	2:I:1678:ASN:ND2	2.51	0.44
2:I:4080:TYR:CZ	2:I:4096:ALA:HB3	2.51	0.44
2:G:45:ARG:HG2	2:G:443:LEU:HD21	2.00	0.44
2:G:1244:GLN:OE1	2:G:1646:ARG:NH1	2.51	0.44
2:B:4687:TYR:OH	2:B:4699:GLY:O	2.33	0.44
2:E:4642:ALA:HA	2:E:4645:CYS:HB2	1.98	0.44
2:G:485:SER:O	2:G:489:ASN:N	2.37	0.44
2:G:618:GLN:OE1	2:G:1678:ASN:ND2	2.51	0.44
2:G:2102:VAL:HB	2:G:2124:LEU:HD12	1.99	0.44
2:G:4080:TYR:CZ	2:G:4096:ALA:HB3	2.51	0.44
2:B:1244:GLN:OE1	2:B:1646:ARG:NH1	2.50	0.44
2:B:2894:LEU:HD11	2:B:2902:HIS:HB2	2.00	0.44
2:B:4666:VAL:HG23	2:B:4669:VAL:HB	2.00	0.44
2:B:4851:TYR:HD2	2:B:4920:PHE:HD1	1.65	0.44
2:E:210:GLU:H	2:E:273:HIS:HE1	1.66	0.44
2:E:215:THR:HG22	2:E:273:HIS:HA	1.98	0.44
2:E:1103:GLY:HA3	2:E:1123:VAL:HA	1.99	0.44
2:G:451:TYR:O	2:G:474:ARG:NH1	2.39	0.44
1:A:92:PRO:HD3	2:B:627:PRO:HB2	1.99	0.44
2:I:2243:SER:HB3	2:I:2246:ASN:H	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:210:GLU:H	2:B:273:HIS:HE1	1.66	0.44
2:B:939:VAL:HG22	2:B:1053:ILE:HG23	1.99	0.44
2:B:4680:LYS:HD3	2:B:4686:LEU:HD22	2.00	0.44
2:E:41:GLY:O	2:E:45:ARG:NH1	2.51	0.44
2:E:1025:ARG:O	2:E:1032:LYS:NZ	2.46	0.44
2:E:4666:VAL:HG23	2:E:4669:VAL:HB	2.00	0.44
2:E:4942:GLU:HB2	2:G:4944:ARG:HH12	1.82	0.44
2:I:41:GLY:O	2:I:45:ARG:NH1	2.51	0.44
2:G:4666:VAL:HG23	2:G:4669:VAL:HB	2.00	0.44
2:B:1730:MET:O	2:B:1772:ARG:NH1	2.46	0.44
2:E:580:GLU:HG2	2:E:583:ILE:HD11	2.00	0.44
2:E:1244:GLN:OE1	2:E:1646:ARG:NH1	2.50	0.44
2:I:45:ARG:HG2	2:I:443:LEU:HD21	2.00	0.44
2:I:2102:VAL:HB	2:I:2124:LEU:HD12	1.99	0.44
2:G:1025:ARG:O	2:G:1032:LYS:NZ	2.46	0.44
2:B:2815:ALA:HB3	2:B:2881:ASN:HD21	1.83	0.44
2:B:3779:VAL:HG23	2:B:3780:LEU:HD12	2.00	0.44
2:B:4914:VAL:HG23	2:E:4888:TYR:HD1	1.83	0.44
2:E:2815:ALA:HB3	2:E:2881:ASN:HD21	1.83	0.44
2:I:4666:VAL:HG23	2:I:4669:VAL:HB	2.00	0.44
2:G:2342:ASN:OD1	2:G:2342:ASN:N	2.50	0.44
1:F:82:TYR:O	1:F:86:GLY:N	2.45	0.44
2:E:2102:VAL:HB	2:E:2124:LEU:HD12	1.99	0.44
2:E:2894:LEU:HD11	2:E:2902:HIS:HB2	2.00	0.44
2:I:215:THR:HG22	2:I:273:HIS:HA	1.98	0.44
2:I:1244:GLN:OE1	2:I:1646:ARG:NH1	2.50	0.44
2:I:4680:LYS:HD3	2:I:4686:LEU:HD22	2.00	0.44
2:G:210:GLU:H	2:G:273:HIS:HE1	1.66	0.44
2:B:41:GLY:O	2:B:45:ARG:NH1	2.51	0.43
2:E:2447:LYS:HG3	2:E:2449:GLU:H	1.82	0.43
2:G:689:THR:H	2:G:778:PHE:HE2	1.64	0.43
2:G:4851:TYR:HD2	2:G:4920:PHE:HD1	1.65	0.43
2:I:575:LEU:HD22	2:I:609:CYS:HB3	2.01	0.43
2:I:1679:ASN:ND2	2:I:1798:LEU:O	2.51	0.43
2:I:3779:VAL:HG23	2:I:3780:LEU:HD12	2.00	0.43
2:G:41:GLY:O	2:G:45:ARG:NH1	2.51	0.43
2:B:4985:LEU:HB2	3:B:5101:ATP:HN61	1.83	0.43
2:E:618:GLN:OE1	2:E:1678:ASN:ND2	2.51	0.43
2:E:1236:THR:OG1	2:E:1608:MET:SD	2.76	0.43
2:E:3779:VAL:HG23	2:E:3780:LEU:HD12	1.99	0.43
2:E:4688:ILE:HG21	2:E:4728:HIS:HB3	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:4832:HIS:NE2	2:I:4942:GLU:OE2	2.48	0.43
2:G:4066:LEU:HD11	2:G:4173:TYR:HB2	2.00	0.43
2:B:2102:VAL:HB	2:B:2124:LEU:HD12	1.99	0.43
2:I:2815:ALA:HB3	2:I:2881:ASN:HD21	1.83	0.43
2:G:214:VAL:HG12	2:G:274:LEU:HD12	2.00	0.43
2:G:2022:PRO:O	2:G:2028:ARG:NH2	2.51	0.43
2:G:2243:SER:HB3	2:G:2246:ASN:H	1.83	0.43
1:A:74:LEU:HB2	1:A:99:PHE:HB2	2.00	0.43
2:E:218:HIS:HB3	2:E:392:ARG:HD3	2.01	0.43
2:E:939:VAL:HG22	2:E:1053:ILE:HG23	1.99	0.43
2:I:2894:LEU:HD11	2:I:2902:HIS:HB2	2.00	0.43
2:G:206:CYS:SG	2:G:207:SER:N	2.92	0.43
2:G:575:LEU:HD22	2:G:609:CYS:HB3	2.01	0.43
2:G:939:VAL:HG22	2:G:1053:ILE:HG23	1.99	0.43
2:G:3779:VAL:HG23	2:G:3780:LEU:HD12	2.00	0.43
2:B:580:GLU:HG2	2:B:583:ILE:HD11	2.00	0.43
2:B:618:GLN:OE1	2:B:1678:ASN:ND2	2.51	0.43
2:B:1679:ASN:ND2	2:B:1798:LEU:O	2.52	0.43
2:B:4860:ARG:HD2	2:E:4582:VAL:HG11	2.00	0.43
2:E:4680:LYS:HD3	2:E:4686:LEU:HD22	2.00	0.43
2:E:4851:TYR:HD2	2:E:4920:PHE:HD1	1.65	0.43
2:I:214:VAL:HG12	2:I:274:LEU:HD12	2.00	0.43
2:I:4944:ARG:HH12	2:G:4942:GLU:HB2	1.82	0.43
2:G:1236:THR:OG1	2:G:1608:MET:SD	2.76	0.43
2:G:2815:ALA:HB3	2:G:2881:ASN:HD21	1.83	0.43
1:F:74:LEU:HB2	1:F:99:PHE:HB2	2.00	0.43
2:B:45:ARG:HG2	2:B:443:LEU:HD21	2.00	0.43
2:B:2243:SER:HB3	2:B:2246:ASN:H	1.83	0.43
2:B:2271:THR:HG22	2:B:2273:LEU:H	1.84	0.43
2:B:2447:LYS:HG3	2:B:2449:GLU:H	1.82	0.43
2:E:1641:ILE:HA	2:E:1642:PRO:HD3	1.89	0.43
2:I:1665:HIS:HA	2:I:1668:ARG:HG2	2.00	0.43
2:I:3773:ARG:HG3	2:I:3815:LYS:HZ3	1.83	0.43
2:I:4066:LEU:HD11	2:I:4173:TYR:HB2	2.00	0.43
2:G:864:PRO:HD2	2:G:867:LEU:HD12	2.01	0.43
2:G:2332:LEU:HD13	2:G:2335:LEU:HD12	2.01	0.43
2:E:1679:ASN:ND2	2:E:1798:LEU:O	2.52	0.43
2:I:767:VAL:HG12	2:I:769:GLU:HG3	2.01	0.43
2:I:1025:ARG:O	2:I:1032:LYS:NZ	2.46	0.43
2:G:767:VAL:HG12	2:G:769:GLU:HG3	2.01	0.43
2:G:2271:THR:HG22	2:G:2273:LEU:H	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:793:LEU:HD22	2:B:821:LEU:HD13	2.00	0.43
2:B:864:PRO:HD2	2:B:867:LEU:HD12	2.01	0.43
2:B:1665:HIS:HA	2:B:1668:ARG:HG2	2.00	0.43
2:B:2342:ASN:OD1	2:B:2342:ASN:N	2.50	0.43
2:E:1665:HIS:HA	2:E:1668:ARG:HG2	2.00	0.43
2:E:2022:PRO:O	2:E:2028:ARG:NH2	2.51	0.43
2:E:2243:SER:HB3	2:E:2246:ASN:H	1.83	0.43
2:I:454:PRO:HG2	2:I:531:ARG:HH12	1.84	0.43
2:G:1679:ASN:ND2	2:G:1798:LEU:O	2.52	0.43
2:B:206:CYS:SG	2:B:207:SER:N	2.92	0.43
2:B:4066:LEU:HD11	2:B:4173:TYR:HB2	2.00	0.43
2:B:4570:ALA:O	2:B:4574:ASN:ND2	2.52	0.43
2:E:4066:LEU:HD11	2:E:4173:TYR:HB2	2.00	0.43
2:I:2342:ASN:OD1	2:I:2342:ASN:N	2.50	0.43
2:G:580:GLU:HG2	2:G:583:ILE:HD11	2.00	0.43
2:B:214:VAL:HG12	2:B:274:LEU:HD12	2.00	0.42
2:I:164:ARG:N	2:I:167:ASP:OD2	2.41	0.42
2:I:580:GLU:HG2	2:I:583:ILE:HD11	2.00	0.42
2:G:1141:ARG:H	2:G:1141:ARG:HD2	1.84	0.42
2:G:2894:LEU:HD11	2:G:2902:HIS:HB2	2.00	0.42
1:J:74:LEU:HB2	1:J:99:PHE:HB2	2.00	0.42
2:B:575:LEU:HD22	2:B:609:CYS:HB3	2.01	0.42
2:B:767:VAL:HG12	2:B:769:GLU:HG3	2.01	0.42
2:B:2332:LEU:HD13	2:B:2335:LEU:HD12	2.01	0.42
2:B:4688:ILE:HG21	2:B:4728:HIS:HB3	1.99	0.42
2:E:575:LEU:HD22	2:E:609:CYS:HB3	2.01	0.42
2:E:4956:THR:O	2:E:4965:SER:N	2.52	0.42
2:I:206:CYS:SG	2:I:207:SER:N	2.92	0.42
2:I:2271:THR:HG22	2:I:2273:LEU:H	1.84	0.42
2:G:1665:HIS:HA	2:G:1668:ARG:HG2	2.00	0.42
2:G:4680:LYS:HD3	2:G:4686:LEU:HD22	2.00	0.42
2:E:485:SER:O	2:E:489:ASN:N	2.37	0.42
2:E:2271:THR:HG22	2:E:2273:LEU:H	1.84	0.42
2:I:1641:ILE:HA	2:I:1642:PRO:HD3	1.89	0.42
2:I:4570:ALA:O	2:I:4574:ASN:ND2	2.52	0.42
2:I:4956:THR:O	2:I:4965:SER:N	2.52	0.42
1:H:74:LEU:HB2	1:H:99:PHE:HB2	2.00	0.42
2:B:218:HIS:HB3	2:B:392:ARG:HD3	2.01	0.42
2:B:454:PRO:HG2	2:B:531:ARG:HH12	1.84	0.42
2:B:2022:PRO:O	2:B:2028:ARG:NH2	2.51	0.42
2:E:454:PRO:HG2	2:E:531:ARG:HH12	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:629:ARG:HD3	2:E:634:GLN:HG2	2.01	0.42
2:E:767:VAL:HG12	2:E:769:GLU:HG3	2.01	0.42
2:I:1236:THR:OG1	2:I:1608:MET:SD	2.76	0.42
2:I:2022:PRO:O	2:I:2028:ARG:NH2	2.52	0.42
2:G:218:HIS:HB3	2:G:392:ARG:HD3	2.01	0.42
2:G:2432:LEU:O	2:G:2436:CYS:N	2.49	0.42
2:B:734:GLY:O	2:B:736:HIS:ND1	2.53	0.42
2:B:940:GLY:O	2:B:1052:ASN:N	2.53	0.42
2:B:1720:LEU:HD23	2:B:1721:GLU:HA	2.02	0.42
2:E:1141:ARG:H	2:E:1141:ARG:HD2	1.84	0.42
2:I:870:ILE:HD11	2:I:1049:TYR:CG	2.55	0.42
2:I:1141:ARG:H	2:I:1141:ARG:HD2	1.84	0.42
2:G:530:ILE:HD13	2:G:536:ASN:HB3	2.02	0.42
2:B:379:HIS:CD2	2:B:381:GLU:H	2.37	0.42
2:B:2423:MET:O	2:B:2427:ALA:N	2.48	0.42
2:E:45:ARG:HG2	2:E:443:LEU:HD21	2.00	0.42
2:E:530:ILE:HD13	2:E:536:ASN:HB3	2.02	0.42
2:E:793:LEU:HD22	2:E:821:LEU:HD13	2.00	0.42
2:I:218:HIS:HB3	2:I:392:ARG:HD3	2.01	0.42
2:I:793:LEU:HD22	2:I:821:LEU:HD13	2.00	0.42
2:I:1720:LEU:HD23	2:I:1721:GLU:HA	2.02	0.42
2:G:2299:VAL:O	2:G:2303:ALA:N	2.48	0.42
2:G:4570:ALA:O	2:G:4574:ASN:ND2	2.52	0.42
2:B:134:ASP:OD1	2:B:134:ASP:N	2.53	0.42
2:B:4956:THR:O	2:B:4965:SER:N	2.52	0.42
2:E:4570:ALA:O	2:E:4574:ASN:ND2	2.52	0.42
2:G:793:LEU:HD22	2:G:821:LEU:HD13	2.00	0.42
2:B:629:ARG:HD3	2:B:634:GLN:HG2	2.01	0.42
2:B:1141:ARG:H	2:B:1141:ARG:HD2	1.84	0.42
2:B:2195:PRO:HB3	2:B:2246:ASN:HD21	1.84	0.42
2:B:2517:UNK:O	2:B:2521:UNK:N	2.53	0.42
2:E:134:ASP:N	2:E:134:ASP:OD1	2.53	0.42
2:E:2195:PRO:HB3	2:E:2246:ASN:HD21	1.84	0.42
2:E:2517:UNK:O	2:E:2521:UNK:N	2.53	0.42
2:I:629:ARG:HB3	2:I:634:GLN:NE2	2.35	0.42
2:I:2823:ILE:HG12	2:I:2937:VAL:HG22	2.01	0.42
2:G:940:GLY:O	2:G:1052:ASN:N	2.53	0.42
2:G:1641:ILE:HA	2:G:1642:PRO:HD3	1.89	0.42
