WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Jun 12, 2024 – 10:49 PM EDT

PDB ID	:	3OPY
Title	:	Crystal structure of Pichia pastoris phosphofructokinase in the T-state
Authors	:	Strater, N.; Marek, S.; Kuettner, E.B.; Kloos, M.; Keim, A.; Bruser, A.; Kirchberger, J.; Schoneberg, T.
Deposited on	:	2010-09-02
Resolution	:	3.05 Å(reported)

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

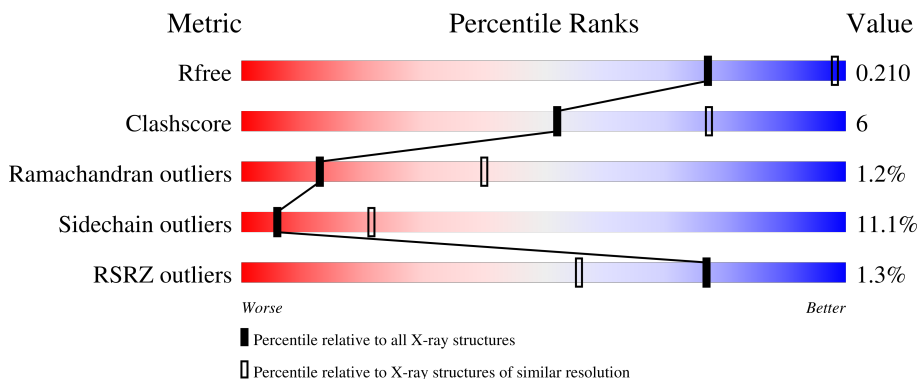|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.05 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	Percentile Ranks	Value
Rfree		0.210
Clashscore		6
Ramachandran outliers		1.2%
Sidechain outliers		11.1%
RSRZ outliers		1.3%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1754 (3.10-3.02)
Clashscore	141614	1864 (3.10-3.02)
Ramachandran outliers	138981	1794 (3.10-3.02)
Sidechain outliers	138945	1793 (3.10-3.02)
RSRZ outliers	127900	1713 (3.10-3.02)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	989	75% 18% • 5%
1	C	989	75% 17% • 5%
1	E	989	75% 17% • 5%
1	G	989	75% 17% • 5%
2	B	941	76% 16% • 6%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	D	941	77% 16% • 6%
2	F	941	3% 76% 16% • 6%
2	H	941	2% 76% 16% • 6%
3	I	351	65% 24% • 8%
3	J	351	61% 28% • 8%
3	K	351	% 67% 22% • 8%
3	L	351	66% 23% • 8%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	SO4	C	991	-	-	X	-

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 65025 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called 6-phosphofructo-1-kinase alpha-subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	936	Total	C	N	O	S	0	0	0
			7008	4410	1200	1373	25			
1	C	936	Total	C	N	O	S	0	0	0
			7008	4410	1200	1373	25			
1	E	936	Total	C	N	O	S	0	0	0
			7008	4410	1200	1373	25			
1	G	936	Total	C	N	O	S	0	0	0
			7008	4410	1200	1373	25			

- Molecule 2 is a protein called 6-phosphofructo-1-kinase beta-subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	884	Total	C	N	O	S	0	0	0
			6546	4093	1165	1254	34			
2	D	884	Total	C	N	O	S	0	0	0
			6546	4093	1165	1254	34			
2	F	884	Total	C	N	O	S	0	0	0
			6546	4093	1165	1254	34			
2	H	884	Total	C	N	O	S	0	0	0
			6546	4093	1165	1254	34			

- Molecule 3 is a protein called 6-phosphofructo-1-kinase gamma-subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	I	323	Total	C	N	O	S	0	0	0
			2590	1650	439	492	9			
3	J	323	Total	C	N	O	S	0	0	0
			2590	1650	439	492	9			
3	K	323	Total	C	N	O	S	0	0	0
			2590	1650	439	492	9			
3	L	323	Total	C	N	O	S	0	0	0
			2590	1650	439	492	9			

• Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0
4	A	1	Total 5	O 4	S 1	0	0

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 5	O 4	S 1	0	0
4	B	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	C	1	Total 5	O 4	S 1	0	0
4	D	1	Total 5	O 4	S 1	0	0
4	D	1	Total 5	O 4	S 1	0	0
4	D	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	E	1	Total 5	O 4	S 1	0	0
4	E	1	Total 5	O 4	S 1	0	0
4	F	1	Total 5	O 4	S 1	0	0
4	F	1	Total 5	O 4	S 1	0	0
4	F	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	G	1	Total 5	O 4	S 1	0	0
4	H	1	Total 5	O 4	S 1	0	0
4	H	1	Total 5	O 4	S 1	0	0
4	H	1	Total 5	O 4	S 1	0	0
4	H	1	Total 5	O 4	S 1	0	0
4	I	1	Total 5	O 4	S 1	0	0
4	I	1	Total 5	O 4	S 1	0	0
4	I	1	Total 5	O 4	S 1	0	0
4	I	1	Total 5	O 4	S 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	I	1	Total 5	O 4	S 1	0	0
4	J	1	Total 5	O 4	S 1	0	0
4	J	1	Total 5	O 4	S 1	0	0
4	J	1	Total 5	O 4	S 1	0	0
4	K	1	Total 5	O 4	S 1	0	0
4	K	1	Total 5	O 4	S 1	0	0
4	K	1	Total 5	O 4	S 1	0	0
4	L	1	Total 5	O 4	S 1	0	0
4	L	1	Total 5	O 4	S 1	0	0
4	L	1	Total 5	O 4	S 1	0	0

- Molecule 5 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).
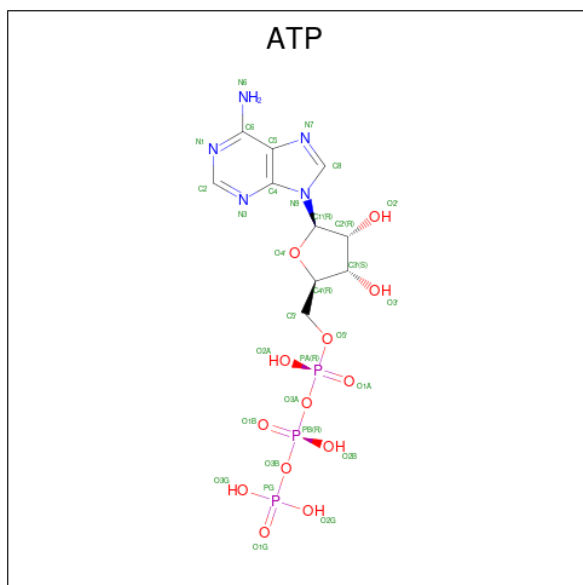
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total 31	C 10	N 5	O 13	P 3	0	0

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	D	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
5	F	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
5	H	1	Total	C	N	O	P	0	0
			31	10	5	13	3		

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
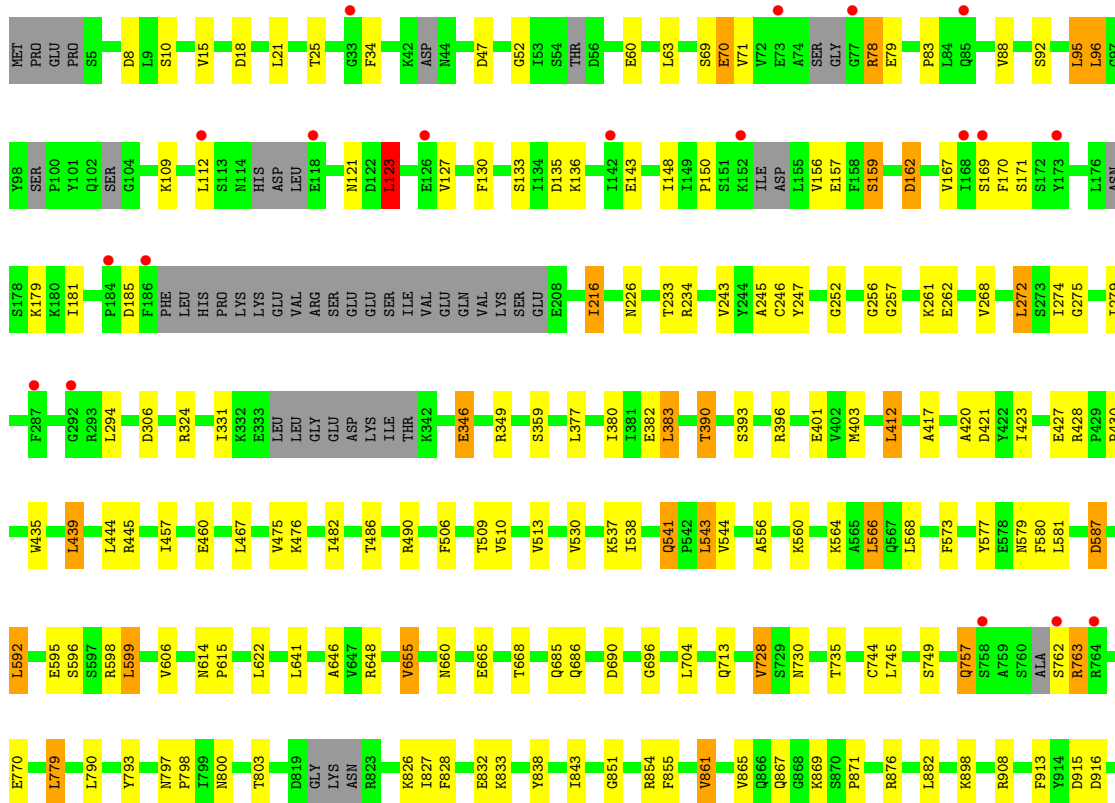
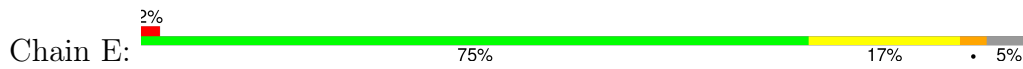- Molecule 1: 6-phosphofructo-1-kinase alpha-subunit

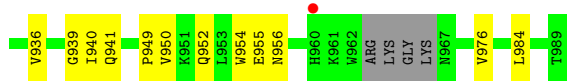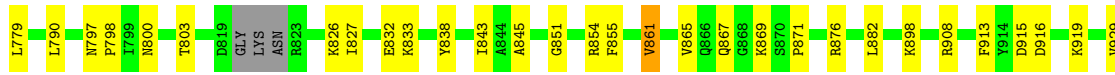- Molecule 1: 6-phosphofructo-1-kinase alpha-subunit

• Molecule 1: 6-phosphofructo-1-kinase alpha-subunit

Chain E:

K919 S924 G925 K926 V929 V936 G939 I940 Q941 P949 V950 K951 Q952 L953 W954 E955 N956 W962 ARG LYS GLY LYS N967 V976 L984 T989
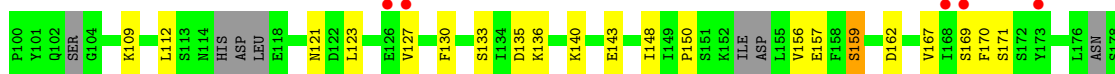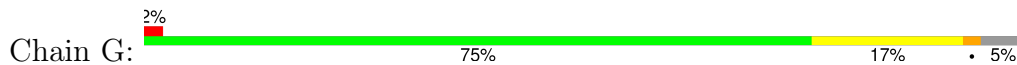
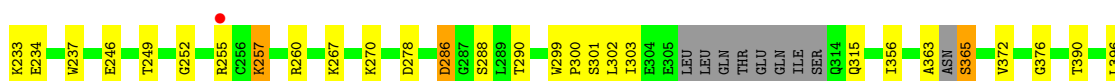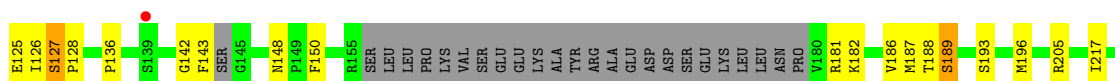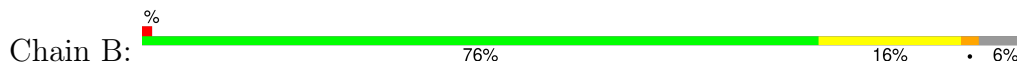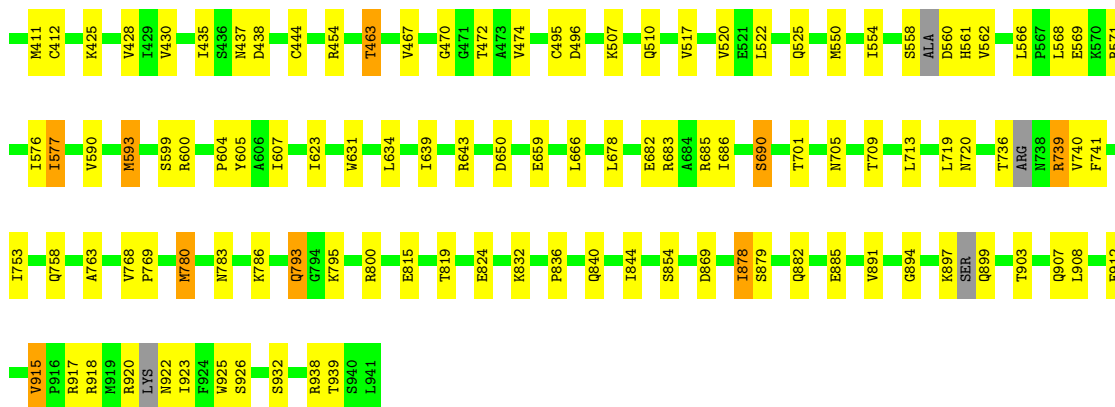● **Molecule 1: 6-phosphofructo-1-kinase alpha-subunit**

Chain G:

MET PRO GLU PRO S5 D8 L9 S10 V15 E24 F34 R38 K42 ASP N44 D47 L50 T51 G52 I53 S54 THR D56 S57 I58 K59 E60 L63 S69 E70 V71 A74 SER GLY G77 R78 E79 P83 V88 S92 L95 L96 G97 Y98 SER

P100 Y101 Q102 SER G104 K109 L112 S113 N114 HIS ASP LEU E118 N121 D122 L123 S133 I134 D135 K136 K140 E143 I148 I149 P150 S151 K152 ILE ASP L155 V156 E157 F158 S159 D162 V167 I168 S169 F170 S171 S172 Y173 L176 ASN S178

K179 K180 I181 D185 F186 PHE LEU HIS PRO LYS LYS GLU VAL ARG SER GLU GLU SER ILE VAL GLU GLN VAL LYS SER K342 E208 I216 N226 T233 R234 V243 Y244 A245 C246 Y247 G252 G256 G257 K261 E262 V268 L272 S273 I274 G275 I279 E286

L294 D306 R324 I331 K332 E333 LEU LEU GLY GLU ASP LYS ILE THR K342 E346 R349 I353 S359 L377 I380 I381 E382 L383 T390 S393 R396 E401 V402 M403 L412 A417 A420 D421 Y422 I423 E427 R428 P429 P430 W435

L439 L444 R445 I457 E460 L467 V475 K476 I482 T486 R490 F506 T509 V510 V513 V530 K537 I538 Q541 P542 L543 V544 A556 K560 K564 A565 L566 Q567 L568 F573 Y577 E578 N579 F580 L581 D587 L592

E595 S596 S597 R598 L599 V606 N614 P615 L622 L641 A646 V647 R648 V655 N660 E665 T668 Q685 Q686 D690 G696 L704 Q713 V728 S729 N730 T735 C744 L745 S749 Q757 S758 A759 S760 ALA S762 R763 R764 E770

L779 L790 N797 P798 I799 N800 T803 D819 GLY LYS ASN R823 K826 I827 E832 K833 Y838 I843 A844 A845 G851 R854 F855 V861 V865 Q866 Q867 G868 K869 S870 P871 B876 L882 K898 R908 F913 Y914 D915 D916 K919 V929

V936 G939 I940 Q941 P949 V950 K951 Q952 L953 W954 E955 N956 H960 K961 W962 ARG LYS GLY LYS N967 V976 L984 T989

● **Molecule 2: 6-phosphofructo-1-kinase beta-subunit**

Chain B:

MET PRO ASP ALA S5 L6 T10 I13 T14 A17 P18 N19 ILE S21 LEU L23 S42 N43 Q44 K45 LEU PHE TRP L49 E52 V58 N78 N81 L82 T83 ARG SER LEU TYR ARG LYS ASP TRP ARG SER I94 I98 L105 S106 V119 S122 P123 N124

E125 I126 S127 P128 P136 S139 G142 F143 SER G145 N148 P149 F150 R155 SER LEU LEU PRO LYS VAL SER GLU GLU LYS ALA TYR ARG ALA GLU ASP ASP SER GLU LYS LEU LEU ASN PRO V180 R181 K182 V186 M187 T188 S189 S193 M196 R205 I217

K233 E234 W237 E246 T249 G252 R255 C256 K257 R260 K267 K270 D278 D286 G287 S288 L289 T290 W299 P300 S301 L302 I303 E304 E305 LEU LEU GLN THR GLU GLN ILE SER Q314 Q315 I356 A363 ASN S365 V372 G376 T390 L396
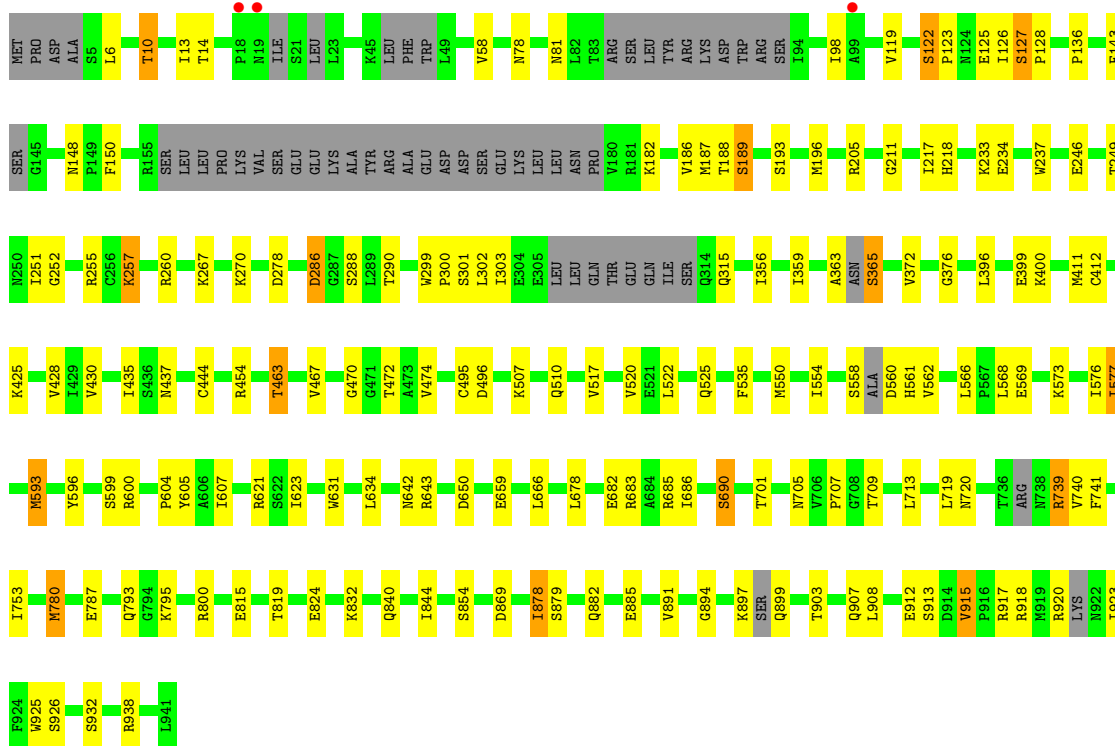
• Molecule 2: 6-phosphofructo-1-kinase beta-subunit

Chain D:

• Molecule 2: 6-phosphofructo-1-kinase beta-subunit

Chain F:

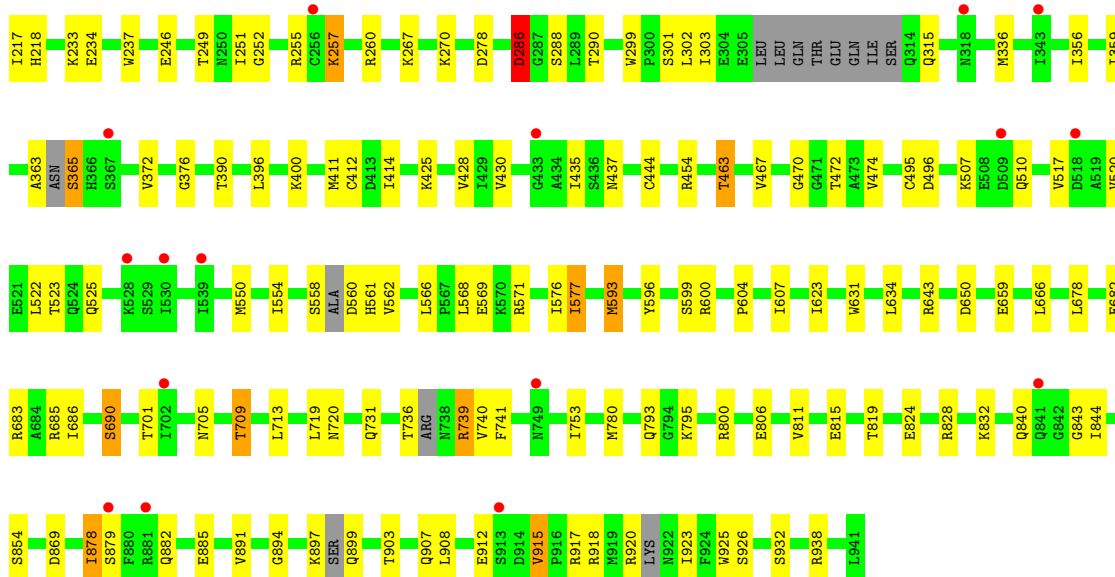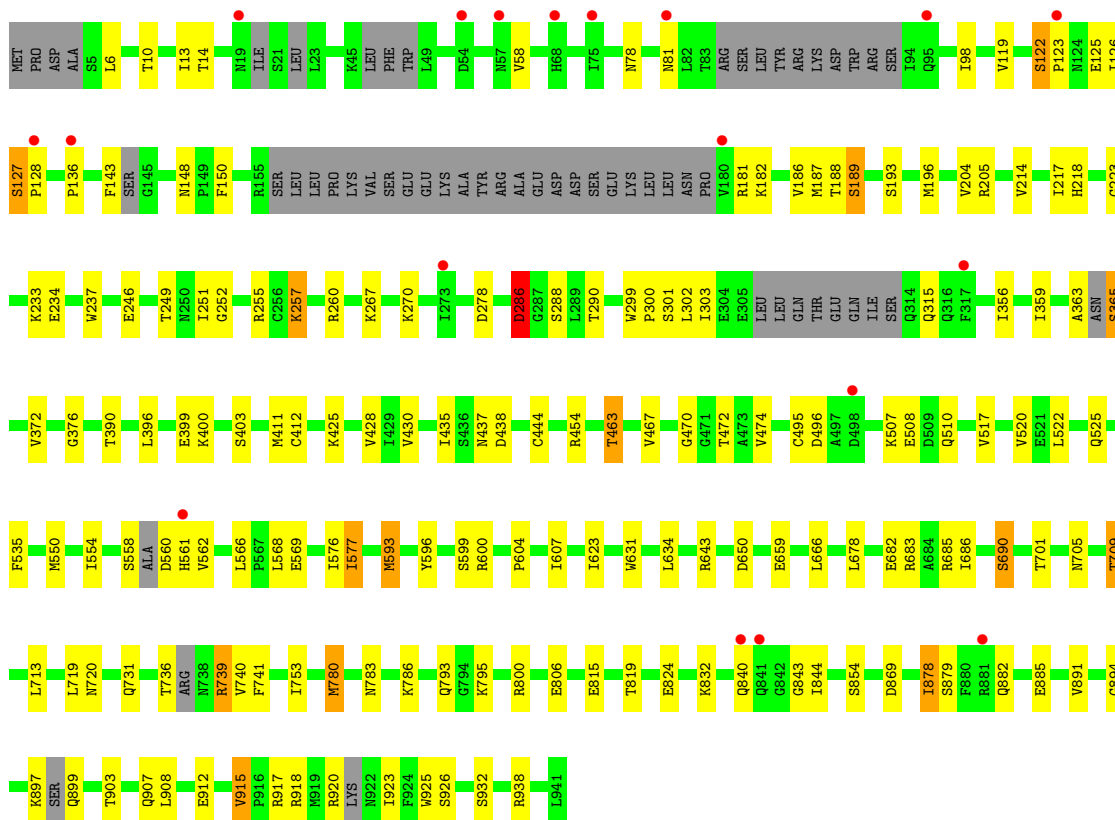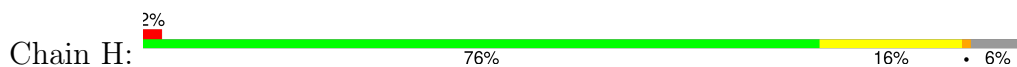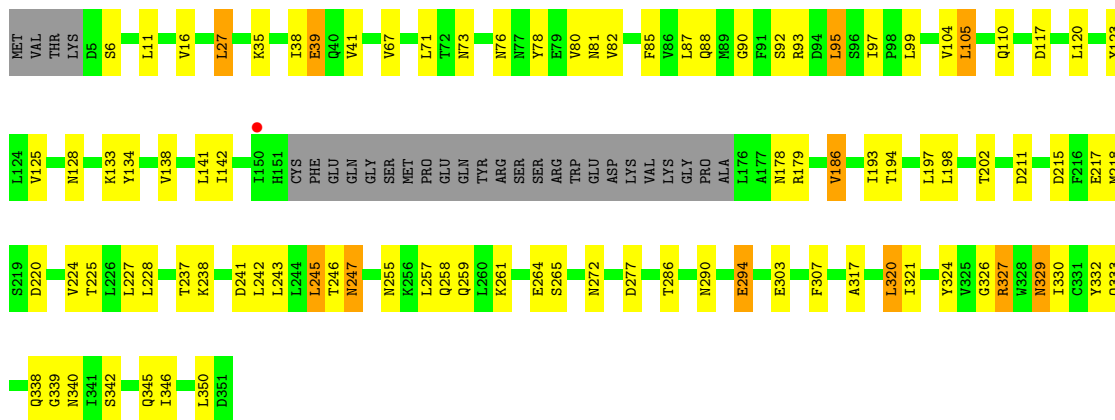• Molecule 2: 6-phosphofructo-1-kinase beta-subunit

Chain H:

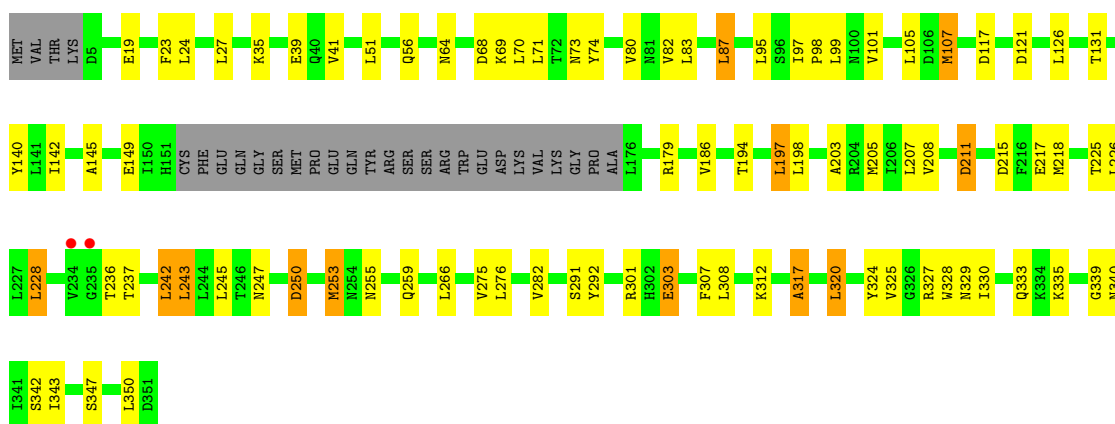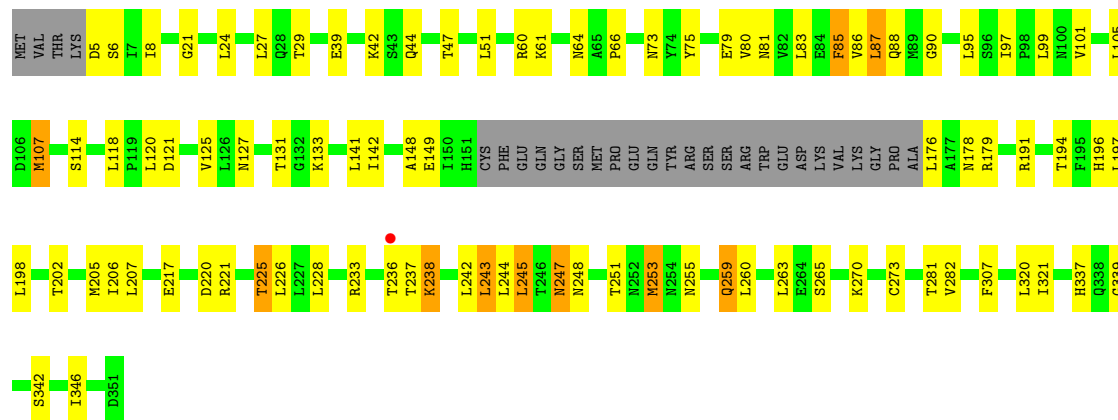• Molecule 3: 6-phosphofructo-1-kinase gamma-subunit

Chain I:

MET VAL THR LYS D5 S6 L11 V16 L27 K35 I38 E39 Q40 V41 V67 L71 T72 N73 N76 N77 Y78 E79 V80 N81 V82 F85 V86 L87 Q88 M89 G90 F91 S92 R93 D94 L95 S96 I97 P98 L99 V104 L105 Q110 D117 L120 Y123

L124 V125 N128 K133 Y134 V138 L141 I142 I150 H151 CYS PHE GLU GLN GLY SER MET PRO GLU GLN TYR ARG SER SER ARG GLU ASP LYS VAL LYS GLY PRO ALA L176 A177 N178 R179 V186 I193 T194 L197 L198 T202 D211 D215 F216 E217 M218

S219 D220 V224 T225 L226 L227 L228 T237 K238 D241 L242 L243 L244 L245 T246 N247 N255 K256 L257 Q258 Q259 L260 K261 E264 S265 N272 D277 T286 N290 E294 E303 F307 A317 L320 I321 Y324 V325 G326 R327 W328 N329 I330 C331 Y332 Q333

Q338 G339 N340 I341 S342 Q345 I346 L350 D351

● Molecule 3: 6-phosphofructo-1-kinase gamma-subunit

Chain J:

61%	28% •	8%

MET VAL THR LYS D5 S6 I7 I8 L11 V16 E19 F20 G21 L24 L27 L31 P37 I38 V41 K42 L51 N62 P66 K69 L70 L71 T72 N73 Y74 Y78 V82 F85 V86 G90 L95 S96 I97 P98 V101 M107

L111 L118 D121 V125 L126 M127 N128 T131 Y140 L141 I142 H151 CYS PHE GLU GLN GLY SER MET PRO GLU GLN TYR ARG SER SER ARG GLU ASP LYS VAL LYS GLY PRO ALA L176 A177 N178 R183 V186 D190 T194 L197 L198 L207 D215

F216 E217 M218 S219 D220 F223 V224 T225 L226 L227 L228 R233 T236 T237 K238 K239 L242 L243 L244 L245 T246 N247 M253 N254 N255 K256 L257 Q258 Q259 S265 L266 N267 K270 C273 L276 D277 Y278 Q279 V282 T286 Y292 I296 R301 H302 E303

F307 L308 K309 K310 R311 A317 L320 I321 Y324 W328 N329 Q333 K334 K335 G339 N340 I341 S342 I346 L350 D351

● Molecule 3: 6-phosphofructo-1-kinase gamma-subunit

Chain K:

%

67%	22% •	8%

MET VAL THR LYS D5 E19 F23 L24 L27 K35 E39 Q40 V41 L51 Q56 N64 D68 K69 L70 L71 T72 N73 Y74 V80 N81 V82 L83 L87 L95 S96 I97 P98 L99 N100 V101 L105 D106 M107 D117 D121 L126 T131

Y140 L141 I142 A145 E149 I150 H151 CYS PHE GLU GLN GLY SER MET PRO GLU GLN TYR ARG SER SER ARG GLU ASP LYS VAL LYS GLY PRO ALA L176 R179 V186 T194 L197 L198 A203 R204 M205 I206 L207 V208 D211 D215 F216 E217 M218 T225 L226

L227 L228 V234 G235 T236 T237 L242 L243 L244 L245 T246 N247 D250 M253 N254 N255 Q259 L266 V275 L276 V282 S291 Y292 R301 H302 E303 F307 L308 K312 A317 L320 Y324 V325 G326 R327 W328 N329 I330 Q333 K334 K335 G339 N340

I341 S342 I343 S347 L350 D351

● Molecule 3: 6-phosphofructo-1-kinase gamma-subunit

Chain L:

66%	23% •	8%

MET VAL THR LYS D5 S6 I7 I8 G21 L24 L27 Q28 T29 E39 K42 S43 Q44 T47 L51 R60 K61 N64 A65 P66 N73 Y74 Y75 E79 V80 N81 V82 L83 E84 F85 V86 L87 Q88 M89 G90 L95 S96 I97 P98 L99 N100 V101 L105

D106 M107 S114 L118 P119 L120 D121 V125 L126 N127 T131 G132 K133 L141 I142 A148 E149 I150 H151 CYS PHE GLU GLN GLY SER MET PRO GLU GLN TYR ARG SER SER ARG TRP GLU ASP LYS VAL LYS GLY PRO ALA L176 A177 N178 R179 R191 T194 F195 H196 L197

L198 T202 M205 I206 L207 E217 D220 R221 T225 L226 L227 L228 R233 T236 T237 K238 L242 L243 L244 L245 T246 N247 N248 T251 N252 M253 N254 N255 Q259 L260 L263 E264 S265 K270 C273 T281 V282 F307 L320 I321 H337 Q338 G339

S342 I346 D351

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	161.66Å 188.30Å 231.56Å 90.00° 92.85° 90.00°	Depositor
Resolution (Å)	29.80 – 3.05 29.82 – 3.05	Depositor EDS
% Data completeness (in resolution range)	(Not available) (29.80-3.05) 84.0 (29.82-3.05)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.95 (at 3.06Å)	Xtriage
Refinement program	BUSTER 2.8.0	Depositor
R, R_{free}	0.200 , 0.232 0.216 , 0.210	Depositor DCC
R_{free} test set	5145 reflections (2.01%)	wwPDB-VP
Wilson B-factor (Å^2)	59.9	Xtriage
Anisotropy	0.250	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 53.1	EDS
L-test for twinning[2]	$< |L| > = 0.42, < L^2 > = 0.24$	Xtriage
Estimated twinning fraction	0.079 for h,-k,-l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	65025	wwPDB-VP
Average B, all atoms (Å^2)	68.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.64% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, 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	0.49	0/7125	0.73	0/9664
1	C	0.50	0/7125	0.73	0/9664
1	E	0.46	0/7125	0.72	0/9664
1	G	0.47	0/7125	0.72	0/9664
2	B	0.51	0/6651	0.74	1/9002 (0.0%)
2	D	0.51	0/6651	0.74	1/9002 (0.0%)
2	F	0.47	0/6651	0.72	1/9002 (0.0%)
2	H	0.48	0/6651	0.73	1/9002 (0.0%)
3	I	0.61	0/2640	0.85	1/3578 (0.0%)
3	J	0.57	0/2640	0.85	0/3578
3	K	0.53	0/2640	0.80	0/3578
3	L	0.54	0/2640	0.78	0/3578
All	All	0.50	0/65664	0.75	5/88976 (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	E	0	1
2	B	0	1
2	D	0	1
2	F	0	1
2	H	0	1
All	All	0	5

There are no bond length outliers.

All (5) bond angle outliers are listed below:

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	I	67	VAL	C-N-CA	5.33	135.04	121.70
2	F	125	GLU	C-N-CA	5.15	134.57	121.70
2	B	125	GLU	C-N-CA	5.12	134.49	121.70
2	H	125	GLU	C-N-CA	5.03	134.27	121.70
2	D	125	GLU	C-N-CA	5.02	134.26	121.70

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	915	VAL	Mainchain
2	D	915	VAL	Mainchain
1	E	123	LEU	Mainchain
2	F	915	VAL	Mainchain
2	H	915	VAL	Mainchain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7008	0	6692	83	0
1	C	7008	0	6692	81	0
1	E	7008	0	6692	81	0
1	G	7008	0	6692	76	0
2	B	6546	0	6253	68	0
2	D	6546	0	6253	69	0
2	F	6546	0	6253	66	0
2	H	6546	0	6253	67	0
3	I	2590	0	2509	41	0
3	J	2590	0	2509	54	0
3	K	2590	0	2509	36	0
3	L	2590	0	2509	42	0
4	A	65	0	0	1	0
4	B	10	0	0	0	0
4	C	50	0	0	3	0
4	D	15	0	0	0	0
4	E	40	0	0	2	0
4	F	15	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	G	40	0	0	0	0
4	H	20	0	0	0	0
4	I	25	0	0	0	0
4	J	15	0	0	0	0
4	K	15	0	0	0	0
4	L	15	0	0	0	0
5	B	31	0	12	0	0
5	D	31	0	12	0	0
5	F	31	0	12	1	0
5	H	31	0	12	1	0
All	All	65025	0	61864	702	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 6.

All (702) 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:B:650:ASP:CB	2:D:148:ASN:HB2	2.01	0.90
2:F:148:ASN:HB2	2:H:650:ASP:CB	2.06	0.85
1:C:622:LEU:HD21	1:C:655:VAL:HG11	1.59	0.84
1:E:216:ILE:HG22	1:E:246:CYS:HB3	1.60	0.84
3:I:255:ASN:O	3:I:259:GLN:HG3	1.78	0.84
1:C:216:ILE:HG22	1:C:246:CYS:HB3	1.60	0.84
1:G:216:ILE:HG22	1:G:246:CYS:HB3	1.60	0.83
1:A:216:ILE:HG22	1:A:246:CYS:HB3	1.60	0.82
1:A:622:LEU:HD21	1:A:655:VAL:HG11	1.62	0.81
1:G:622:LEU:HD21	1:G:655:VAL:HG11	1.65	0.79
2:B:148:ASN:HB2	2:D:650:ASP:CB	2.13	0.79
1:E:622:LEU:HD21	1:E:655:VAL:HG11	1.65	0.78
2:D:780:MET:HE1	3:J:265:SER:HB3	1.66	0.78
3:K:225:THR:HG22	3:K:320:LEU:HD22	1.68	0.75
3:J:86:VAL:HG22	3:J:242:LEU:HB3	1.67	0.74
1:G:467:LEU:HD23	1:G:560:LYS:HG2	1.70	0.73
1:E:467:LEU:HD23	1:E:560:LYS:HG2	1.71	0.73
1:A:467:LEU:HD23	1:A:560:LYS:HG2	1.71	0.73
1:G:393:SER:HB2	1:G:396:ARG:HG3	1.70	0.73
1:A:393:SER:HB2	1:A:396:ARG:HG3	1.70	0.72
1:E:445:ARG:HE	1:E:587:ASP:HB2	1.55	0.72
2:H:122:SER:HB3	2:H:123:PRO:HD3	1.72	0.72
1:G:445:ARG:HE	1:G:587:ASP:HB2	1.54	0.71