2:G:4763:GLY:O	2:G:4766:THR:OG1	2.30	0.42
2:B:4083:ASP:HB3	2:B:4086:GLY:H	1.85	0.42
2:I:103:TYR:HB3	2:I:152:PRO:HD3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:379:HIS:CD2	2:I:381:GLU:H	2.37	0.42
2:I:4083:ASP:HB3	2:I:4086:GLY:H	1.85	0.42
2:G:629:ARG:HD3	2:G:634:GLN:HG2	2.01	0.42
2:B:2438:PRO:HB3	2:B:2453:ILE:HB	2.02	0.42
2:B:4641:PRO:O	2:B:4645:CYS:N	2.52	0.42
2:E:206:CYS:SG	2:E:207:SER:N	2.92	0.42
2:E:214:VAL:HG12	2:E:274:LEU:HD12	2.00	0.42
2:E:2823:ILE:HG12	2:E:2937:VAL:HG22	2.01	0.42
2:I:864:PRO:HD2	2:I:867:LEU:HD12	2.01	0.42
2:I:1940:CYS:O	2:I:1944:GLU:N	2.53	0.42
2:I:2517:UNK:O	2:I:2521:UNK:N	2.53	0.42
2:G:870:ILE:HD11	2:G:1049:TYR:CG	2.55	0.42
2:B:2257:LEU:HD11	2:B:2276:ALA:HB2	2.02	0.41
2:B:2823:ILE:HG12	2:B:2937:VAL:HG22	2.01	0.41
2:B:3915:ILE:O	2:B:3919:THR:N	2.52	0.41
2:E:393:CYS:SG	2:E:395:GLN:NE2	2.93	0.41
2:E:870:ILE:HD11	2:E:1049:TYR:CG	2.55	0.41
2:E:2332:LEU:HD13	2:E:2335:LEU:HD12	2.01	0.41
2:E:2432:LEU:O	2:E:2436:CYS:N	2.49	0.41
2:I:40:GLU:HB3	2:I:44:ASN:HB3	2.02	0.41
2:G:234:SER:O	2:G:242:ARG:NE	2.52	0.41
2:G:454:PRO:HG2	2:G:531:ARG:HH12	1.84	0.41
2:B:4673:ARG:HH12	2:B:4698:LYS:HE3	1.85	0.41
2:E:103:TYR:HB3	2:E:152:PRO:HD3	2.02	0.41
2:I:234:SER:O	2:I:242:ARG:NE	2.52	0.41
2:I:530:ILE:HD13	2:I:536:ASN:HB3	2.02	0.41
2:I:2257:LEU:HD11	2:I:2276:ALA:HB2	2.02	0.41
2:G:4956:THR:O	2:G:4965:SER:N	2.52	0.41
1:H:44:LYS:HA	1:H:45:PRO:HD3	1.88	0.41
2:E:40:GLU:HB3	2:E:44:ASN:HB3	2.03	0.41
2:E:234:SER:O	2:E:242:ARG:NE	2.52	0.41
2:E:379:HIS:CD2	2:E:381:GLU:H	2.37	0.41
2:E:940:GLY:O	2:E:1052:ASN:N	2.53	0.41
2:E:1720:LEU:HD23	2:E:1721:GLU:HA	2.02	0.41
2:I:734:GLY:O	2:I:736:HIS:ND1	2.53	0.41
2:G:107:ILE:HG22	2:G:148:TRP:HB2	2.03	0.41
2:G:379:HIS:CD2	2:G:381:GLU:H	2.37	0.41
2:G:2517:UNK:O	2:G:2521:UNK:N	2.53	0.41
2:B:393:CYS:SG	2:B:395:GLN:NE2	2.93	0.41
2:B:870:ILE:HD11	2:B:1049:TYR:CG	2.55	0.41
2:E:107:ILE:HG22	2:E:148:TRP:HB2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:2257:LEU:HD11	2:E:2276:ALA:HB2	2.02	0.41
2:E:2438:PRO:HB3	2:E:2453:ILE:HB	2.02	0.41
2:E:4233:LEU:HA	2:E:4236:SER:HB3	2.03	0.41
2:I:395:GLN:NE2	2:I:397:GLU:OE1	2.54	0.41
2:I:4104:THR:HG22	2:I:4106:PRO:HD2	2.03	0.41
2:I:4673:ARG:HH12	2:I:4698:LYS:HE3	1.85	0.41
2:G:134:ASP:OD1	2:G:134:ASP:N	2.53	0.41
2:G:393:CYS:SG	2:G:395:GLN:NE2	2.93	0.41
2:G:629:ARG:HB3	2:G:634:GLN:NE2	2.35	0.41
2:G:1720:LEU:HD23	2:G:1721:GLU:HA	2.02	0.41
2:G:2823:ILE:HG12	2:G:2937:VAL:HG22	2.01	0.41
2:B:530:ILE:HD13	2:B:536:ASN:HB3	2.02	0.41
2:B:4233:LEU:HA	2:B:4236:SER:HB3	2.03	0.41
2:E:864:PRO:HD2	2:E:867:LEU:HD12	2.01	0.41
2:E:946:ALA:HA	2:E:949:ASN:HB2	2.03	0.41
2:I:629:ARG:HD3	2:I:634:GLN:HG2	2.01	0.41
2:I:940:GLY:O	2:I:1052:ASN:N	2.53	0.41
2:G:395:GLN:NE2	2:G:397:GLU:OE1	2.54	0.41
2:G:2195:PRO:HB3	2:G:2246:ASN:HD21	1.85	0.41
2:G:2423:MET:O	2:G:2427:ALA:N	2.48	0.41
2:G:2438:PRO:HB3	2:G:2453:ILE:HB	2.02	0.41
2:G:4673:ARG:HH12	2:G:4698:LYS:HE3	1.85	0.41
2:B:40:GLU:HB3	2:B:44:ASN:HB3	2.02	0.41
2:B:629:ARG:HB3	2:B:634:GLN:NE2	2.35	0.41
2:B:4804:TYR:HB3	2:B:4806:ASN:HD22	1.85	0.41
2:I:606:LEU:HG	2:I:617:ASN:HD22	1.86	0.41
2:I:4804:TYR:HB3	2:I:4806:ASN:HD22	1.85	0.41
2:G:1727:ARG:HH21	2:G:1775:HIS:CE1	2.39	0.41
2:G:4104:THR:HG22	2:G:4106:PRO:HD2	2.03	0.41
2:B:357:LEU:HD12	2:B:388:LEU:HD11	2.03	0.41
2:B:606:LEU:HG	2:B:617:ASN:HD22	1.86	0.41
2:B:4142:ASN:HA	2:B:4145:VAL:HG12	2.02	0.41
2:E:629:ARG:HB3	2:E:634:GLN:NE2	2.35	0.41
2:E:864:PRO:HA	2:E:865:PRO:HD3	1.94	0.41
2:E:1940:CYS:O	2:E:1944:GLU:N	2.53	0.41
2:E:4104:THR:HG22	2:E:4106:PRO:HD2	2.03	0.41
2:I:393:CYS:SG	2:I:395:GLN:NE2	2.93	0.41
2:I:2438:PRO:HB3	2:I:2453:ILE:HB	2.02	0.41
2:I:2674:UNK:O	2:I:2676:UNK:N	2.54	0.41
2:G:2674:UNK:O	2:G:2676:UNK:N	2.54	0.41
2:G:4804:TYR:HB3	2:G:4806:ASN:HD22	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:103:TYR:HB3	2:B:152:PRO:HD3	2.02	0.41
2:B:143:GLY:HA3	2:B:147:TRP:HE1	1.86	0.41
2:B:2232:CYS:SG	2:B:2233:CYS:N	2.94	0.41
2:B:4567:LEU:HA	2:B:4816:ILE:HD12	2.03	0.41
2:E:395:GLN:NE2	2:E:397:GLU:OE1	2.54	0.41
2:E:2143:THR:N	2:E:3651:ASN:OD1	2.54	0.41
2:I:946:ALA:HA	2:I:949:ASN:HB2	2.03	0.41
2:I:2332:LEU:HD13	2:I:2335:LEU:HD12	2.01	0.41
2:I:3513:UNK:O	2:I:3515:UNK:N	2.54	0.41
2:I:3889:GLN:HG3	2:I:3967:GLU:HG3	2.03	0.41
2:I:4567:LEU:HA	2:I:4816:ILE:HD12	2.03	0.41
2:I:4802:GLY:HA2	2:I:4808:PHE:HB2	2.03	0.41
2:G:2257:LEU:HD11	2:G:2276:ALA:HB2	2.02	0.41
2:G:2327:GLY:HA2	2:G:2330:ARG:HD3	2.03	0.41
2:G:4802:GLY:HA2	2:G:4808:PHE:HB2	2.03	0.41
1:F:92:PRO:HD3	2:E:627:PRO:HB2	2.02	0.41
2:B:55:ALA:O	2:B:281:ARG:NH2	2.54	0.41
2:B:2674:UNK:O	2:B:2676:UNK:N	2.54	0.41
2:E:2674:UNK:O	2:E:2676:UNK:N	2.54	0.41
2:E:4083:ASP:HB3	2:E:4086:GLY:H	1.85	0.41
2:E:4142:ASN:HA	2:E:4145:VAL:HG12	2.02	0.41
2:E:4641:PRO:O	2:E:4645:CYS:N	2.52	0.41
2:I:134:ASP:OD1	2:I:134:ASP:N	2.53	0.41
2:I:2143:THR:N	2:I:3651:ASN:OD1	2.54	0.41
2:I:2195:PRO:HB3	2:I:2246:ASN:HD21	1.84	0.41
2:I:2232:CYS:SG	2:I:2233:CYS:N	2.94	0.41
2:I:2327:GLY:HA2	2:I:2330:ARG:HD3	2.03	0.41
2:G:40:GLU:HB3	2:G:44:ASN:HB3	2.03	0.41
2:G:103:TYR:HB3	2:G:152:PRO:HD3	2.02	0.41
2:G:4083:ASP:HB3	2:G:4086:GLY:H	1.85	0.41
2:B:1863:LEU:HB3	2:B:1870:VAL:HG21	2.02	0.41
2:B:4823:LEU:HD23	2:I:4843:LEU:HD12	2.03	0.41
2:E:1863:LEU:HB3	2:E:1870:VAL:HG21	2.03	0.41
2:E:4567:LEU:HA	2:E:4816:ILE:HD12	2.03	0.41
2:E:4918:ILE:HD13	2:E:4918:ILE:HA	1.93	0.41
2:I:2346:VAL:HG13	2:I:2349:ASN:H	1.86	0.41
2:G:3513:UNK:O	2:G:3515:UNK:N	2.54	0.41
2:G:4233:LEU:HA	2:G:4236:SER:HB3	2.02	0.41
1:J:44:LYS:HA	1:J:45:PRO:HD3	1.88	0.40
2:B:2346:VAL:HG13	2:B:2349:ASN:H	1.86	0.40
2:B:3513:UNK:O	2:B:3515:UNK:N	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:214:VAL:HG22	2:I:341:TYR:CE1	2.56	0.40
2:I:4983:HIS:HB2	2:I:4988:TYR:HE2	1.86	0.40
2:G:35:LEU:HD13	2:G:49:LEU:HD13	2.03	0.40
2:G:3915:ILE:O	2:G:3919:THR:N	2.52	0.40
2:G:3971:GLY:N	2:G:4032:GLU:OE2	2.53	0.40
2:G:4567:LEU:HA	2:G:4816:ILE:HD12	2.03	0.40
2:G:4983:HIS:HB2	2:G:4988:TYR:HE2	1.86	0.40
2:B:234:SER:O	2:B:242:ARG:NE	2.52	0.40
2:B:1641:ILE:HA	2:B:1642:PRO:HD3	1.89	0.40
2:B:1940:CYS:O	2:B:1944:GLU:N	2.53	0.40
2:B:4104:THR:HG22	2:B:4106:PRO:HD2	2.03	0.40
2:B:4802:GLY:HA2	2:B:4808:PHE:HB2	2.03	0.40
2:E:790:ARG:HG2	2:E:1627:ALA:HA	2.03	0.40
2:E:4673:ARG:HH12	2:E:4698:LYS:HE3	1.85	0.40
2:I:143:GLY:HA3	2:I:147:TRP:HE1	1.86	0.40
2:I:1863:LEU:HB3	2:I:1870:VAL:HG21	2.03	0.40
2:G:681:HIS:HB3	2:G:784:SER:HB3	2.03	0.40
2:G:838:HIS:HA	2:G:1201:HIS:HB3	2.04	0.40
2:G:2143:THR:N	2:G:3651:ASN:OD1	2.54	0.40
2:E:143:GLY:HA3	2:E:147:TRP:HE1	1.86	0.40
2:E:2232:CYS:SG	2:E:2233:CYS:N	2.94	0.40
2:E:3513:UNK:O	2:E:3515:UNK:N	2.54	0.40
2:E:4763:GLY:H	2:E:4767:TRP:HE1	1.69	0.40
2:E:4804:TYR:HB3	2:E:4806:ASN:HD22	1.85	0.40
2:I:4233:LEU:HA	2:I:4236:SER:HB3	2.03	0.40
2:G:1096:THR:HG23	2:G:1199:VAL:HG22	2.03	0.40
2:B:614:VAL:HA	2:B:2169:GLN:HB3	2.03	0.40
2:B:708:GLY:HA3	2:B:722:TRP:HB3	2.03	0.40
2:B:1236:THR:OG1	2:B:1608:MET:SD	2.76	0.40
2:B:4763:GLY:H	2:B:4767:TRP:HE1	1.69	0.40
2:B:4983:HIS:HB2	2:B:4988:TYR:HE2	1.86	0.40
2:E:1096:THR:HG23	2:E:1199:VAL:HG22	2.03	0.40
2:E:1727:ARG:HH21	2:E:1775:HIS:CE1	2.39	0.40
2:E:4983:HIS:HB2	2:E:4988:TYR:HE2	1.86	0.40
2:E:5000:GLU:HA	2:E:5003:HIS:CD2	2.57	0.40
2:I:55:ALA:O	2:I:281:ARG:NH2	2.54	0.40
2:I:107:ILE:HG22	2:I:148:TRP:HB2	2.03	0.40
2:I:838:HIS:HA	2:I:1201:HIS:HB3	2.03	0.40
2:I:2021:CYS:HA	2:I:2022:PRO:HD3	1.96	0.40
2:G:606:LEU:HG	2:G:617:ASN:HD22	1.86	0.40
2:B:395:GLN:NE2	2:B:397:GLU:OE1	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:838:HIS:HA	2:B:1201:HIS:HB3	2.04	0.40
2:B:946:ALA:HA	2:B:949:ASN:HB2	2.03	0.40
2:E:2034:PHE:O	2:E:2038:LEU:N	2.55	0.40
2:E:3971:GLY:N	2:E:4032:GLU:OE2	2.53	0.40
2:I:471:LEU:O	2:I:475:GLN:N	2.53	0.40
2:I:708:GLY:HA3	2:I:722:TRP:HB3	2.03	0.40
2:I:3971:GLY:N	2:I:4032:GLU:OE2	2.53	0.40
2:G:864:PRO:HA	2:G:865:PRO:HD3	1.94	0.40
2:G:1940:CYS:O	2:G:1944:GLU:N	2.53	0.40
2:G:2437:ALA:HA	2:G:2438:PRO:HD3	1.96	0.40
2:G:3804:ILE:HG22	2:G:3812:VAL:HG21	2.04	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 PDB entries followed by that with respect to all EM entries.