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:393:SER:HB2	1:E:396:ARG:HG3	1.70	0.71
2:B:122:SER:HB3	2:B:123:PRO:HD3	1.72	0.71
1:C:393:SER:HB2	1:C:396:ARG:HG3	1.73	0.71
2:D:780:MET:CE	3:J:265:SER:HB3	2.20	0.71
1:C:445:ARG:HE	1:C:587:ASP:HB2	1.56	0.70
2:F:650:ASP:CB	2:H:148:ASN:HB2	2.20	0.70
1:C:467:LEU:HD23	1:C:560:LYS:HG2	1.73	0.70
2:F:122:SER:HB3	2:F:123:PRO:HD3	1.72	0.70
1:A:445:ARG:HE	1:A:587:ASP:HB2	1.56	0.70
3:J:282:VAL:HG22	3:J:340:ASN:HD21	1.57	0.70
3:L:225:THR:HG22	3:L:320:LEU:HD22	1.74	0.69
3:J:282:VAL:HG22	3:J:340:ASN:ND2	2.07	0.69
2:D:122:SER:HB3	2:D:123:PRO:HD3	1.73	0.68
1:C:390:THR:HG23	2:D:470:GLY:HA2	1.74	0.68
2:H:189:SER:HB3	2:H:288:SER:HB3	1.75	0.68
2:F:189:SER:HB3	2:F:288:SER:HB3	1.74	0.68
3:L:75:TYR:HB3	3:L:79:GLU:HB2	1.74	0.68
1:A:294:LEU:HD11	1:A:331:ILE:HD12	1.75	0.66
3:K:228:LEU:HD22	3:K:320:LEU:HD21	1.77	0.66
3:I:264:GLU:HG2	3:I:330:ILE:HD12	1.78	0.66
3:J:307:PHE:HD2	3:J:308:LEU:HD12	1.59	0.66
2:B:189:SER:HB3	2:B:288:SER:HB3	1.77	0.66
3:I:329:ASN:HD22	3:I:329:ASN:H	1.42	0.65
1:A:390:THR:HG23	2:B:470:GLY:HA2	1.78	0.65
2:D:709:THR:CG2	2:D:894:GLY:HA2	2.27	0.65
1:G:728:VAL:HG22	1:G:744:CYS:HB2	1.78	0.64
3:I:123:TYR:HD1	3:I:198:LEU:HD11	1.62	0.64
2:H:709:THR:CG2	2:H:894:GLY:HA2	2.27	0.64
2:D:189:SER:HB3	2:D:288:SER:HB3	1.78	0.64
2:F:709:THR:CG2	2:F:894:GLY:HA2	2.28	0.64
3:I:290:ASN:O	3:I:294:GLU:HB2	1.96	0.64
1:C:728:VAL:HG22	1:C:744:CYS:HB2	1.78	0.63
1:G:390:THR:HG23	2:H:470:GLY:HA2	1.79	0.63
3:I:247:ASN:HD22	3:I:247:ASN:H	1.47	0.63
1:A:728:VAL:HG22	1:A:744:CYS:HB2	1.80	0.63
2:F:290:THR:HG22	2:F:520:VAL:HG13	1.81	0.63
2:B:412:CYS:SG	2:B:454:ARG:HD2	2.38	0.63
1:E:728:VAL:HG22	1:E:744:CYS:HB2	1.81	0.63
3:I:257:LEU:HG	3:I:261:LYS:HD2	1.81	0.63
2:B:709:THR:CG2	2:B:894:GLY:HA2	2.29	0.62
3:L:221:ARG:HG3	3:L:253:MET:HB3	1.80	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:294:LEU:HD11	1:E:331:ILE:HD12	1.82	0.62
1:G:294:LEU:HD11	1:G:331:ILE:HD12	1.79	0.62
3:J:125:VAL:HG22	3:J:198:LEU:HD12	1.82	0.62
2:H:412:CYS:SG	2:H:454:ARG:HD2	2.40	0.61
3:I:120:LEU:HD23	3:I:193:ILE:HD12	1.82	0.61
3:I:95:LEU:HB3	3:I:99:LEU:HD23	1.83	0.61
2:F:412:CYS:SG	2:F:454:ARG:HD2	2.42	0.60
2:B:577:ILE:HD11	2:B:666:LEU:HD21	1.83	0.60
1:G:412:LEU:HD21	1:G:577:TYR:HA	1.84	0.60
3:J:11:LEU:HD22	3:J:16:VAL:HG11	1.84	0.60
3:K:307:PHE:HD2	3:K:308:LEU:HD12	1.66	0.60
1:C:762:SER:HB3	2:D:643:ARG:HG3	1.84	0.60
2:F:577:ILE:HD11	2:F:666:LEU:HD21	1.84	0.60
2:D:188:THR:OG1	2:D:249:THR:HG21	2.02	0.59
1:C:294:LEU:HD11	1:C:331:ILE:HD12	1.83	0.59
2:F:188:THR:OG1	2:F:249:THR:HG21	2.02	0.59
3:K:228:LEU:HD21	3:K:266:LEU:HD11	1.83	0.59
2:B:290:THR:HG22	2:B:520:VAL:HG13	1.83	0.59
2:H:286:ASP:O	2:H:290:THR:HG23	2.03	0.59
2:F:286:ASP:O	2:F:290:THR:HG23	2.03	0.59
2:H:918:ARG:HD2	2:H:920:ARG:HH21	1.68	0.59
2:B:286:ASP:O	2:B:290:THR:HG23	2.03	0.59
3:I:90:GLY:HA2	3:I:125:VAL:O	2.02	0.59
2:B:188:THR:OG1	2:B:249:THR:HG21	2.02	0.58
2:H:577:ILE:HD11	2:H:666:LEU:HD21	1.84	0.58
2:D:577:ILE:HD11	2:D:666:LEU:HD21	1.84	0.58
1:C:412:LEU:HD21	1:C:577:TYR:HA	1.85	0.58
1:E:412:LEU:HD21	1:E:577:TYR:HA	1.84	0.58
3:L:179:ARG:HG3	3:L:202:THR:HG23	1.85	0.58
1:E:390:THR:HG23	2:F:470:GLY:HA2	1.85	0.58
2:B:918:ARG:HD2	2:B:920:ARG:HH21	1.67	0.57
2:D:286:ASP:O	2:D:290:THR:HG23	2.04	0.57
2:D:412:CYS:SG	2:D:454:ARG:HD2	2.45	0.57
3:I:320:LEU:HG	3:I:324:TYR:HD2	1.69	0.57
2:H:188:THR:OG1	2:H:249:THR:HG21	2.03	0.57
1:A:412:LEU:HD21	1:A:577:TYR:HA	1.85	0.57
1:C:686:GLN:HE21	1:G:685:GLN:HE21	1.51	0.57
3:J:247:ASN:HD22	3:J:247:ASN:H	1.53	0.57
2:D:918:ARG:HD2	2:D:920:ARG:HH21	1.68	0.57
1:A:129:PHE:HD1	2:D:10:THR:HG23	1.70	0.56
2:D:290:THR:HG22	2:D:520:VAL:HG13	1.87	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:709:THR:HG22	2:F:894:GLY:HA2	1.88	0.56
2:H:903:THR:HB	2:H:908:LEU:HD11	1.87	0.56
3:K:69:LYS:O	3:K:73:ASN:HB2	2.05	0.56
1:A:762:SER:HB3	2:B:643:ARG:HG3	1.87	0.56
3:J:69:LYS:O	3:J:73:ASN:ND2	2.39	0.56
2:F:918:ARG:HD2	2:F:920:ARG:HH21	1.68	0.56
3:J:307:PHE:HZ	3:J:321:ILE:HD12	1.70	0.56
3:K:312:LYS:HE3	3:K:317:ALA:HA	1.88	0.56
1:A:130:PHE:HD1	1:A:170:PHE:HA	1.70	0.56
2:D:211:GLY:HA3	3:J:296:ILE:HG21	1.88	0.56
1:G:247:TYR:HE2	1:G:261:LYS:HB2	1.71	0.56
1:G:668:THR:O	2:H:736:THR:HG22	2.06	0.56
3:L:247:ASN:HD22	3:L:247:ASN:H	1.53	0.55
1:E:130:PHE:HD1	1:E:170:PHE:HA	1.72	0.55
1:A:668:THR:O	2:B:736:THR:HG22	2.07	0.55
2:F:903:THR:HB	2:F:908:LEU:HD11	1.88	0.55
1:A:247:TYR:HE2	1:A:261:LYS:HB2	1.72	0.55
1:G:130:PHE:HD1	1:G:170:PHE:HA	1.70	0.55
2:H:709:THR:HG22	2:H:894:GLY:HA2	1.87	0.55
1:A:427:GLU:HG3	1:A:573:PHE:CZ	2.42	0.55
1:G:427:GLU:HG3	1:G:573:PHE:CZ	2.41	0.55
3:J:307:PHE:CD2	3:J:308:LEU:HD12	2.40	0.55
2:D:123:PRO:HD2	2:D:126:ILE:HA	1.89	0.55
1:E:427:GLU:HG3	1:E:573:PHE:CZ	2.41	0.55
3:K:51:LEU:HD11	3:K:98:PRO:HB2	1.87	0.55
2:B:709:THR:HG22	2:B:894:GLY:HA2	1.88	0.55
2:D:709:THR:HG22	2:D:894:GLY:HA2	1.88	0.55
1:A:686:GLN:HE21	1:E:685:GLN:HE21	1.55	0.54
1:C:427:GLU:HG3	1:C:573:PHE:CZ	2.42	0.54
2:H:290:THR:HG22	2:H:520:VAL:HG13	1.88	0.54
3:J:51:LEU:HD21	3:J:98:PRO:HB2	1.90	0.54
1:C:592:LEU:CD1	1:C:598:ARG:HH12	2.20	0.54
2:F:123:PRO:HD2	2:F:126:ILE:HA	1.89	0.54
2:D:903:THR:HB	2:D:908:LEU:HD11	1.89	0.54
1:E:592:LEU:CD1	1:E:598:ARG:HH12	2.20	0.54
2:F:182:LYS:HB2	2:F:278:ASP:HB2	1.89	0.54
2:F:267:LYS:HA	2:F:270:LYS:HD2	1.90	0.54
3:J:69:LYS:HB2	3:J:72:THR:HB	1.90	0.54
2:B:903:THR:HB	2:B:908:LEU:HD11	1.90	0.54
2:D:182:LYS:HB2	2:D:278:ASP:HB2	1.90	0.54
2:B:123:PRO:HD2	2:B:126:ILE:HA	1.89	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:592:LEU:CD1	1:G:598:ARG:HH12	2.20	0.54
3:J:310:LYS:HD3	3:J:311:ARG:HG3	1.89	0.54
2:D:709:THR:HG23	2:D:894:GLY:HA2	1.89	0.54
1:C:130:PHE:HD1	1:C:170:PHE:HA	1.72	0.53
1:E:226:ASN:HD22	1:E:275:GLY:H	1.56	0.53
1:E:383:LEU:HD13	2:F:467:VAL:HG21	1.89	0.53
2:H:123:PRO:HD2	2:H:126:ILE:HA	1.89	0.53
2:H:182:LYS:HB2	2:H:278:ASP:HB2	1.90	0.53
1:A:123:LEU:HD22	2:D:136:PRO:HD2	1.90	0.53
1:C:383:LEU:HD13	2:D:467:VAL:HG21	1.89	0.53
1:E:247:TYR:HE2	1:E:261:LYS:HB2	1.72	0.53
3:J:66:PRO:HG2	3:J:73:ASN:ND2	2.22	0.53
3:K:276:LEU:HG	3:K:343:ILE:HG12	1.90	0.53
1:C:247:TYR:HE2	1:C:261:LYS:HB2	1.72	0.53
1:G:882:LEU:HD11	1:G:940:ILE:HD11	1.90	0.53
2:B:363:ALA:O	2:B:365:SER:N	2.42	0.53
2:B:474:VAL:HG13	2:B:720:ASN:HD21	1.73	0.53
1:G:226:ASN:HD22	1:G:275:GLY:H	1.56	0.53
3:L:83:LEU:HD22	3:L:242:LEU:HB2	1.91	0.53
1:G:148:ILE:HB	1:G:159:SER:HB3	1.91	0.53
3:K:71:LEU:HD11	3:K:107:MET:HG3	1.90	0.53
3:K:97:ILE:O	3:K:101:VAL:HG23	2.09	0.53
2:F:709:THR:HG23	2:F:894:GLY:HA2	1.91	0.52
2:H:709:THR:HG23	2:H:894:GLY:HA2	1.90	0.52
3:I:92:SER:HB2	3:I:246:THR:OG1	2.10	0.52
3:J:292:TYR:HD1	3:J:303:GLU:HG2	1.74	0.52
1:A:148:ILE:HB	1:A:159:SER:HB3	1.92	0.52
1:A:420:ALA:HB2	1:A:457:ILE:HD12	1.91	0.52
2:D:193:SER:O	2:D:196:MET:HG3	2.10	0.52
1:C:770:GLU:HB3	1:C:861:VAL:HG13	1.92	0.52
1:A:592:LEU:CD1	1:A:598:ARG:HH12	2.23	0.52
1:C:530:VAL:HG23	1:C:543:LEU:HA	1.91	0.52
1:C:615:PRO:HG3	1:C:871:PRO:HG3	1.92	0.52
1:A:78:ARG:HE	2:B:571:ARG:HH12	1.58	0.52
2:D:267:LYS:HA	2:D:270:LYS:HD2	1.92	0.52
2:H:577:ILE:HG23	2:H:607:ILE:HB	1.90	0.52
2:B:193:SER:O	2:B:196:MET:HG3	2.09	0.52
1:C:882:LEU:HD11	1:C:940:ILE:HD11	1.92	0.52
1:C:439:LEU:HD11	1:C:475:VAL:HG13	1.92	0.52
1:E:78:ARG:HE	2:F:571:ARG:HH12	1.58	0.52
1:E:530:VAL:HG23	1:E:543:LEU:HA	1.92	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:307:PHE:HZ	3:I:321:ILE:HD12	1.74	0.52
2:B:267:LYS:HA	2:B:270:LYS:HD2	1.91	0.52
2:B:566:LEU:HD12	2:B:600:ARG:HB3	1.92	0.52
1:G:420:ALA:HB2	1:G:457:ILE:HD12	1.92	0.52
2:H:363:ALA:O	2:H:365:SER:N	2.43	0.52
2:B:182:LYS:HB2	2:B:278:ASP:HB2	1.92	0.51
1:E:148:ILE:HB	1:E:159:SER:HB3	1.90	0.51
2:H:631:TRP:HA	2:H:634:LEU:HD12	1.92	0.51
1:E:439:LEU:HD11	1:E:475:VAL:HG13	1.92	0.51
1:E:490:ARG:HB2	2:F:463:THR:HG23	1.92	0.51
4:E:991:SO4:O3	2:F:739:ARG:NH2	2.43	0.51
1:A:530:VAL:HG23	1:A:543:LEU:HA	1.91	0.51
1:E:444:LEU:HD11	1:E:482:ILE:HD12	1.92	0.51
2:F:363:ALA:O	2:F:365:SER:N	2.43	0.51
3:J:256:LYS:HZ2	3:J:277:ASP:HB2	1.74	0.51
1:A:226:ASN:HD22	1:A:275:GLY:H	1.57	0.51
3:L:66:PRO:HB2	3:L:73:ASN:HD21	1.76	0.51
2:D:363:ALA:O	2:D:365:SER:N	2.44	0.51
2:F:566:LEU:HD12	2:F:600:ARG:HB3	1.93	0.51
1:G:606:VAL:O	1:G:696:GLY:HA3	2.11	0.51
3:K:333:GLN:HB2	3:K:347:SER:HB3	1.92	0.51
1:A:606:VAL:O	1:A:696:GLY:HA3	2.11	0.51
1:E:420:ALA:HB2	1:E:457:ILE:HD12	1.93	0.51
1:G:599:LEU:HB3	1:G:690:ASP:HB2	1.93	0.51
2:H:193:SER:O	2:H:196:MET:HG3	2.11	0.51
2:H:566:LEU:HD12	2:H:600:ARG:HB3	1.92	0.51
3:I:320:LEU:HG	3:I:324:TYR:CD2	2.46	0.51
1:E:790:LEU:HG	1:E:826:LYS:HE3	1.93	0.51
1:G:444:LEU:HD11	1:G:482:ILE:HD12	1.92	0.51
3:L:95:LEU:HD22	3:L:99:LEU:HD23	1.93	0.51
2:B:577:ILE:HG23	2:B:607:ILE:HB	1.92	0.51
3:I:88:GLN:HE22	3:I:104:VAL:HG22	1.75	0.51
3:J:273:CYS:HB3	3:J:346:ILE:HD12	1.93	0.51
3:L:81:ASN:ND2	3:L:114:SER:H	2.08	0.51
1:C:599:LEU:HB3	1:C:690:ASP:HB2	1.93	0.51
1:E:615:PRO:HG3	1:E:871:PRO:HG3	1.92	0.51
2:F:193:SER:O	2:F:196:MET:HG3	2.11	0.51
2:F:631:TRP:HA	2:F:634:LEU:HD12	1.92	0.51
1:G:615:PRO:HG3	1:G:871:PRO:HG3	1.92	0.51
2:D:474:VAL:HG13	2:D:720:ASN:HD21	1.74	0.50
2:D:566:LEU:HD12	2:D:600:ARG:HB3	1.92	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:267:LYS:HA	2:H:270:LYS:HD2	1.93	0.50
3:I:11:LEU:HD22	3:I:16:VAL:HG11	1.93	0.50
2:B:709:THR:HG23	2:B:894:GLY:HA2	1.92	0.50
1:G:383:LEU:HD13	2:H:467:VAL:HG21	1.93	0.50
1:A:595:GLU:HG3	1:A:598:ARG:HH21	1.76	0.50
3:J:24:LEU:HD22	3:J:140:TYR:HD2	1.75	0.50
1:C:606:VAL:O	1:C:696:GLY:HA3	2.11	0.50
2:D:299:TRP:O	2:D:301:SER:N	2.44	0.50
1:G:530:VAL:HG23	1:G:543:LEU:HA	1.92	0.50
1:C:949:PRO:HB2	1:C:952:GLN:HE21	1.77	0.50
2:D:659:GLU:HB2	2:D:690:SER:HB3	1.93	0.50
1:A:898:LYS:HG2	3:K:117:ASP:O	2.12	0.50
3:I:38:ILE:HD11	3:I:105:LEU:O	2.11	0.50
3:I:245:LEU:O	3:I:277:ASP:HA	2.11	0.50
2:D:577:ILE:HG23	2:D:607:ILE:HB	1.92	0.50
1:E:668:THR:O	2:F:736:THR:HG22	2.12	0.50
1:E:762:SER:HB3	2:F:643:ARG:HG3	1.94	0.50
2:F:577:ILE:HG23	2:F:607:ILE:HB	1.93	0.50
2:H:659:GLU:HB2	2:H:690:SER:HB3	1.94	0.50
1:A:882:LEU:HD11	1:A:940:ILE:HD11	1.94	0.50
1:C:420:ALA:HB2	1:C:457:ILE:HD12	1.94	0.50
2:B:257:LYS:HA	2:B:260:ARG:HE	1.77	0.50
1:C:226:ASN:HD22	1:C:275:GLY:H	1.59	0.50
2:D:396:LEU:HD13	2:D:430:VAL:HG22	1.94	0.50
1:E:882:LEU:HD11	1:E:940:ILE:HD11	1.93	0.50
3:L:127:ASN:HD21	3:L:248:ASN:CG	2.15	0.50
1:G:541:GLN:HE21	1:G:541:GLN:HA	1.77	0.49
3:K:292:TYR:HD1	3:K:303:GLU:HG2	1.77	0.49
1:A:444:LEU:HD11	1:A:482:ILE:HD12	1.93	0.49
1:C:790:LEU:HG	1:C:826:LYS:HE3	1.94	0.49
2:F:356:ILE:HG12	2:F:372:VAL:HG21	1.94	0.49
2:F:659:GLU:HB2	2:F:690:SER:HB3	1.95	0.49
1:A:439:LEU:HD11	1:A:475:VAL:HG13	1.93	0.49
2:F:474:VAL:HG13	2:F:720:ASN:HD21	1.76	0.49
2:H:299:TRP:O	2:H:301:SER:N	2.45	0.49
3:I:78:TYR:CZ	3:I:82:VAL:HG21	2.47	0.49
3:K:41:VAL:HG11	3:K:145:ALA:HB2	1.93	0.49
1:A:513:VAL:HG21	1:A:976:VAL:HG13	1.95	0.49
1:A:599:LEU:HB3	1:A:690:ASP:HB2	1.95	0.49
2:D:356:ILE:HG12	2:D:372:VAL:HG21	1.94	0.49
1:G:790:LEU:HG	1:G:826:LYS:HE3	1.93	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:J:292:TYR:CD1	3:J:303:GLU:HG2	2.47	0.49
3:L:81:ASN:HD21	3:L:114:SER:H	1.60	0.49
2:H:474:VAL:HG13	2:H:720:ASN:HD21	1.77	0.49
1:A:615:PRO:HG3	1:A:871:PRO:HG3	1.94	0.49
2:B:631:TRP:HA	2:B:634:LEU:HD12	1.95	0.49
1:C:148:ILE:HB	1:C:159:SER:HB3	1.93	0.49
1:G:595:GLU:HG3	1:G:598:ARG:HH21	1.78	0.49
3:I:255:ASN:HB3	3:I:258:GLN:HB2	1.94	0.49
3:K:83:LEU:HD22	3:K:242:LEU:HB2	1.95	0.49
1:A:129:PHE:CD1	2:D:10:THR:HG23	2.48	0.49
1:A:383:LEU:HD13	2:B:467:VAL:HG21	1.95	0.49
1:G:439:LEU:HD11	1:G:475:VAL:HG13	1.94	0.49
1:C:444:LEU:HD11	1:C:482:ILE:HD12	1.94	0.49
1:E:599:LEU:HB3	1:E:690:ASP:HB2	1.94	0.49
2:H:205:ARG:HG2	2:H:237:TRP:CD2	2.48	0.49
3:L:107:MET:HG2	3:L:244:LEU:HD11	1.95	0.49
3:L:207:LEU:HD11	3:L:226:LEU:HD13	1.95	0.49
1:A:949:PRO:HB2	1:A:952:GLN:HE21	1.78	0.48
2:H:739:ARG:HD3	2:H:741:PHE:CE2	2.48	0.48
2:B:780:MET:O	3:I:327:ARG:NH2	2.45	0.48
2:F:257:LYS:HA	2:F:260:ARG:HE	1.78	0.48
2:F:396:LEU:HD13	2:F:430:VAL:HG22	1.94	0.48
1:G:762:SER:HB3	2:H:643:ARG:HG3	1.95	0.48
1:G:949:PRO:HB2	1:G:952:GLN:HE21	1.79	0.48
1:E:949:PRO:HB2	1:E:952:GLN:HE21	1.78	0.48
2:B:396:LEU:HD13	2:B:430:VAL:HG22	1.94	0.48
1:C:361:ASP:HB2	4:C:991:SO4:O3	2.13	0.48
1:G:919:LYS:HE2	1:G:929:VAL:HG21	1.95	0.48
3:I:71:LEU:HD12	3:I:110:GLN:HB2	1.95	0.48
1:A:490:ARG:HB2	2:B:463:THR:HG23	1.96	0.48
1:C:592:LEU:HD13	1:C:598:ARG:HH12	1.78	0.48
2:D:739:ARG:HD3	2:D:741:PHE:CE2	2.49	0.48
3:I:264:GLU:HG2	3:I:330:ILE:CD1	2.42	0.48
3:J:62:ASN:ND2	3:J:340:ASN:HB2	2.29	0.48
2:F:205:ARG:HG2	2:F:237:TRP:CD2	2.49	0.48
2:F:739:ARG:HD3	2:F:741:PHE:CE2	2.48	0.48
3:L:90:GLY:HA2	3:L:125:VAL:O	2.14	0.48
2:B:356:ILE:HG12	2:B:372:VAL:HG21	1.95	0.48
2:D:631:TRP:HA	2:D:634:LEU:HD12	1.94	0.48
2:F:299:TRP:O	2:F:301:SER:N	2.45	0.48
2:H:356:ILE:HG12	2:H:372:VAL:HG21	1.95	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:558:SER:O	2:F:560:ASP:N	2.47	0.48
1:E:95:LEU:HB3	1:E:96:LEU:H	1.61	0.48
1:E:513:VAL:HG21	1:E:976:VAL:HG13	1.96	0.48
1:G:490:ARG:HB2	2:H:463:THR:HG23	1.96	0.48
3:J:5:ASP:HA	3:J:8:ILE:HD12	1.96	0.48
2:B:659:GLU:HB2	2:B:690:SER:HB3	1.95	0.48
1:C:541:GLN:HE21	1:C:541:GLN:HA	1.79	0.48
1:C:901:ALA:HB2	3:L:118:LEU:HD13	1.96	0.48
2:D:257:LYS:HA	2:D:260:ARG:HE	1.78	0.48
1:G:60:GLU:HG2	1:G:109:LYS:HA	1.96	0.47
2:H:257:LYS:HA	2:H:260:ARG:HE	1.79	0.47
2:H:878:ILE:HG22	2:H:879:SER:H	1.79	0.47
3:I:81:ASN:ND2	3:I:117:ASP:OD2	2.47	0.47
3:J:78:TYR:CE2	3:J:82:VAL:HG21	2.49	0.47
3:L:255:ASN:O	3:L:259:GLN:HB2	2.14	0.47
1:A:592:LEU:HD13	1:A:598:ARG:HH12	1.79	0.47
1:A:635:ARG:NH2	4:A:993:SO4:O1	2.47	0.47
1:A:790:LEU:HG	1:A:826:LYS:HE3	1.95	0.47
1:E:869:LYS:HA	2:F:731:GLN:HE22	1.79	0.47
1:G:592:LEU:HD13	1:G:598:ARG:HH12	1.80	0.47
2:D:205:ARG:HG2	2:D:237:TRP:CD2	2.50	0.47
2:D:558:SER:O	2:D:560:ASP:N	2.47	0.47
3:J:126:LEU:HG	3:J:197:LEU:HD11	1.95	0.47
2:F:815:GLU:O	2:F:819:THR:HG23	2.14	0.47
3:I:272:ASN:HB2	3:I:345:GLN:NE2	2.29	0.47
3:J:73:ASN:OD1	3:J:74:TYR:N	2.48	0.47
1:E:541:GLN:HA	1:E:541:GLN:HE21	1.79	0.47
2:F:576:ILE:HD13	2:F:593:MET:HG2	1.97	0.47
1:G:133:SER:HB3	1:G:136:LYS:HB2	1.94	0.47
3:L:97:ILE:HD11	3:L:131:THR:HG22	1.95	0.47
1:A:15:VAL:HG22	1:A:109:LYS:HB2	1.97	0.47
1:A:60:GLU:HG2	1:A:109:LYS:HA	1.97	0.47
1:C:95:LEU:HB3	1:C:96:LEU:H	1.61	0.47
1:E:133:SER:HB3	1:E:136:LYS:HB2	1.97	0.47
1:E:510:VAL:HG12	1:E:538:ILE:HG13	1.96	0.47
1:G:234:ARG:HD2	1:G:268:VAL:HG23	1.97	0.47
3:J:74:TYR:OH	3:J:335:LYS:HD3	2.14	0.47
1:E:606:VAL:O	1:E:696:GLY:HA3	2.15	0.47
1:G:150:PRO:HG3	1:G:157:GLU:O	2.15	0.47
2:H:396:LEU:HD13	2:H:430:VAL:HG22	1.95	0.47
3:K:80:VAL:HA	3:K:83:LEU:HD12	1.97	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:307:PHE:HZ	3:L:321:ILE:HD12	1.79	0.47
2:B:205:ARG:HG2	2:B:237:TRP:CD2	2.50	0.47
2:B:739:ARG:HD3	2:B:741:PHE:CE2	2.49	0.47
1:C:510:VAL:HG12	1:C:538:ILE:HG13	1.97	0.47
1:G:15:VAL:HG22	1:G:109:LYS:HB2	1.97	0.47
3:J:244:LEU:HD22	3:J:276:LEU:HD22	1.97	0.47
1:A:541:GLN:HE21	1:A:541:GLN:HA	1.80	0.47
1:A:770:GLU:HB3	1:A:861:VAL:HG13	1.96	0.47
1:A:851:GLY:HA3	1:A:854:ARG:HB2	1.97	0.47