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	105/108 (97%)	94 (90%)	11 (10%)	0	100	100
1	F	105/108 (97%)	93 (89%)	12 (11%)	0	100	100
1	H	105/108 (97%)	94 (90%)	11 (10%)	0	100	100
1	J	105/108 (97%)	93 (89%)	12 (11%)	0	100	100
2	B	3235/4416 (73%)	2877 (89%)	352 (11%)	6 (0%)	47	80
2	E	3235/4416 (73%)	2878 (89%)	351 (11%)	6 (0%)	47	80
2	G	3235/4416 (73%)	2877 (89%)	352 (11%)	6 (0%)	47	80
2	I	3235/4416 (73%)	2878 (89%)	351 (11%)	6 (0%)	47	80
All	All	13360/18096 (74%)	11884 (89%)	1452 (11%)	24 (0%)	50	80

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	1708	ARG
2	B	1840	PRO
2	B	1932	PRO
2	B	4641	PRO
2	E	1708	ARG
2	E	1840	PRO
2	E	1932	PRO
2	E	4641	PRO
2	I	1708	ARG
2	I	1840	PRO
2	I	1932	PRO
2	I	4641	PRO
2	G	1708	ARG
2	G	1840	PRO
2	G	1932	PRO
2	G	4641	PRO
2	B	2291	GLN
2	B	4640	GLU
2	E	2291	GLN
2	E	4640	GLU
2	I	2291	GLN
2	I	4640	GLU
2	G	2291	GLN
2	G	4640	GLU

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 PDB entries followed by that with respect to all EM entries.

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	88/89 (99%)	88 (100%)	0	100 100
1	F	88/89 (99%)	88 (100%)	0	100 100
1	H	88/89 (99%)	88 (100%)	0	100 100
1	J	88/89 (99%)	88 (100%)	0	100 100
2	B	2493/3022 (82%)	2476 (99%)	17 (1%)	84 90
2	E	2493/3022 (82%)	2476 (99%)	17 (1%)	84 90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	G	2493/3022 (82%)	2476 (99%)	17 (1%)	84 90
2	I	2493/3022 (82%)	2476 (99%)	17 (1%)	84 90
All	All	10324/12444 (83%)	10256 (99%)	68 (1%)	84 90

All (68) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	131	LEU
2	B	534	ARG
2	B	553	ARG
2	B	978	THR
2	B	1076	ARG
2	B	1141	ARG
2	B	1600	LEU
2	B	1676	LEU
2	B	1964	ARG
2	B	3787	LYS
2	B	3805	LEU
2	B	3896	ASN
2	B	4034	ASN
2	B	4085	ARG
2	B	4120	ASN
2	B	4818	MET
2	B	4954	MET
2	E	131	LEU
2	E	534	ARG
2	E	553	ARG
2	E	978	THR
2	E	1076	ARG
2	E	1141	ARG
2	E	1600	LEU
2	E	1676	LEU
2	E	1964	ARG
2	E	3787	LYS
2	E	3805	LEU
2	E	3896	ASN
2	E	4034	ASN
2	E	4085	ARG
2	E	4120	ASN
2	E	4818	MET
2	E	4954	MET

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Mol	Chain	Res	Type
2	I	131	LEU
2	I	534	ARG
2	I	553	ARG
2	I	978	THR
2	I	1076	ARG
2	I	1141	ARG
2	I	1600	LEU
2	I	1676	LEU
2	I	1964	ARG
2	I	3787	LYS
2	I	3805	LEU
2	I	3896	ASN
2	I	4034	ASN
2	I	4085	ARG
2	I	4120	ASN
2	I	4818	MET
2	I	4954	MET
2	G	131	LEU
2	G	534	ARG
2	G	553	ARG
2	G	978	THR
2	G	1076	ARG
2	G	1141	ARG
2	G	1600	LEU
2	G	1676	LEU
2	G	1964	ARG
2	G	3787	LYS
2	G	3805	LEU
2	G	3896	ASN
2	G	4034	ASN
2	G	4085	ARG
2	G	4120	ASN
2	G	4818	MET
2	G	4954	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (156) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	87	HIS
1	A	87	HIS
1	H	87	HIS
1	J	87	HIS

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Mol	Chain	Res	Type
2	B	57	ASN
2	B	111	HIS
2	B	113	HIS
2	B	273	HIS
2	B	379	HIS
2	B	383	HIS
2	B	395	GLN
2	B	405	HIS
2	B	413	GLN
2	B	479	GLN
2	B	520	ASN
2	B	725	HIS
2	B	949	ASN
2	B	1598	GLN
2	B	1663	HIS
2	B	1679	ASN
2	B	1691	GLN
2	B	1693	GLN
2	B	1702	HIS
2	B	1719	HIS
2	B	1775	HIS
2	B	1972	ASN
2	B	2005	GLN
2	B	2127	GLN
2	B	2291	GLN
2	B	3771	HIS
2	B	3781	GLN
2	B	3896	ASN
2	B	3946	GLN
2	B	3950	ASN
2	B	4034	ASN
2	B	4054	ASN
2	B	4120	ASN
2	B	4142	ASN
2	B	4209	GLN
2	B	4691	GLN
2	B	4806	ASN
2	B	5003	HIS
2	E	57	ASN
2	E	111	HIS
2	E	113	HIS
2	E	273	HIS

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Mol	Chain	Res	Type
2	E	379	HIS
2	E	383	HIS
2	E	395	GLN
2	E	405	HIS
2	E	413	GLN
2	E	479	GLN
2	E	520	ASN
2	E	725	HIS
2	E	949	ASN
2	E	1598	GLN
2	E	1663	HIS
2	E	1679	ASN
2	E	1691	GLN
2	E	1693	GLN
2	E	1702	HIS
2	E	1719	HIS
2	E	1775	HIS
2	E	1972	ASN
2	E	2005	GLN
2	E	2127	GLN
2	E	2291	GLN
2	E	3771	HIS
2	E	3781	GLN
2	E	3896	ASN
2	E	3946	GLN
2	E	3950	ASN
2	E	4034	ASN
2	E	4054	ASN
2	E	4120	ASN
2	E	4142	ASN
2	E	4209	GLN
2	E	4691	GLN
2	E	4806	ASN
2	E	5003	HIS
2	I	57	ASN
2	I	111	HIS
2	I	113	HIS
2	I	273	HIS
2	I	379	HIS
2	I	383	HIS
2	I	395	GLN
2	I	405	HIS

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Mol	Chain	Res	Type
2	I	413	GLN
2	I	479	GLN
2	I	520	ASN
2	I	725	HIS
2	I	949	ASN
2	I	1598	GLN
2	I	1663	HIS
2	I	1679	ASN
2	I	1691	GLN
2	I	1693	GLN
2	I	1702	HIS
2	I	1719	HIS
2	I	1775	HIS
2	I	1972	ASN
2	I	2005	GLN
2	I	2127	GLN
2	I	2291	GLN
2	I	3771	HIS
2	I	3781	GLN
2	I	3896	ASN
2	I	3946	GLN
2	I	3950	ASN
2	I	4034	ASN
2	I	4054	ASN
2	I	4120	ASN
2	I	4142	ASN
2	I	4209	GLN
2	I	4691	GLN
2	I	4806	ASN
2	I	5003	HIS
2	G	57	ASN
2	G	111	HIS
2	G	113	HIS
2	G	273	HIS
2	G	379	HIS
2	G	383	HIS
2	G	395	GLN
2	G	405	HIS
2	G	413	GLN
2	G	479	GLN
2	G	520	ASN
2	G	725	HIS

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Mol	Chain	Res	Type
2	G	949	ASN
2	G	1598	GLN
2	G	1663	HIS
2	G	1679	ASN
2	G	1691	GLN
2	G	1693	GLN
2	G	1702	HIS
2	G	1719	HIS
2	G	1775	HIS
2	G	1972	ASN
2	G	2005	GLN
2	G	2127	GLN
2	G	2291	GLN
2	G	3771	HIS
2	G	3781	GLN
2	G	3896	ASN
2	G	3946	GLN
2	G	3950	ASN
2	G	4034	ASN
2	G	4054	ASN
2	G	4120	ASN
2	G	4142	ASN
2	G	4209	GLN
2	G	4691	GLN
2	G	4806	ASN
2	G	5003	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 for Mogul analysis.

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	ATP	B	5101	-	26,33,33	0.87	1 (3%)	31,52,52	1.57	5 (16%)
3	ATP	I	5101	-	26,33,33	0.88	1 (3%)	31,52,52	1.55	5 (16%)
4	CFF	I	5102	-	8,15,15	2.53	3 (37%)	8,23,23	1.19	1 (12%)
4	CFF	B	5102	-	8,15,15	2.52	3 (37%)	8,23,23	1.19	1 (12%)
4	CFF	G	5102	-	8,15,15	2.53	4 (50%)	8,23,23	1.19	1 (12%)
3	ATP	E	5101	-	26,33,33	0.87	1 (3%)	31,52,52	1.54	5 (16%)
3	ATP	G	5101	-	26,33,33	0.87	1 (3%)	31,52,52	1.54	5 (16%)
4	CFF	E	5102	-	8,15,15	2.53	3 (37%)	8,23,23	1.20	1 (12%)

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	ATP	B	5101	-	-	4/18/38/38	0/3/3/3
3	ATP	I	5101	-	-	4/18/38/38	0/3/3/3
4	CFF	I	5102	-	-	-	0/2/2/2
4	CFF	B	5102	-	-	-	0/2/2/2
4	CFF	G	5102	-	-	-	0/2/2/2
3	ATP	E	5101	-	-	4/18/38/38	0/3/3/3
3	ATP	G	5101	-	-	4/18/38/38	0/3/3/3
4	CFF	E	5102	-	-	-	0/2/2/2

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	5102	CFF	C6-N1	-4.46	1.31	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	I	5102	CFF	C6-N1	-4.46	1.31	1.38
4	G	5102	CFF	C6-N1	-4.44	1.31	1.38
4	B	5102	CFF	C6-N1	-4.43	1.31	1.38
4	E	5102	CFF	C5-C4	-4.41	1.33	1.39
4	G	5102	CFF	C5-C4	-4.39	1.33	1.39
4	B	5102	CFF	C5-C4	-4.39	1.33	1.39
4	I	5102	CFF	C5-C4	-4.39	1.33	1.39
4	E	5102	CFF	O13-C6	-2.31	1.18	1.24
4	G	5102	CFF	O13-C6	-2.31	1.18	1.24
4	I	5102	CFF	O13-C6	-2.30	1.18	1.24
4	B	5102	CFF	O13-C6	-2.29	1.18	1.24
3	I	5101	ATP	C5-C4	2.20	1.46	1.40
3	E	5101	ATP	C5-C4	2.20	1.46	1.40
3	G	5101	ATP	C5-C4	2.19	1.46	1.40
3	B	5101	ATP	C5-C4	2.19	1.46	1.40
4	G	5102	CFF	C5-C6	-2.00	1.37	1.41

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	I	5101	ATP	PB-O3B-PG	-3.54	120.69	132.83
3	E	5101	ATP	PB-O3B-PG	-3.53	120.71	132.83
3	G	5101	ATP	PB-O3B-PG	-3.51	120.77	132.83
3	B	5101	ATP	PB-O3B-PG	-3.51	120.80	132.83
3	E	5101	ATP	PA-O3A-PB	-3.35	121.34	132.83
3	G	5101	ATP	PA-O3A-PB	-3.34	121.36	132.83
3	B	5101	ATP	PA-O3A-PB	-3.34	121.38	132.83
3	I	5101	ATP	PA-O3A-PB	-3.33	121.38	132.83
3	B	5101	ATP	N3-C2-N1	-3.23	123.64	128.68
3	G	5101	ATP	N3-C2-N1	-3.14	123.77	128.68
3	E	5101	ATP	N3-C2-N1	-3.12	123.80	128.68
3	I	5101	ATP	N3-C2-N1	-3.10	123.83	128.68
4	B	5102	CFF	C14-N7-C8	-2.81	111.89	125.43
4	G	5102	CFF	C14-N7-C8	-2.81	111.91	125.43
4	E	5102	CFF	C14-N7-C8	-2.80	111.93	125.43
4	I	5102	CFF	C14-N7-C8	-2.80	111.94	125.43
3	B	5101	ATP	C4-C5-N7	-2.75	106.53	109.40
3	E	5101	ATP	C4-C5-N7	-2.74	106.55	109.40
3	G	5101	ATP	C4-C5-N7	-2.72	106.57	109.40
3	I	5101	ATP	C4-C5-N7	-2.71	106.58	109.40
3	I	5101	ATP	C3'-C2'-C1'	2.57	104.85	100.98
3	B	5101	ATP	C3'-C2'-C1'	2.57	104.85	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	G	5101	ATP	C3'-C2'-C1'	2.57	104.84	100.98
3	E	5101	ATP	C3'-C2'-C1'	2.56	104.83	100.98

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	5101	ATP	C5'-O5'-PA-O1A
3	E	5101	ATP	C5'-O5'-PA-O1A
3	I	5101	ATP	C5'-O5'-PA-O1A
3	G	5101	ATP	C5'-O5'-PA-O1A
3	B	5101	ATP	PA-O3A-PB-O1B
3	E	5101	ATP	PA-O3A-PB-O1B
3	I	5101	ATP	PA-O3A-PB-O1B
3	G	5101	ATP	PA-O3A-PB-O1B
3	E	5101	ATP	PA-O3A-PB-O2B
3	I	5101	ATP	PA-O3A-PB-O2B
3	G	5101	ATP	PA-O3A-PB-O2B
3	B	5101	ATP	PA-O3A-PB-O2B
3	B	5101	ATP	O4'-C4'-C5'-O5'
3	E	5101	ATP	O4'-C4'-C5'-O5'
3	I	5101	ATP	O4'-C4'-C5'-O5'
3	G	5101	ATP	O4'-C4'-C5'-O5'

There are no ring outliers.

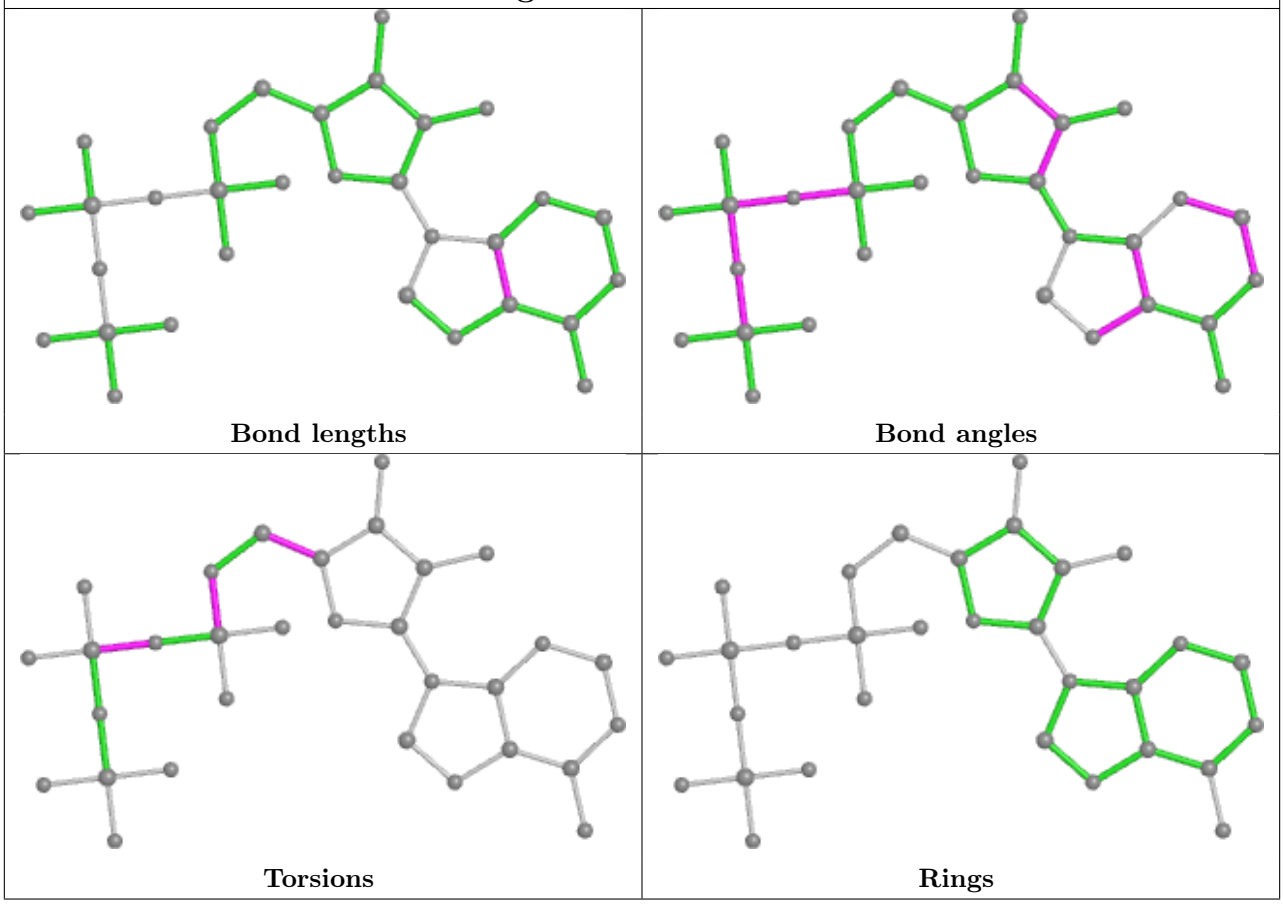
5 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	5101	ATP	1	0
4	I	5102	CFF	1	0
4	B	5102	CFF	1	0
4	G	5102	CFF	1	0
4	E	5102	CFF	1	0

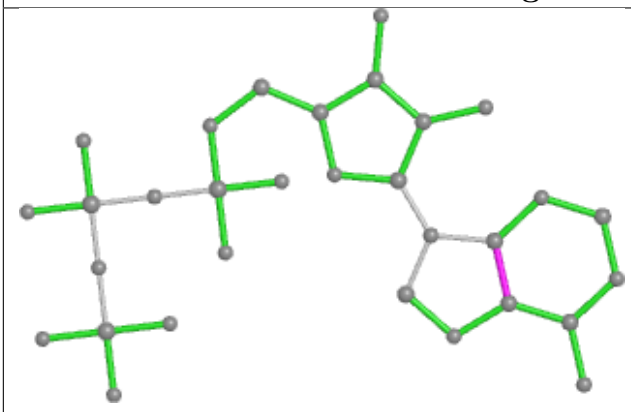
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