1:C:513:VAL:HG21	1:C:976:VAL:HG13	1.97	0.47
2:D:211:GLY:HA3	3:J:296:ILE:CG2	2.45	0.47
1:A:133:SER:HB3	1:A:136:LYS:HB2	1.97	0.46
2:B:558:SER:O	2:B:560:ASP:N	2.48	0.46
1:E:770:GLU:HB3	1:E:861:VAL:HG13	1.97	0.46
2:F:257:LYS:H	2:F:257:LYS:HD3	1.81	0.46
2:H:908:LEU:HA	2:H:912:GLU:HB2	1.97	0.46
1:A:403:MET:HA	1:A:460:GLU:HB2	1.97	0.46
1:E:60:GLU:HG2	1:E:109:LYS:HA	1.97	0.46
2:B:908:LEU:HA	2:B:912:GLU:HB2	1.98	0.46
2:H:576:ILE:HD13	2:H:593:MET:HG2	1.96	0.46
3:J:244:LEU:HD23	3:J:276:LEU:HB3	1.96	0.46
1:G:757:GLN:OE1	2:H:843:GLY:HA2	2.15	0.46
3:L:21:GLY:HA2	3:L:24:LEU:HD12	1.97	0.46
1:C:133:SER:HB3	1:C:136:LYS:HB2	1.97	0.46
2:F:908:LEU:HA	2:F:912:GLU:HB2	1.98	0.46
1:G:513:VAL:HG21	1:G:976:VAL:HG13	1.97	0.46
1:G:838:TYR:HB3	1:G:843:ILE:HD11	1.98	0.46
2:H:558:SER:O	2:H:560:ASP:N	2.49	0.46
3:J:19:GLU:CD	3:J:19:GLU:H	2.18	0.46
3:L:179:ARG:HD2	3:L:206:ILE:HG13	1.98	0.46
2:D:576:ILE:HD13	2:D:593:MET:HG2	1.98	0.46
1:E:592:LEU:HD13	1:E:598:ARG:HH12	1.80	0.46
2:F:249:THR:HG22	2:F:252:GLY:H	1.81	0.46
1:G:510:VAL:HG12	1:G:538:ILE:HG13	1.96	0.46
1:G:851:GLY:HA3	1:G:854:ARG:HB2	1.98	0.46
1:G:770:GLU:HB3	1:G:861:VAL:HG13	1.96	0.46
3:I:134:TYR:O	3:I:138:VAL:HG23	2.16	0.46
3:L:86:VAL:HG23	3:L:120:LEU:HD11	1.97	0.46
1:A:233:THR:HA	1:A:243:VAL:HG21	1.98	0.46
3:J:183:ARG:HG2	3:J:194:THR:HB	1.97	0.46
3:K:255:ASN:O	3:K:259:GLN:HG3	2.15	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:798:PRO:HG2	3:J:233:ARG:HA	1.98	0.46
1:G:233:THR:HA	1:G:243:VAL:HG21	1.98	0.46
1:E:15:VAL:HG22	1:E:109:LYS:HB2	1.97	0.46
3:I:27:LEU:HD21	3:I:41:VAL:HG23	1.98	0.46
3:L:39:GLU:HA	3:L:42:LYS:HB2	1.97	0.46
1:C:60:GLU:HG2	1:C:109:LYS:HA	1.96	0.45
2:F:811:VAL:HG13	1:G:845:ALA:HB1	1.98	0.45
2:H:897:LYS:O	2:H:899:GLN:N	2.49	0.45
2:B:576:ILE:HD13	2:B:593:MET:HG2	1.98	0.45
3:J:37:PRO:O	3:J:41:VAL:HG12	2.15	0.45
2:H:127:SER:CB	2:H:128:PRO:HD3	2.47	0.45
2:H:815:GLU:O	2:H:819:THR:HG23	2.16	0.45
3:K:74:TYR:CE1	3:K:335:LYS:HB3	2.51	0.45
3:L:85:PHE:CD2	3:L:238:LYS:HB3	2.51	0.45
1:A:685:GLN:HE21	1:E:686:GLN:HE21	1.64	0.45
1:A:838:TYR:HB3	1:A:843:ILE:HD11	1.99	0.45
1:C:86:GLU:HG2	2:D:621:ARG:HH21	1.80	0.45
1:C:233:THR:HA	1:C:243:VAL:HG21	1.97	0.45
1:C:851:GLY:HA3	1:C:854:ARG:HB2	1.97	0.45
2:D:187:MET:HB3	2:D:217:ILE:HB	1.98	0.45
2:D:257:LYS:H	2:D:257:LYS:HD3	1.82	0.45
2:D:815:GLU:O	2:D:819:THR:HG23	2.17	0.45
3:L:243:LEU:HD22	3:L:245:LEU:HD13	1.98	0.45
1:E:423:ILE:HG22	1:E:457:ILE:HB	1.99	0.45
1:G:70:GLU:HB2	1:G:181:ILE:HA	1.99	0.45
3:J:218:MET:CE	3:J:226:LEU:HD12	2.47	0.45
2:B:249:THR:HG22	2:B:252:GLY:H	1.82	0.45
2:B:257:LYS:H	2:B:257:LYS:HD3	1.81	0.45
3:J:71:LEU:HD11	3:J:107:MET:HG3	1.99	0.45
2:B:299:TRP:O	2:B:301:SER:N	2.48	0.45
1:G:34:PHE:HB3	1:G:63:LEU:HB3	1.99	0.45
3:L:125:VAL:HG22	3:L:198:LEU:HD12	1.98	0.45
1:C:403:MET:HA	1:C:460:GLU:HB2	1.98	0.45
2:H:78:ASN:HA	2:H:81:ASN:HD22	1.82	0.45
3:L:220:ASP:HB2	3:L:253:MET:HG3	1.98	0.45
2:B:127:SER:CB	2:B:128:PRO:HD3	2.47	0.45
2:B:187:MET:HB3	2:B:217:ILE:HB	1.98	0.45
1:C:15:VAL:HG22	1:C:109:LYS:HB2	1.98	0.45
1:C:800:ASN:ND2	1:C:803:THR:HG23	2.31	0.45
3:I:81:ASN:HB3	3:I:117:ASP:OD1	2.17	0.45
3:K:87:LEU:HB3	3:K:243:LEU:HD23	1.99	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:510:VAL:HG12	1:A:538:ILE:HG13	1.98	0.45
2:B:136:PRO:HD2	1:C:123:LEU:HD22	1.99	0.45
2:B:918:ARG:HB3	2:B:920:ARG:HE	1.82	0.45
1:C:595:GLU:HG3	1:C:598:ARG:HH21	1.82	0.45
1:E:595:GLU:HG3	1:E:598:ARG:HH21	1.82	0.45
2:H:918:ARG:HB3	2:H:920:ARG:HE	1.82	0.45
1:C:838:TYR:HB3	1:C:843:ILE:HD11	1.99	0.44
2:F:187:MET:HB3	2:F:217:ILE:HB	1.99	0.44
1:C:234:ARG:HD2	1:C:268:VAL:HG23	1.98	0.44
1:E:233:THR:HA	1:E:243:VAL:HG21	1.99	0.44
1:E:272:LEU:H	1:E:272:LEU:HD23	1.82	0.44
1:E:403:MET:HA	1:E:460:GLU:HB2	1.98	0.44
1:G:403:MET:HA	1:G:460:GLU:HB2	1.98	0.44
3:L:5:ASP:HA	3:L:8:ILE:HD12	1.98	0.44
1:C:423:ILE:HG22	1:C:457:ILE:HB	1.99	0.44
3:K:308:LEU:HD21	3:K:325:VAL:HG11	1.99	0.44
3:K:327:ARG:HB2	3:K:330:ILE:CD1	2.48	0.44
3:L:120:LEU:HB2	3:L:191:ARG:CZ	2.47	0.44
2:B:143:PHE:CE1	2:B:148:ASN:O	2.71	0.44
1:C:417:ALA:O	1:C:876:ARG:HD3	2.17	0.44
1:C:685:GLN:HE21	1:G:686:GLN:HE21	1.64	0.44
1:E:851:GLY:HA3	1:E:854:ARG:HB2	1.98	0.44
2:F:414:ILE:HG12	5:F:942:ATP:H3'	1.99	0.44
2:H:249:THR:HG22	2:H:252:GLY:H	1.83	0.44
1:A:84:LEU:HD11	2:B:605:TYR:CE1	2.53	0.44
2:B:939:THR:HG21	3:I:326:GLY:O	2.18	0.44
1:C:919:LYS:HE2	1:C:929:VAL:HG21	2.00	0.44
2:H:604:PRO:HB2	2:H:623:ILE:HD12	2.00	0.44
3:I:76:ASN:O	3:I:80:VAL:HG12	2.18	0.44
3:K:320:LEU:HG	3:K:324:TYR:HD2	1.82	0.44
2:D:897:LYS:O	2:D:899:GLN:N	2.51	0.44
3:J:90:GLY:HA2	3:J:125:VAL:O	2.18	0.44
1:A:423:ILE:HG22	1:A:457:ILE:HB	2.00	0.44
2:B:815:GLU:O	2:B:819:THR:HG23	2.17	0.44
1:C:245:ALA:HB1	1:C:279:ILE:HG12	1.99	0.44
1:G:247:TYR:O	1:G:252:GLY:HA3	2.18	0.44
3:K:126:LEU:HD12	3:K:197:LEU:HD11	2.00	0.44
1:C:272:LEU:HD23	1:C:272:LEU:H	1.83	0.44
1:C:377:LEU:HA	1:C:380:ILE:HD12	1.99	0.44
2:D:878:ILE:HG22	2:D:879:SER:H	1.82	0.44
1:E:123:LEU:HD22	2:H:136:PRO:HD2	2.00	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:735:THR:HB	1:E:939:GLY:HA3	2.00	0.44
2:H:257:LYS:HD3	2:H:257:LYS:H	1.81	0.44
3:I:329:ASN:HB2	3:I:350:LEU:HB2	2.00	0.44
3:L:88:GLN:HA	3:L:244:LEU:HB2	1.99	0.44
1:C:396:ARG:NH1	4:C:996:SO4:O2	2.50	0.44
2:D:127:SER:CB	2:D:128:PRO:HD3	2.48	0.44
2:D:249:THR:HG22	2:D:252:GLY:H	1.83	0.44
2:F:918:ARG:HB3	2:F:920:ARG:HE	1.82	0.44
2:D:908:LEU:HA	2:D:912:GLU:HB2	2.00	0.43
1:E:377:LEU:HA	1:E:380:ILE:HD12	1.99	0.43
2:F:78:ASN:HA	2:F:81:ASN:HD22	1.82	0.43
2:F:878:ILE:HG22	2:F:879:SER:H	1.83	0.43
3:K:23:PHE:O	3:K:27:LEU:HB2	2.18	0.43
1:A:34:PHE:HB3	1:A:63:LEU:HB3	1.99	0.43
1:E:346:GLU:HG3	1:E:349:ARG:HH21	1.83	0.43
1:E:838:TYR:HB3	1:E:843:ILE:HD11	2.00	0.43
3:J:320:LEU:HG	3:J:324:TYR:HD2	1.82	0.43
1:A:417:ALA:O	1:A:876:ARG:HD3	2.18	0.43
2:D:78:ASN:HA	2:D:81:ASN:HD22	1.83	0.43
1:E:150:PRO:HG3	1:E:157:GLU:O	2.18	0.43
3:I:35:LYS:HE2	3:I:39:GLU:HB3	1.99	0.43
2:D:399:GLU:O	2:D:535:PHE:HB3	2.19	0.43
2:D:604:PRO:HB2	2:D:623:ILE:HD12	1.99	0.43
1:E:919:LYS:HE2	1:E:929:VAL:HG21	2.00	0.43
1:G:272:LEU:HD23	1:G:272:LEU:H	1.82	0.43
3:L:80:VAL:HA	3:L:83:LEU:HD12	1.99	0.43
1:A:763:ARG:HH11	1:A:763:ARG:HA	1.83	0.43
2:H:780:MET:HE1	3:L:265:SER:HB3	1.99	0.43
1:A:800:ASN:ND2	1:A:803:THR:HG23	2.33	0.43
1:G:140:LYS:HB2	1:G:140:LYS:HE3	1.83	0.43
2:H:411:MET:HE2	2:H:428:VAL:HG11	2.00	0.43
3:I:179:ARG:HG2	3:I:202:THR:HG23	2.01	0.43
3:I:332:TYR:CE1	3:I:346:ILE:HG12	2.53	0.43
2:D:741:PHE:HA	2:D:832:LYS:O	2.18	0.43
2:F:897:LYS:O	2:F:899:GLN:N	2.52	0.43
1:G:797:ASN:HA	1:G:798:PRO:HD3	1.91	0.43
2:H:187:MET:HB3	2:H:217:ILE:HB	2.00	0.43
3:J:255:ASN:HB3	3:J:258:GLN:HB2	2.00	0.43
3:K:126:LEU:HD22	3:K:131:THR:HB	2.01	0.43
3:K:208:VAL:HG23	3:K:211:ASP:H	1.84	0.43
1:C:140:LYS:HB2	1:C:140:LYS:HE3	1.83	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:417:ALA:O	1:E:876:ARG:HD3	2.18	0.43
1:G:156:VAL:HA	1:G:169:SER:HB3	2.01	0.43
1:G:614:ASN:ND2	1:G:665:GLU:HG2	2.34	0.43
3:J:78:TYR:CZ	3:J:82:VAL:HG21	2.53	0.43
1:A:377:LEU:HA	1:A:380:ILE:HD12	2.01	0.43
1:A:614:ASN:ND2	1:A:665:GLU:HG2	2.33	0.43
1:C:70:GLU:HB2	1:C:181:ILE:HA	2.01	0.43
3:L:60:ARG:HH21	3:L:61:LYS:HE2	1.84	0.43
2:B:604:PRO:HB2	2:B:623:ILE:HD12	2.01	0.43
2:B:783:ASN:HA	2:B:786:LYS:HD3	2.01	0.43
2:D:682:GLU:HA	2:D:685:ARG:HD3	2.01	0.43
1:E:70:GLU:HB2	1:E:181:ILE:HA	2.01	0.43
1:G:423:ILE:HG22	1:G:457:ILE:HB	2.00	0.43
3:J:97:ILE:O	3:J:101:VAL:HG23	2.19	0.43
1:C:556:ALA:HB2	1:C:564:LYS:HD3	2.00	0.42
3:J:128:ASN:ND2	3:J:131:THR:H	2.17	0.42