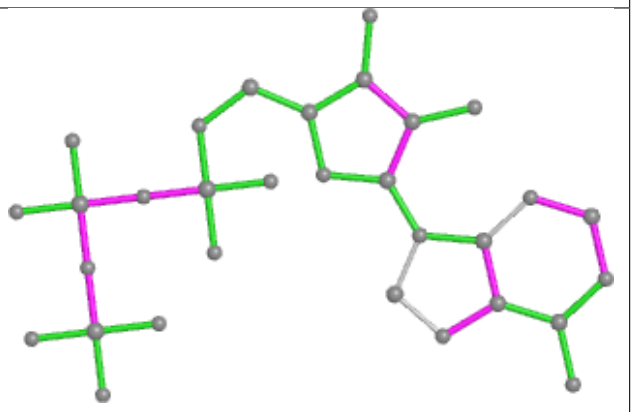
Ligand ATP B 5101



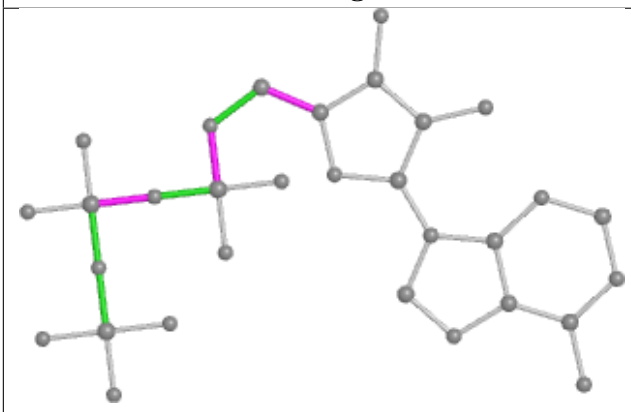
Ligand ATP I 5101



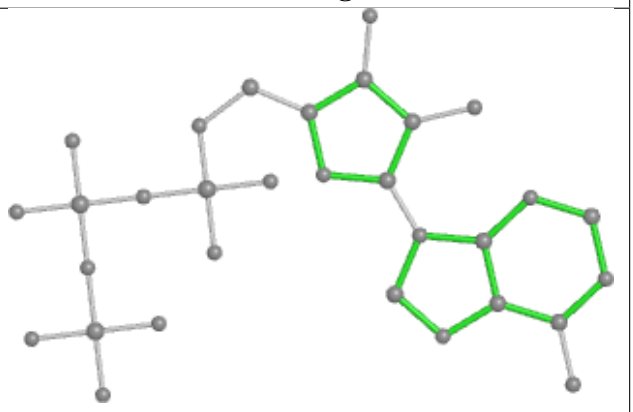
Bond lengths



Bond angles

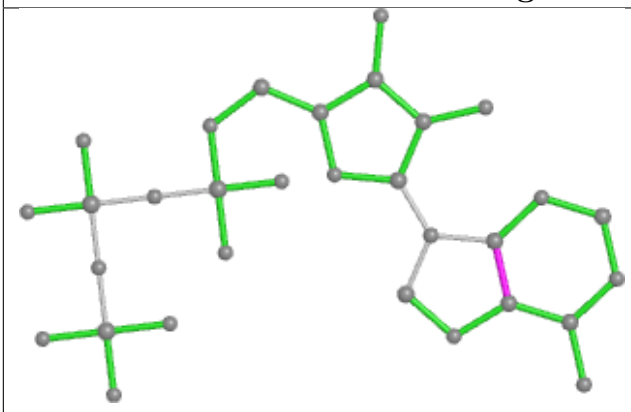


Torsions

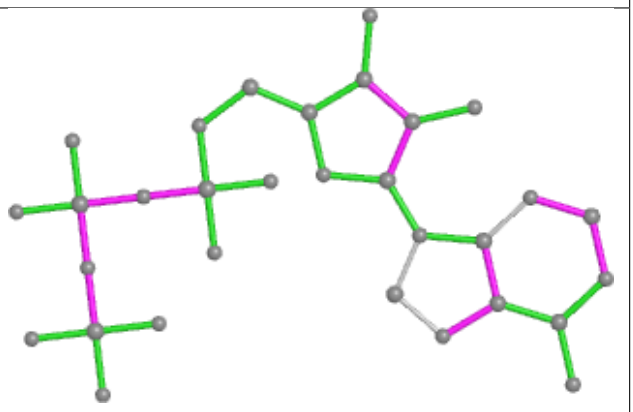


Rings

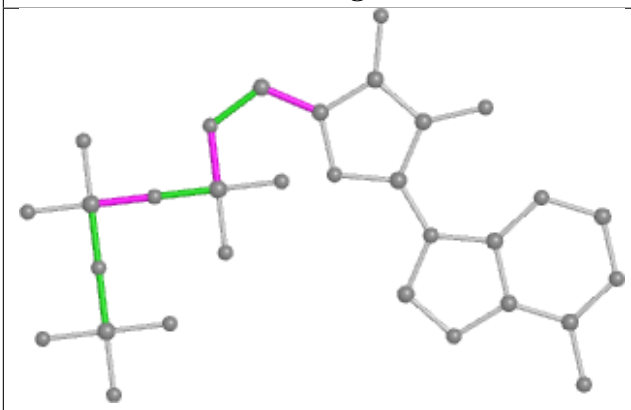
Ligand ATP E 5101



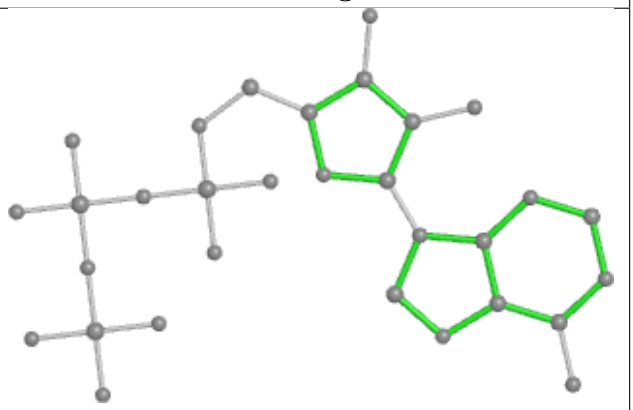
Bond lengths



Bond angles

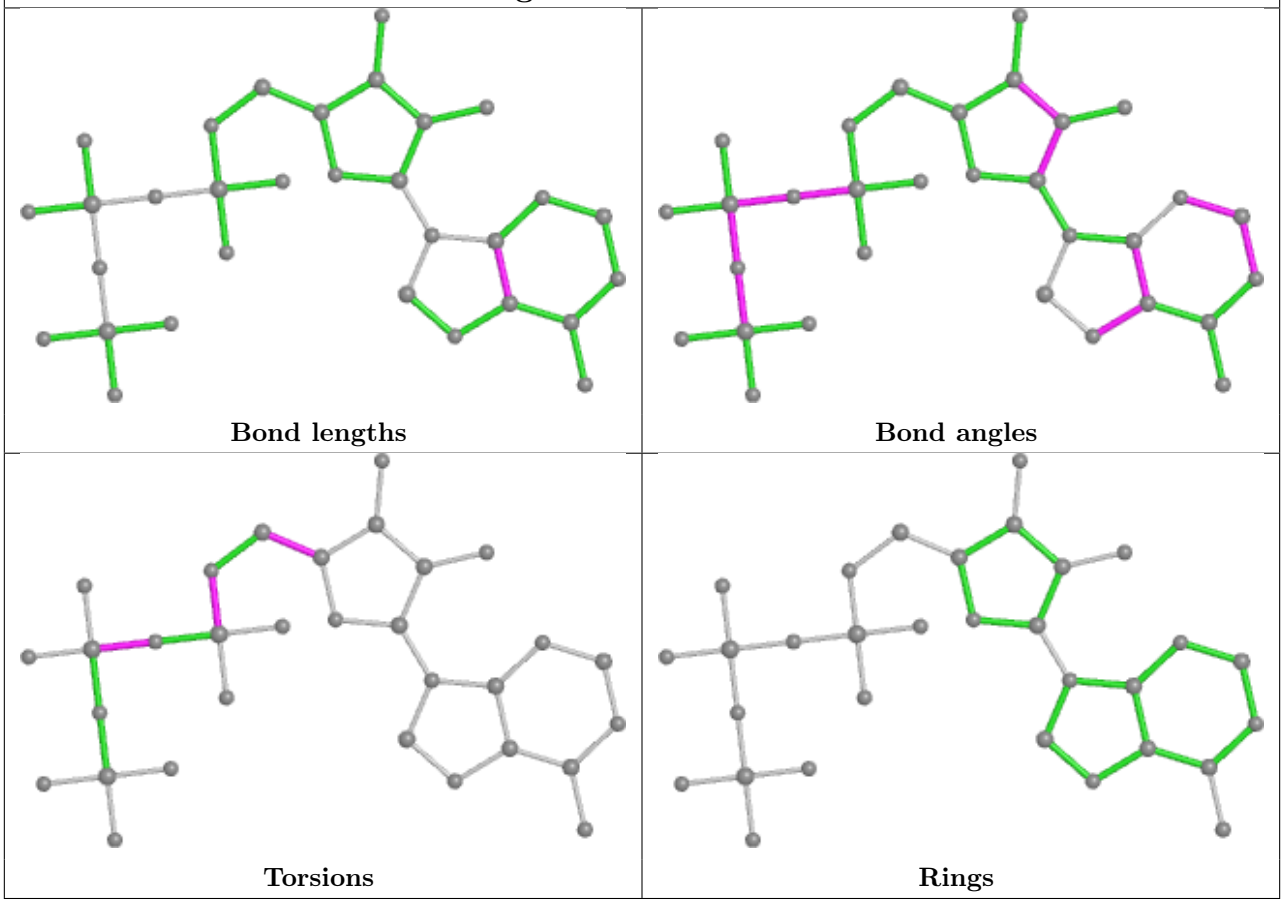


Torsions



Rings

Ligand ATP G 5101



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	E	14
2	B	14
2	I	14
2	G	14

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	4345:UNK	C	4540:PHE	N	72.62
1	B	4345:UNK	C	4540:PHE	N	72.61

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	I	4345:UNK	C	4540:PHE	N	72.60
1	G	4345:UNK	C	4540:PHE	N	72.60
1	E	3613:UNK	C	3639:THR	N	43.07
1	B	3613:UNK	C	3639:THR	N	43.04
1	I	3613:UNK	C	3639:THR	N	43.03
1	G	3613:UNK	C	3639:THR	N	43.03
1	B	4253:GLU	C	4320:UNK	N	27.32
1	E	4253:GLU	C	4320:UNK	N	27.31
1	I	4253:GLU	C	4320:UNK	N	27.29
1	G	4253:GLU	C	4320:UNK	N	27.28
1	B	3163:UNK	C	3170:UNK	N	16.19
1	E	3163:UNK	C	3170:UNK	N	16.19
1	I	3163:UNK	C	3170:UNK	N	16.19
1	G	3163:UNK	C	3170:UNK	N	16.19
1	B	3063:UNK	C	3134:UNK	N	14.97
1	E	3063:UNK	C	3134:UNK	N	14.96
1	I	3063:UNK	C	3134:UNK	N	14.96
1	G	3063:UNK	C	3134:UNK	N	14.96
1	E	3468:UNK	C	3511:UNK	N	14.60
1	G	3468:UNK	C	3511:UNK	N	14.60
1	B	3468:UNK	C	3511:UNK	N	14.59
1	I	3468:UNK	C	3511:UNK	N	14.59
1	B	2703:UNK	C	2734:ASN	N	14.53
1	G	2703:UNK	C	2734:ASN	N	14.49
1	E	2703:UNK	C	2734:ASN	N	14.48
1	I	2703:UNK	C	2734:ASN	N	14.48
1	E	3236:UNK	C	3241:UNK	N	13.44
1	B	3236:UNK	C	3241:UNK	N	13.43
1	I	3236:UNK	C	3241:UNK	N	13.43
1	G	3236:UNK	C	3241:UNK	N	13.43
1	E	2976:UNK	C	2995:UNK	N	12.55
1	B	2976:UNK	C	2995:UNK	N	12.54
1	I	2976:UNK	C	2995:UNK	N	12.54
1	G	2976:UNK	C	2995:UNK	N	12.54
1	B	1564:UNK	C	1573:MET	N	12.29
1	E	1564:UNK	C	1573:MET	N	12.29
1	I	1564:UNK	C	1573:MET	N	12.27
1	G	1564:UNK	C	1573:MET	N	12.27
1	B	3254:UNK	C	3261:UNK	N	8.31
1	E	3254:UNK	C	3261:UNK	N	8.31
1	I	3254:UNK	C	3261:UNK	N	8.31
1	G	3254:UNK	C	3261:UNK	N	8.31

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	1297:UNK	C	1430:UNK	N	6.25
1	I	1297:UNK	C	1430:UNK	N	6.25
1	G	1297:UNK	C	1430:UNK	N	6.25
1	B	1297:UNK	C	1430:UNK	N	6.24
1	B	2939:ARG	C	2942:UNK	N	3.30
1	E	2939:ARG	C	2942:UNK	N	3.27
1	G	2939:ARG	C	2942:UNK	N	3.27
1	I	2939:ARG	C	2942:UNK	N	3.26
1	I	2479:LEU	C	2487:UNK	N	3.25
1	E	2479:LEU	C	2487:UNK	N	3.24
1	G	2479:LEU	C	2487:UNK	N	3.24
1	B	2479:LEU	C	2487:UNK	N	3.23

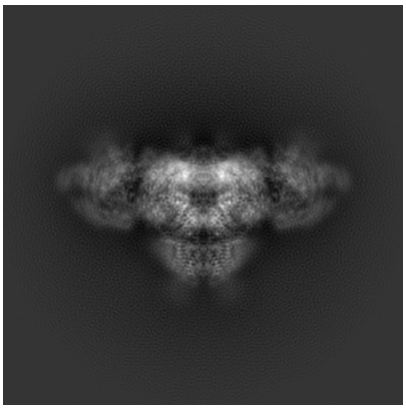
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-8382. These allow visual inspection of the internal detail of the map and identification of artifacts.