3:K:179:ARG:HG3	3:K:205:MET:SD	2.58	0.42
1:E:779:LEU:HD23	1:E:779:LEU:HA	1.94	0.42
2:F:682:GLU:HA	2:F:685:ARG:HD3	2.01	0.42
1:G:800:ASN:ND2	1:G:803:THR:HG23	2.35	0.42
3:J:218:MET:HE2	3:J:223:PHE:HD1	1.84	0.42
3:K:218:MET:HE3	3:K:226:LEU:HD12	2.00	0.42
3:L:221:ARG:H	3:L:253:MET:HE3	1.83	0.42
1:A:346:GLU:HG3	1:A:349:ARG:HH21	1.83	0.42
2:B:78:ASN:HA	2:B:81:ASN:HD22	1.84	0.42
2:B:780:MET:HE1	3:I:265:SER:HB3	2.01	0.42
1:G:417:ALA:O	1:G:876:ARG:HD3	2.19	0.42
1:G:423:ILE:HG12	1:G:580:PHE:CE2	2.55	0.42
1:A:150:PRO:HG3	1:A:157:GLU:O	2.20	0.42
1:A:234:ARG:HD2	1:A:268:VAL:HG23	2.00	0.42
2:H:403:SER:HB3	5:H:942:ATP:O3G	2.19	0.42
3:K:292:TYR:CD1	3:K:303:GLU:HG2	2.54	0.42
3:L:273:CYS:HB3	3:L:346:ILE:HD12	2.00	0.42
1:A:156:VAL:HA	1:A:169:SER:HB3	2.01	0.42
1:A:272:LEU:HD23	1:A:272:LEU:H	1.84	0.42
1:A:430:PRO:HB2	1:A:435:TRP:HB3	2.02	0.42
1:A:476:LYS:HG2	1:A:486:THR:HB	2.01	0.42
1:C:34:PHE:HB3	1:C:63:LEU:HB3	2.00	0.42
1:C:346:GLU:HG3	1:C:349:ARG:HH21	1.84	0.42
1:C:614:ASN:ND2	1:C:665:GLU:HG2	2.34	0.42
2:D:411:MET:HE2	2:D:428:VAL:HG11	2.01	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:234:ARG:HD2	1:E:268:VAL:HG23	2.01	0.42
1:E:247:TYR:O	1:E:252:GLY:HA3	2.19	0.42
1:E:423:ILE:HG12	1:E:580:PHE:CE2	2.55	0.42
1:E:800:ASN:ND2	1:E:803:THR:HG23	2.34	0.42
2:F:127:SER:CB	2:F:128:PRO:HD3	2.49	0.42
3:J:8:ILE:HG12	3:J:21:GLY:HA2	2.02	0.42
2:B:356:ILE:HB	2:B:390:THR:HG21	2.02	0.42
2:B:758:GLN:HG3	2:B:763:ALA:HB3	2.00	0.42
2:D:787:GLU:HG3	3:J:267:ASN:HB2	2.01	0.42
1:E:428:ARG:HD3	1:E:566:LEU:HD13	2.02	0.42
2:H:127:SER:HB3	2:H:128:PRO:HD3	2.02	0.42
2:H:356:ILE:HB	2:H:390:THR:HG21	2.01	0.42
1:A:735:THR:HB	1:A:939:GLY:HA3	2.01	0.42
1:A:793:TYR:HE2	1:A:828:PHE:HD2	1.67	0.42
1:A:984:LEU:HD21	3:J:207:LEU:HB3	2.00	0.42
2:B:768:VAL:HA	2:B:769:PRO:HD3	1.96	0.42
1:C:988:THR:O	3:I:218:MET:HA	2.19	0.42
1:E:614:ASN:ND2	1:E:665:GLU:HG2	2.35	0.42
2:F:741:PHE:HA	2:F:832:LYS:O	2.20	0.42
2:H:143:PHE:CE1	2:H:148:ASN:O	2.73	0.42
3:K:250:ASP:OD1	3:K:253:MET:HG3	2.20	0.42
1:A:797:ASN:HA	1:A:798:PRO:HD3	1.92	0.42
2:B:741:PHE:HA	2:B:832:LYS:O	2.19	0.42
2:F:596:TYR:CZ	2:F:600:ARG:HD3	2.55	0.42
1:G:913:PHE:CE1	1:G:915:ASP:HB2	2.55	0.42
3:L:51:LEU:HD22	3:L:99:LEU:HB2	2.00	0.42
1:A:245:ALA:HB1	1:A:279:ILE:HG12	2.01	0.42
1:C:247:TYR:O	1:C:252:GLY:HA3	2.20	0.42
1:C:428:ARG:HD3	1:C:566:LEU:HD13	2.02	0.42
1:E:245:ALA:HB1	1:E:279:ILE:HG12	2.01	0.42
4:E:990:SO4:S	2:F:828:ARG:NH2	2.92	0.42
1:G:346:GLU:HG3	1:G:349:ARG:HH21	1.84	0.42
1:G:377:LEU:HA	1:G:380:ILE:HD12	2.02	0.42
3:J:247:ASN:H	3:J:247:ASN:ND2	2.16	0.42
1:A:762:SER:HB3	2:B:643:ARG:H	1.84	0.42
1:C:763:ARG:HH11	1:C:763:ARG:HA	1.84	0.42
2:D:218:HIS:HA	2:D:251:ILE:HG23	2.02	0.42
1:E:430:PRO:HB2	1:E:435:TRP:HB3	2.01	0.42
2:F:204:VAL:HA	2:F:214:VAL:HG11	2.01	0.42
2:F:411:MET:HE2	2:F:428:VAL:HG11	2.01	0.42
2:H:204:VAL:HA	2:H:214:VAL:HG11	2.02	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:682:GLU:HA	2:H:685:ARG:HD3	2.02	0.42
3:I:224:VAL:HA	3:I:227:LEU:HD12	2.01	0.42
3:K:218:MET:CE	3:K:226:LEU:HD12	2.50	0.42
3:L:243:LEU:HD11	3:L:263:LEU:HD12	2.01	0.42
1:A:70:GLU:HB2	1:A:181:ILE:HA	2.02	0.41
1:C:156:VAL:HA	1:C:169:SER:HB3	2.02	0.41
2:D:780:MET:HE1	3:J:265:SER:CB	2.44	0.41
2:F:143:PHE:CE1	2:F:148:ASN:O	2.72	0.41
2:F:356:ILE:HA	2:F:359:ILE:HD12	2.01	0.41
2:F:604:PRO:HB2	2:F:623:ILE:HD12	2.01	0.41
1:G:735:THR:HB	1:G:939:GLY:HA3	2.01	0.41
2:B:897:LYS:O	2:B:899:GLN:N	2.53	0.41
1:C:938:ILE:HG12	1:C:947:PHE:CD1	2.54	0.41
1:E:757:GLN:OE1	2:F:843:GLY:HA2	2.20	0.41
1:A:18:ASP:HB3	1:A:21:LEU:HB2	2.02	0.41
1:C:67:PRO:HB3	1:C:102:GLN:HA	2.01	0.41
1:E:34:PHE:HB3	1:E:63:LEU:HB3	2.01	0.41
1:E:913:PHE:CE1	1:E:915:ASP:HB2	2.55	0.41
1:G:430:PRO:HB2	1:G:435:TRP:HB3	2.03	0.41
3:K:95:LEU:HB3	3:K:99:LEU:HD23	2.02	0.41
1:C:735:THR:HB	1:C:939:GLY:HA3	2.02	0.41
2:D:143:PHE:CE1	2:D:148:ASN:O	2.72	0.41
2:D:918:ARG:HB3	2:D:920:ARG:HE	1.85	0.41
1:E:476:LYS:HG2	1:E:486:THR:HB	2.01	0.41
2:F:218:HIS:HA	2:F:251:ILE:HG23	2.03	0.41
1:G:78:ARG:HB3	1:G:79:GLU:H	1.77	0.41
1:C:793:TYR:HE2	1:C:828:PHE:HD2	1.68	0.41
1:G:401:GLU:HB3	1:G:490:ARG:HG2	2.03	0.41
2:H:218:HIS:HA	2:H:251:ILE:HG23	2.02	0.41
3:J:38:ILE:O	3:J:42:LYS:HB2	2.21	0.41
3:L:87:LEU:O	3:L:243:LEU:HD23	2.20	0.41
3:L:101:VAL:HG11	3:L:141:LEU:HD12	2.01	0.41
1:A:423:ILE:HG12	1:A:580:PHE:CE2	2.56	0.41
1:C:423:ILE:HG12	1:C:580:PHE:CE2	2.56	0.41
1:C:476:LYS:HG2	1:C:486:THR:HB	2.02	0.41
1:G:763:ARG:HH11	1:G:763:ARG:HA	1.85	0.41
3:I:329:ASN:H	3:I:329:ASN:ND2	2.14	0.41
3:J:278:TYR:O	3:J:279:GLN:HB3	2.20	0.41
1:A:401:GLU:HB3	1:A:490:ARG:HG2	2.03	0.41
1:A:751:TYR:OH	2:B:836:PRO:O	2.39	0.41
1:C:762:SER:N	2:D:642:ASN:HA	2.35	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:797:ASN:HA	1:E:798:PRO:HD3	1.94	0.41
1:G:245:ALA:HB1	1:G:279:ILE:HG12	2.01	0.41
1:G:428:ARG:HD3	1:G:566:LEU:HD13	2.03	0.41
3:I:93:ARG:HG2	3:I:247:ASN:OD1	2.19	0.41
1:A:924:SER:HB2	1:A:926:LYS:HG3	2.03	0.41
2:B:780:MET:HE1	3:I:324:TYR:HA	2.02	0.41
1:E:18:ASP:HB3	1:E:21:LEU:HB2	2.03	0.41
1:E:156:VAL:HA	1:E:169:SER:HB3	2.02	0.41
2:F:336:MET:SD	2:F:523:THR:HG21	2.61	0.41
1:G:556:ALA:HB2	1:G:564:LYS:HD3	2.02	0.41
1:G:869:LYS:HA	2:H:731:GLN:HE22	1.86	0.41
2:H:741:PHE:HA	2:H:832:LYS:O	2.20	0.41
3:K:35:LYS:HE2	3:K:39:GLU:HB3	2.02	0.41
1:A:428:ARG:HD3	1:A:566:LEU:HD13	2.02	0.41
1:A:912:PHE:CD1	1:A:919:LYS:HE3	2.56	0.41
1:A:919:LYS:HE2	1:A:929:VAL:HG21	2.03	0.41
2:B:590:VAL:HG21	2:B:639:ILE:HD12	2.03	0.41
2:B:878:ILE:HG22	2:B:879:SER:H	1.85	0.41
1:C:360:ILE:N	4:C:991:SO4:O1	2.51	0.41
1:C:430:PRO:HB2	1:C:435:TRP:HB3	2.01	0.41
1:C:490:ARG:HB2	2:D:463:THR:HG23	2.03	0.41
1:C:720:PRO:HB2	1:C:890:ILE:HA	2.03	0.41
2:D:356:ILE:HA	2:D:359:ILE:HD12	2.03	0.41
2:D:707:PRO:HG3	2:D:913:SER:HB3	2.02	0.41
2:D:780:MET:HE1	3:J:324:TYR:HA	2.02	0.41
2:F:356:ILE:HB	2:F:390:THR:HG21	2.03	0.41
1:G:324:ARG:HB3	1:G:353:ILE:HG21	2.02	0.41
2:H:596:TYR:CZ	2:H:600:ARG:HD3	2.56	0.41
3:J:66:PRO:HG2	3:J:73:ASN:HD21	1.86	0.41
3:K:203:ALA:O	3:K:207:LEU:HG	2.21	0.41
3:L:179:ARG:HD3	3:L:205:MET:HB2	2.03	0.41
1:E:793:TYR:HE2	1:E:828:PHE:HD2	1.69	0.41
1:E:798:PRO:HG2	3:L:233:ARG:HA	2.03	0.41
2:F:105:LEU:HD11	2:F:142:GLY:HA3	2.03	0.41
2:H:218:HIS:O	2:H:223:GLY:HA3	2.21	0.41
3:J:301:ARG:HD2	3:J:328:TRP:CE2	2.56	0.41
3:K:301:ARG:HD2	3:K:328:TRP:CE2	2.56	0.41
1:A:247:TYR:O	1:A:252:GLY:HA3	2.21	0.40
1:E:482:ILE:HD13	1:E:482:ILE:HA	1.99	0.40
2:H:412:CYS:HG	2:H:454:ARG:HD2	1.86	0.40
3:L:179:ARG:CG	3:L:202:THR:HG23	2.49	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:573:LYS:HG2	2:D:605:TYR:HE2	1.86	0.40
1:E:556:ALA:HB2	1:E:564:LYS:HD3	2.02	0.40
2:H:356:ILE:HA	2:H:359:ILE:HD12	2.03	0.40
2:H:399:GLU:O	2:H:535:PHE:HB3	2.21	0.40
3:K:24:LEU:HD22	3:K:140:TYR:HD2	1.86	0.40
1:A:25:THR:HA	1:A:162:ASP:OD1	2.21	0.40
2:B:127:SER:HB3	2:B:128:PRO:HD3	2.03	0.40
2:B:411:MET:HE2	2:B:428:VAL:HG11	2.03	0.40
2:B:682:GLU:HA	2:B:685:ARG:HD3	2.03	0.40
2:D:596:TYR:CZ	2:D:600:ARG:HD3	2.56	0.40
1:E:401:GLU:HB3	1:E:490:ARG:HG2	2.03	0.40
1:E:763:ARG:HA	1:E:763:ARG:HH11	1.85	0.40
3:I:186:VAL:HB	3:I:193:ILE:HG21	2.03	0.40
3:L:337:HIS:HD2	3:L:342:SER:HB3	1.86	0.40
2:B:105:LEU:HD11	2:B:142:GLY:HA3	2.03	0.40
1:E:25:THR:HA	1:E:162:ASP:OD1	2.22	0.40
1:G:38:ARG:HH12	1:G:50:LEU:CB	2.34	0.40
1:G:476:LYS:HG2	1:G:486:THR:HB	2.03	0.40
1:C:68:LEU:O	1:C:100:PRO:HA	2.22	0.40
1:C:779:LEU:HD23	1:C:779:LEU:HA	1.93	0.40
1:C:913:PHE:CE1	1:C:915:ASP:HB2	2.56	0.40
1:E:924:SER:HB2	1:E:926:LYS:HG3	2.03	0.40
2:H:783:ASN:HA	2:H:786:LYS:HD3	2.04	0.40