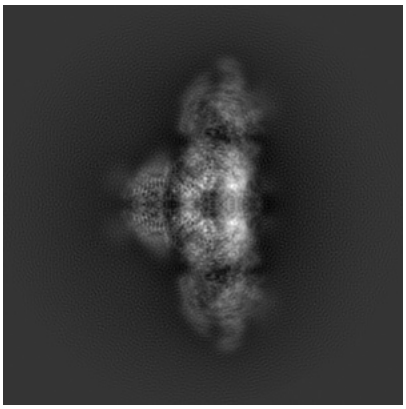
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

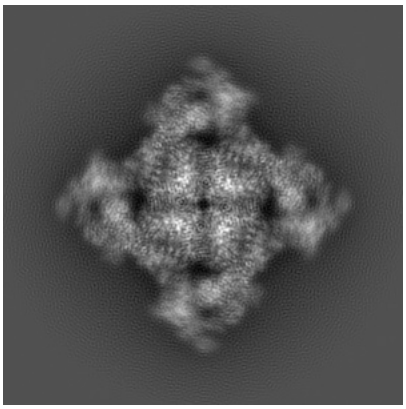
6.1.1 Primary map



X

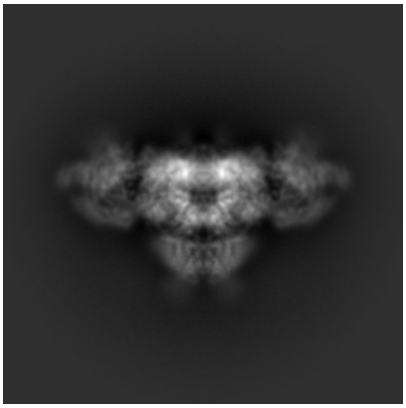


Y

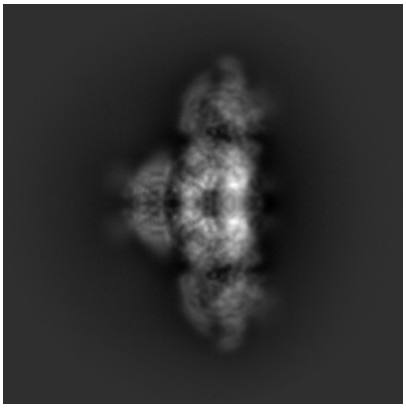


Z

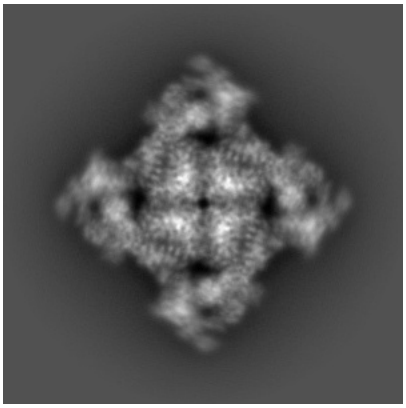
6.1.2 Raw map



X



Y

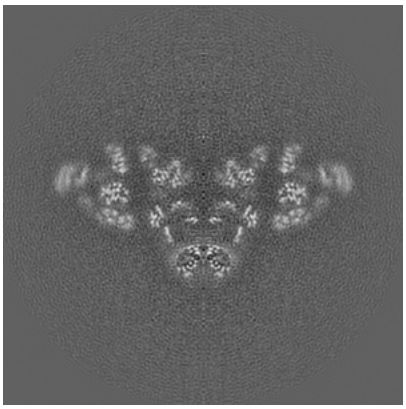


Z

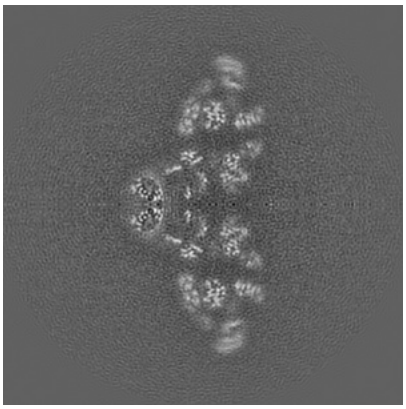
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

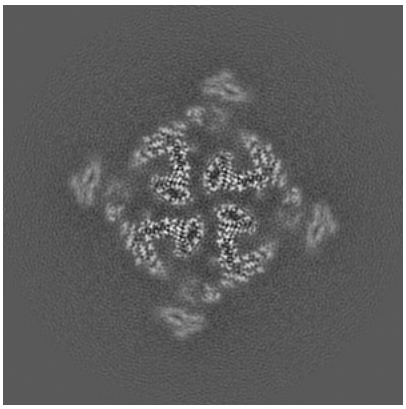
6.2.1 Primary map



X Index: 200

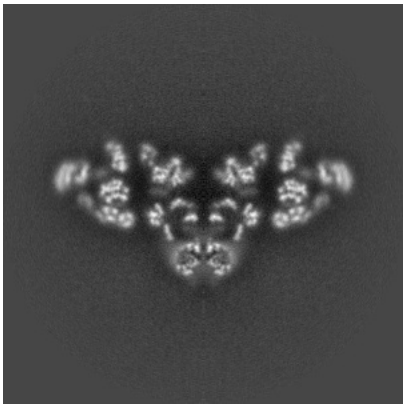


Y Index: 200

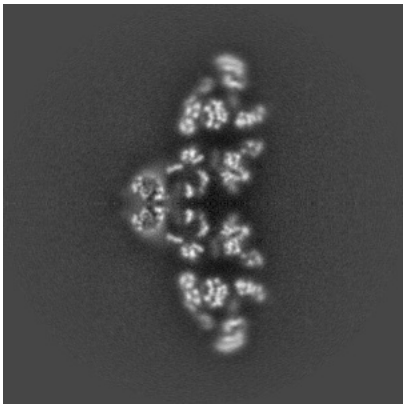


Z Index: 200

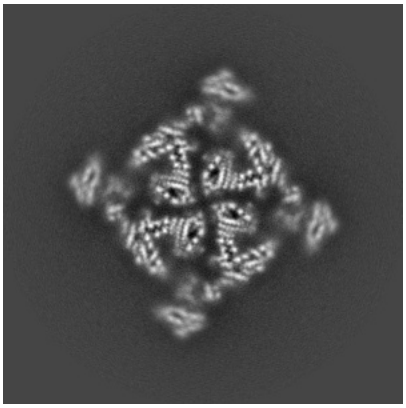
6.2.2 Raw map



X Index: 200



Y Index: 200

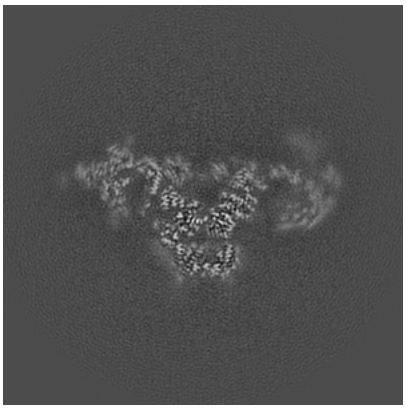


Z Index: 200

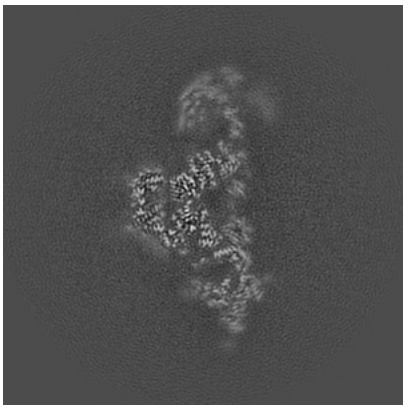
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

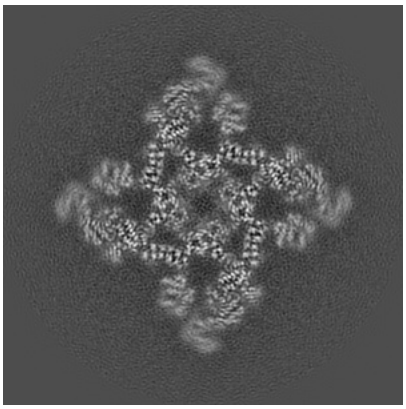
6.3.1 Primary map



X Index: 216

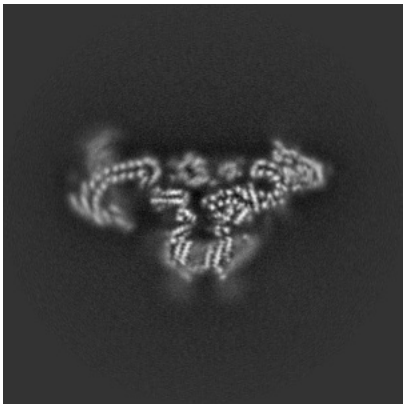


Y Index: 184

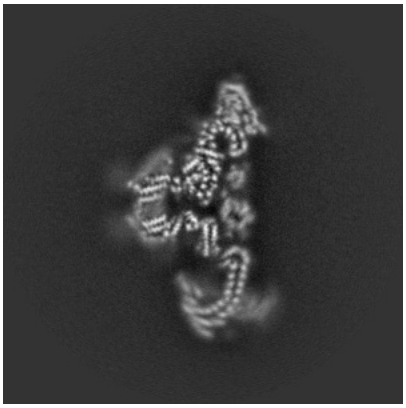


Z Index: 226

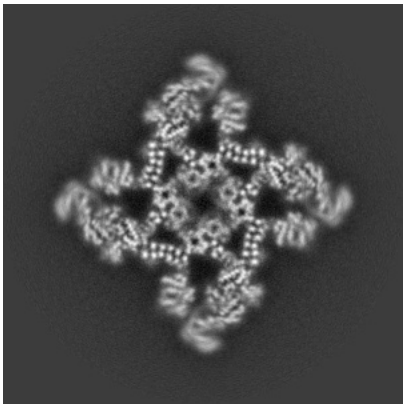
6.3.2 Raw map



X Index: 176



Y Index: 224

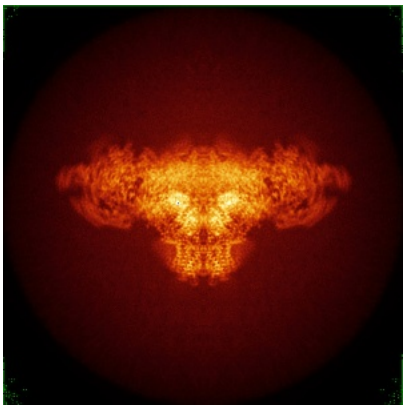


Z Index: 227

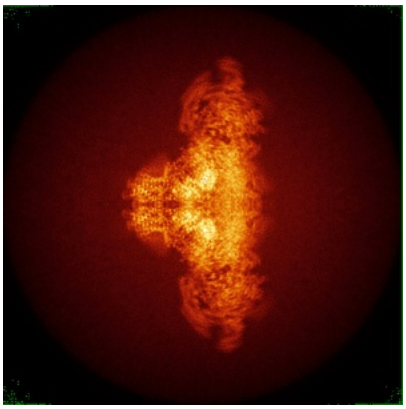
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

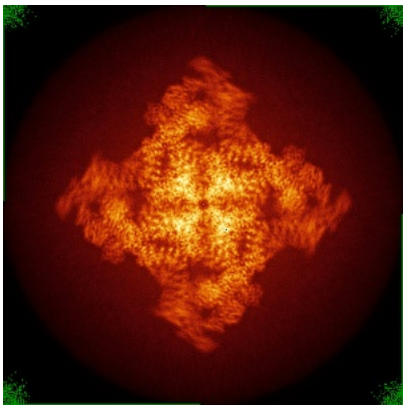
6.4.1 Primary map



X

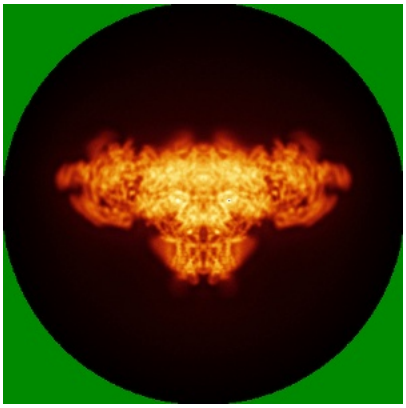


Y

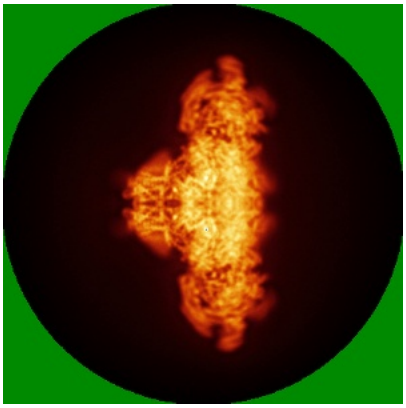


Z

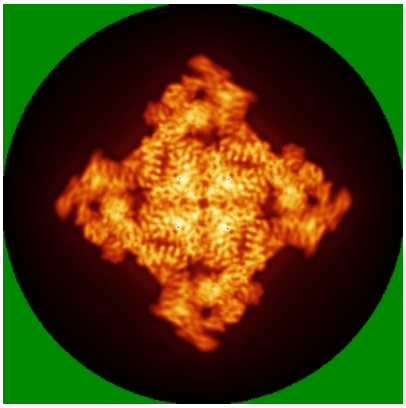
6.4.2 Raw map



X



Y

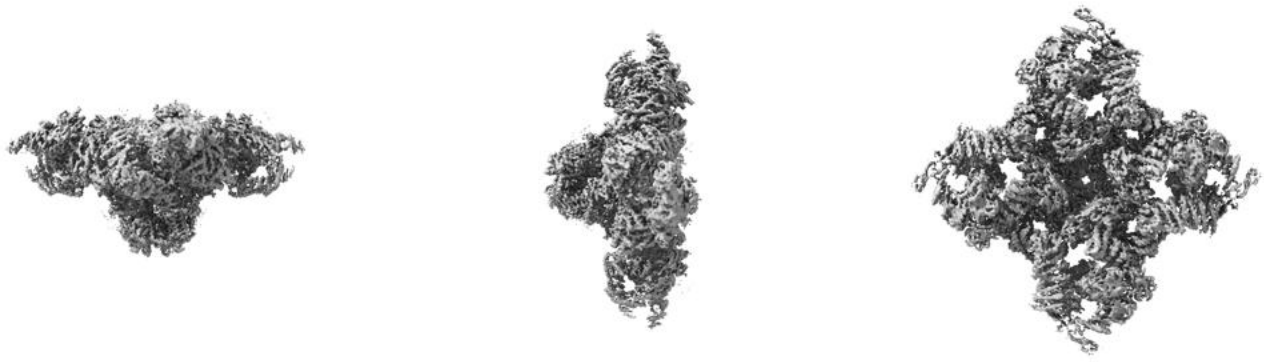


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

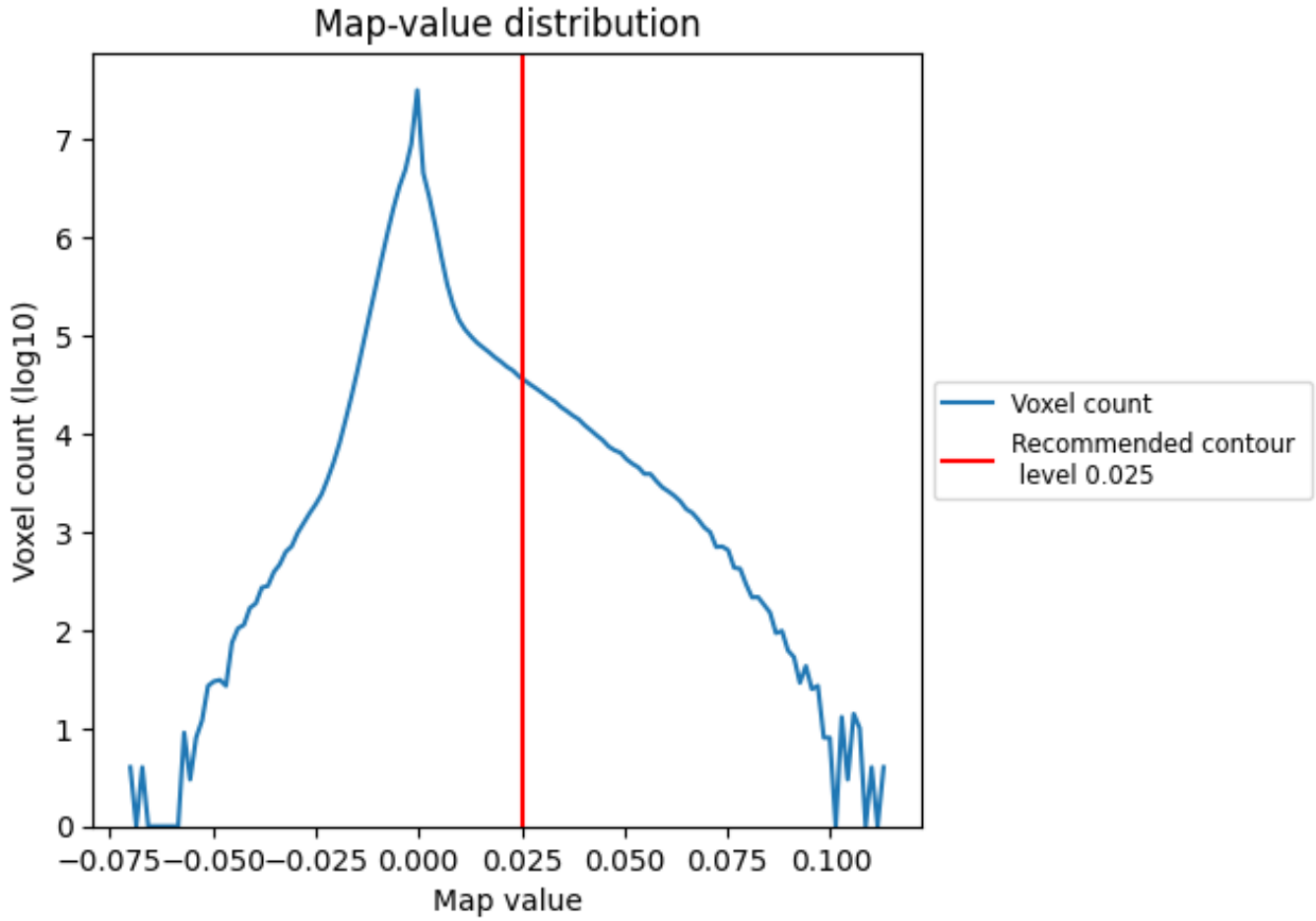
6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

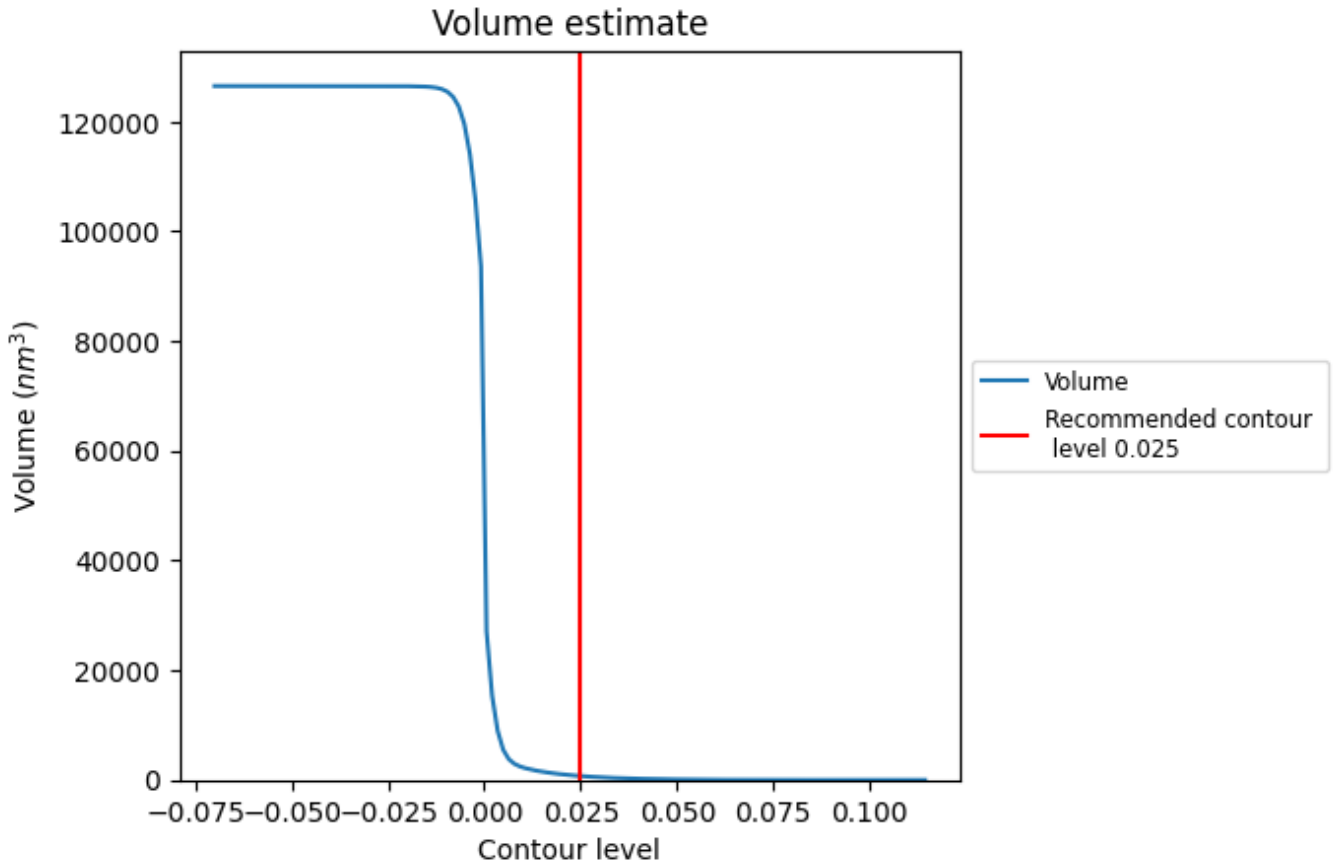
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

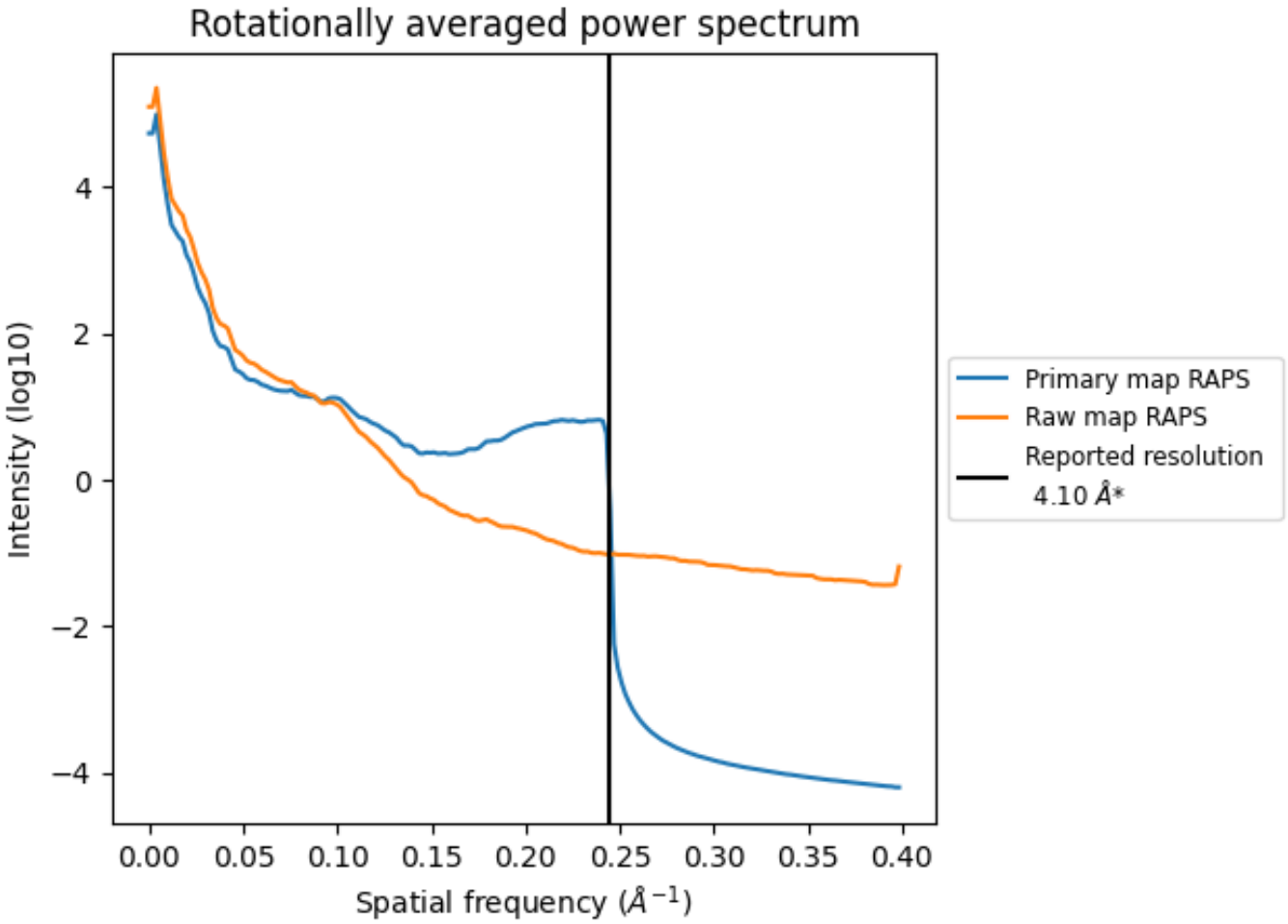
7.2 Volume estimate



The volume at the recommended contour level is 713 nm^3; this corresponds to an approximate mass of 644 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

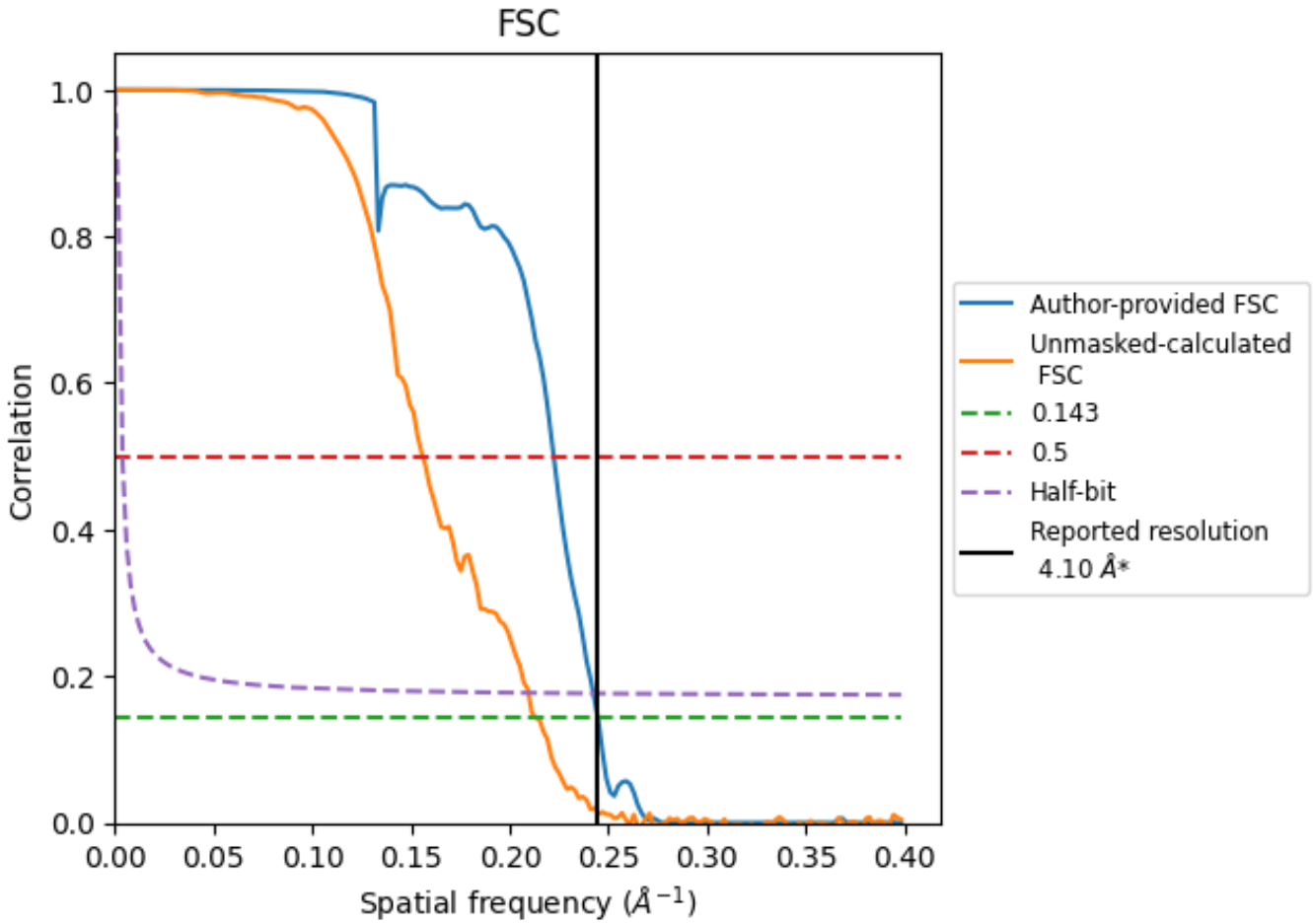


*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8.2 Resolution estimates (i)

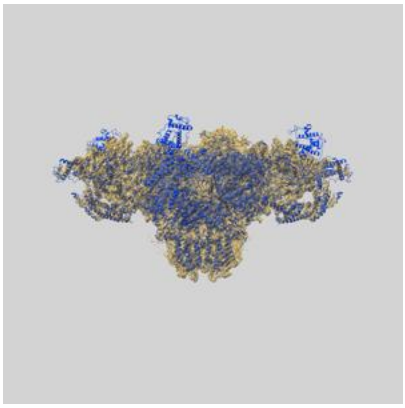
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.10	-	-
Author-provided FSC curve	4.08	4.50	4.13
Unmasked-calculated*	4.69	6.41	4.77

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.69 differs from the reported value 4.1 by more than 10 %

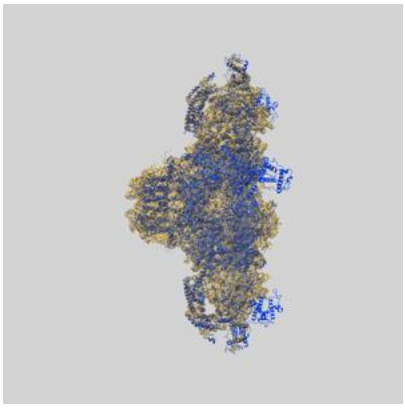
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-8382 and PDB model 5TAQ. Per-residue inclusion information can be found in section 3 on page 6.

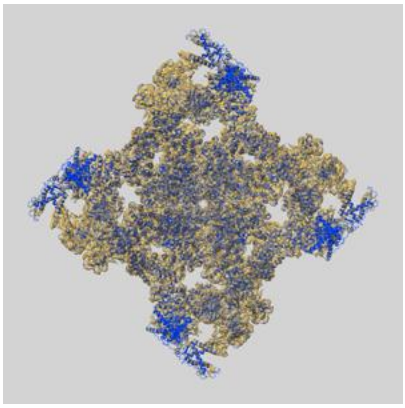
9.1 Map-model overlay



X



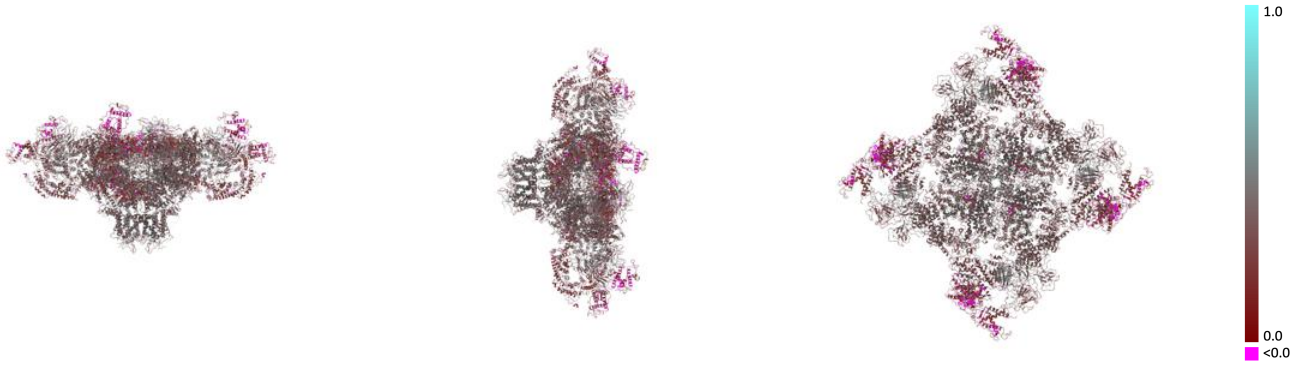
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

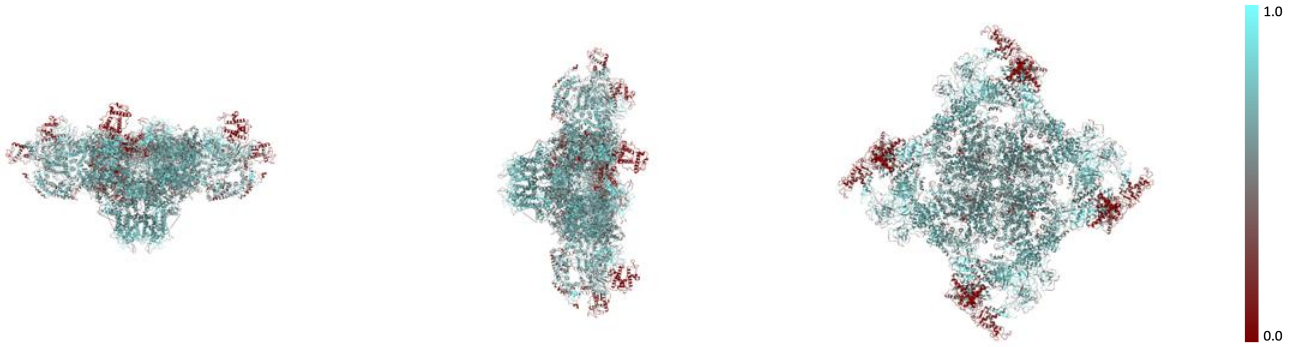
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

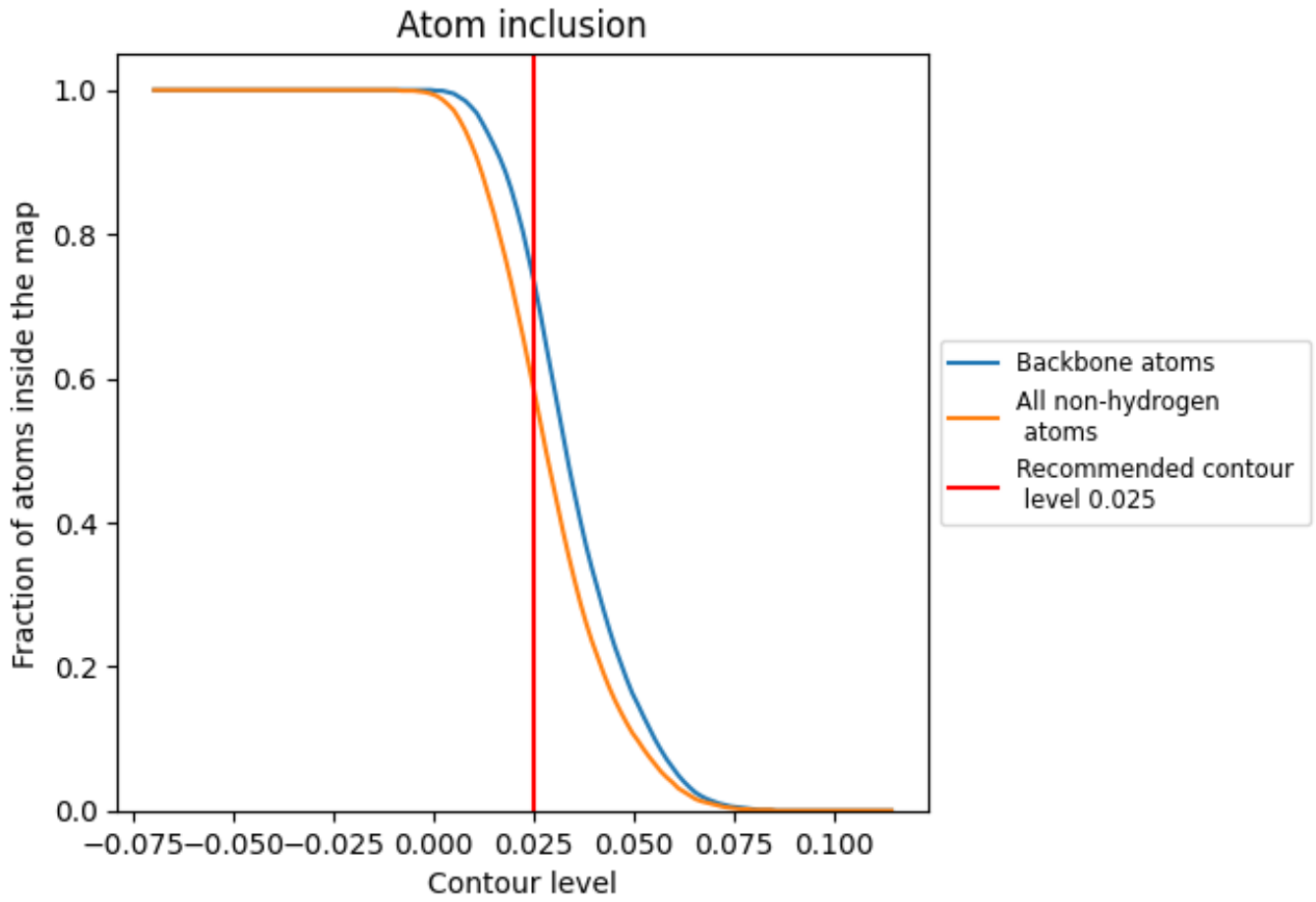
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.025).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 58% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5830	0.3350
A	0.5570	0.3500
B	0.5830	0.3340
E	0.5840	0.3340
F	0.5600	0.3560
G	0.5840	0.3350
H	0.5560	0.3530
I	0.5840	0.3350
J	0.5620	0.3490