There are no symmetry-related clashes.

5.3　Torsion angles ⓘ

5.3.1　Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	908/989 (92%)	840 (92%)	58 (6%)	10 (1%)	14	42
1	C	908/989 (92%)	841 (93%)	57 (6%)	10 (1%)	14	42

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	908/989 (92%)	841 (93%)	57 (6%)	10 (1%)	14	42
1	G	908/989 (92%)	843 (93%)	55 (6%)	10 (1%)	14	42
2	B	859/941 (91%)	800 (93%)	46 (5%)	13 (2%)	10	35
2	D	859/941 (91%)	803 (94%)	45 (5%)	11 (1%)	12	38
2	F	859/941 (91%)	803 (94%)	45 (5%)	11 (1%)	12	38
2	H	859/941 (91%)	800 (93%)	46 (5%)	13 (2%)	10	35
3	I	319/351 (91%)	296 (93%)	21 (7%)	2 (1%)	25	55
3	J	319/351 (91%)	285 (89%)	29 (9%)	5 (2%)	9	33
3	K	319/351 (91%)	286 (90%)	31 (10%)	2 (1%)	25	55
3	L	319/351 (91%)	283 (89%)	33 (10%)	3 (1%)	17	47
All	All	8344/9124 (92%)	7721 (92%)	523 (6%)	100 (1%)	13	40

All (100) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	646	ALA
2	B	127	SER
2	B	150	PHE
2	B	303	ILE
1	C	646	ALA
2	D	127	SER
2	D	150	PHE
2	D	303	ILE
1	E	646	ALA
2	F	127	SER
2	F	150	PHE
2	F	303	ILE
1	G	646	ALA
2	H	127	SER
2	H	150	PHE
2	H	303	ILE
3	J	339	GLY
3	K	317	ALA
1	A	162	ASP
1	A	179	LYS
1	C	162	ASP
1	C	179	LYS
1	E	162	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	179	LYS
1	G	162	ASP
1	G	179	LYS
3	I	317	ALA
3	I	339	GLY
3	J	279	GLN
3	K	339	GLY
3	L	64	ASN
3	L	339	GLY
1	A	171	SER
1	A	256	GLY
2	B	315	GLN
2	D	315	GLN
2	D	917	ARG
1	E	171	SER
2	F	315	GLN
1	G	78	ARG
1	G	171	SER
2	H	315	GLN
2	H	917	ARG
3	J	31	LEU
3	J	317	ALA
2	B	122	SER
2	B	840	GLN
2	B	917	ARG
2	B	925	TRP
1	C	78	ARG
1	C	171	SER
1	C	256	GLY
2	D	122	SER
1	E	78	ARG
1	E	256	GLY
2	F	122	SER
2	F	840	GLN
2	F	917	ARG
1	G	256	GLY
2	H	122	SER
2	H	840	GLN
3	J	236	THR
1	A	52	GLY
1	A	78	ARG
2	B	793	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	B	878	ILE
1	C	52	GLY
2	D	840	GLN
2	D	925	TRP
2	F	286	ASP
2	F	925	TRP
2	H	286	ASP
2	H	925	TRP
3	L	148	ALA
2	B	438	ASP
2	D	878	ILE
1	E	52	GLY
2	F	878	ILE
1	G	52	GLY
2	H	438	ASP
2	H	878	ILE
1	A	83	PRO
1	A	274	ILE
1	C	274	ILE
1	E	274	ILE
1	G	274	ILE
1	C	83	PRO
1	E	83	PRO
1	G	83	PRO
2	H	376	GLY
2	B	376	GLY
1	C	257	GLY
1	E	257	GLY
2	F	376	GLY
1	A	257	GLY
2	D	300	PRO
2	D	376	GLY
1	G	257	GLY
2	B	300	PRO
2	H	300	PRO

5.3.2 Protein sidechains ⓘ

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

The Analysed column shows the number of residues for which the sidechain conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	725/835 (87%)	648 (89%)	77 (11%)	6	23
1	C	725/835 (87%)	650 (90%)	75 (10%)	7	24
1	E	725/835 (87%)	648 (89%)	77 (11%)	6	23
1	G	725/835 (87%)	646 (89%)	79 (11%)	6	22
2	B	670/799 (84%)	600 (90%)	70 (10%)	7	24
2	D	670/799 (84%)	602 (90%)	68 (10%)	7	25
2	F	670/799 (84%)	600 (90%)	70 (10%)	7	24
2	H	670/799 (84%)	598 (89%)	72 (11%)	6	23
3	I	282/322 (88%)	242 (86%)	40 (14%)	3	13
3	J	282/322 (88%)	239 (85%)	43 (15%)	3	10
3	K	282/322 (88%)	245 (87%)	37 (13%)	4	15
3	L	282/322 (88%)	248 (88%)	34 (12%)	5	17
All	All	6708/7824 (86%)	5966 (89%)	742 (11%)	6	21

All (742) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	ASP
1	A	10	SER
1	A	47	ASP
1	A	69	SER
1	A	70	GLU
1	A	71	VAL
1	A	79	GLU
1	A	88	VAL
1	A	92	SER
1	A	95	LEU
1	A	96	LEU
1	A	112	LEU
1	A	120	ASN
1	A	121	ASN
1	A	123	LEU
1	A	127	VAL
1	A	135	ASP
1	A	159	SER
1	A	167	VAL
1	A	185	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	216	ILE
1	A	262	GLU
1	A	306	ASP
1	A	322	LEU
1	A	324	ARG
1	A	346	GLU
1	A	359	SER
1	A	382	GLU
1	A	383	LEU
1	A	390	THR
1	A	412	LEU
1	A	421	ASP
1	A	439	LEU
1	A	506	PHE
1	A	509	THR
1	A	537	LYS
1	A	541	GLN
1	A	543	LEU
1	A	544	VAL
1	A	566	LEU
1	A	568	LEU
1	A	579	ASN
1	A	581	LEU
1	A	587	ASP
1	A	592	LEU
1	A	596	SER
1	A	599	LEU
1	A	641	LEU
1	A	648	ARG
1	A	655	VAL
1	A	660	ASN
1	A	704	LEU
1	A	713	GLN
1	A	728	VAL
1	A	730	ASN
1	A	745	LEU
1	A	749	SER
1	A	757	GLN
1	A	763	ARG
1	A	779	LEU
1	A	827	ILE
1	A	832	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	833	LYS
1	A	855	PHE
1	A	861	VAL
1	A	865	VAL
1	A	867	GLN
1	A	898	LYS
1	A	908	ARG
1	A	916	ASP
1	A	936	VAL
1	A	941	GLN
1	A	950	VAL
1	A	954	TRP
1	A	955	GLU
1	A	956	ASN
1	A	984	LEU
2	B	6	LEU
2	B	10	THR
2	B	13	ILE
2	B	14	THR
2	B	58	VAL
2	B	98	ILE
2	B	106	SER
2	B	119	VAL
2	B	181	ARG
2	B	186	VAL
2	B	189	SER
2	B	233	LYS
2	B	234	GLU
2	B	246	GLU
2	B	255	ARG
2	B	257	LYS
2	B	286	ASP
2	B	302	LEU
2	B	365	SER
2	B	425	LYS
2	B	435	ILE
2	B	437	ASN
2	B	444	CYS
2	B	463	THR
2	B	472	THR
2	B	495	CYS
2	B	496	ASP

Continued from previous page...

Mol	Chain	Res	Type
2	B	507	LYS
2	B	510	GLN
2	B	517	VAL
2	B	522	LEU
2	B	525	GLN
2	B	550	MET
2	B	554	ILE
2	B	561	HIS
2	B	562	VAL
2	B	568	LEU
2	B	569	GLU
2	B	577	ILE
2	B	593	MET
2	B	599	SER
2	B	678	LEU
2	B	683	ARG
2	B	686	ILE
2	B	690	SER
2	B	701	THR
2	B	705	ASN
2	B	713	LEU
2	B	719	LEU
2	B	739	ARG
2	B	740	VAL
2	B	753	ILE
2	B	780	MET
2	B	793	GLN
2	B	795	LYS
2	B	800	ARG
2	B	824	GLU
2	B	844	ILE
2	B	854	SER
2	B	869	ASP
2	B	882	GLN
2	B	885	GLU
2	B	891	VAL
2	B	907	GLN
2	B	915	VAL
2	B	922	ASN
2	B	923	ILE
2	B	926	SER
2	B	932	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	B	938	ARG
1	C	8	ASP
1	C	10	SER
1	C	47	ASP
1	C	69	SER
1	C	70	GLU
1	C	71	VAL
1	C	79	GLU
1	C	88	VAL
1	C	92	SER
1	C	95	LEU
1	C	96	LEU
1	C	112	LEU
1	C	121	ASN
1	C	123	LEU
1	C	127	VAL
1	C	135	ASP
1	C	159	SER
1	C	167	VAL
1	C	185	ASP
1	C	216	ILE
1	C	262	GLU
1	C	272	LEU
1	C	306	ASP
1	C	324	ARG
1	C	346	GLU
1	C	359	SER
1	C	382	GLU
1	C	383	LEU
1	C	390	THR
1	C	412	LEU
1	C	421	ASP
1	C	439	LEU
1	C	506	PHE
1	C	509	THR
1	C	537	LYS
1	C	541	GLN
1	C	543	LEU
1	C	544	VAL
1	C	566	LEU
1	C	568	LEU
1	C	579	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	581	LEU
1	C	587	ASP
1	C	592	LEU
1	C	596	SER
1	C	599	LEU
1	C	641	LEU
1	C	648	ARG
1	C	655	VAL
1	C	660	ASN
1	C	704	LEU
1	C	713	GLN
1	C	728	VAL
1	C	730	ASN
1	C	745	LEU
1	C	749	SER
1	C	757	GLN
1	C	763	ARG
1	C	779	LEU
1	C	827	ILE
1	C	832	GLU
1	C	833	LYS
1	C	855	PHE
1	C	861	VAL
1	C	865	VAL
1	C	867	GLN
1	C	898	LYS
1	C	908	ARG
1	C	916	ASP
1	C	936	VAL
1	C	941	GLN
1	C	950	VAL
1	C	954	TRP
1	C	955	GLU
1	C	956	ASN
2	D	6	LEU
2	D	10	THR
2	D	13	ILE
2	D	14	THR
2	D	58	VAL
2	D	98	ILE
2	D	119	VAL
2	D	186	VAL

Continued from previous page...

Mol	Chain	Res	Type
2	D	189	SER
2	D	233	LYS
2	D	234	GLU
2	D	246	GLU
2	D	255	ARG
2	D	257	LYS
2	D	286	ASP
2	D	302	LEU
2	D	365	SER
2	D	400	LYS
2	D	425	LYS
2	D	435	ILE
2	D	437	ASN
2	D	444	CYS
2	D	463	THR
2	D	472	THR
2	D	495	CYS
2	D	496	ASP
2	D	507	LYS
2	D	510	GLN
2	D	517	VAL
2	D	522	LEU
2	D	525	GLN
2	D	550	MET
2	D	554	ILE
2	D	561	HIS
2	D	562	VAL
2	D	568	LEU
2	D	569	GLU
2	D	577	ILE
2	D	593	MET
2	D	599	SER
2	D	678	LEU
2	D	683	ARG
2	D	686	ILE
2	D	690	SER
2	D	701	THR
2	D	705	ASN
2	D	713	LEU
2	D	719	LEU
2	D	739	ARG
2	D	740	VAL

Continued from previous page...

Mol	Chain	Res	Type
2	D	753	ILE
2	D	780	MET
2	D	793	GLN
2	D	795	LYS
2	D	800	ARG
2	D	824	GLU
2	D	844	ILE
2	D	854	SER
2	D	869	ASP
2	D	882	GLN
2	D	885	GLU
2	D	891	VAL
2	D	907	GLN
2	D	915	VAL
2	D	923	ILE
2	D	926	SER
2	D	932	SER
2	D	938	ARG
1	E	8	ASP
1	E	10	SER
1	E	47	ASP
1	E	69	SER
1	E	70	GLU
1	E	71	VAL
1	E	79	GLU
1	E	88	VAL
1	E	92	SER
1	E	95	LEU
1	E	96	LEU
1	E	112	LEU
1	E	121	ASN
1	E	123	LEU
1	E	127	VAL
1	E	135	ASP
1	E	143	GLU
1	E	159	SER
1	E	167	VAL
1	E	185	ASP
1	E	216	ILE
1	E	262	GLU
1	E	272	LEU
1	E	306	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	324	ARG
1	E	346	GLU
1	E	359	SER
1	E	382	GLU
1	E	383	LEU
1	E	390	THR
1	E	412	LEU
1	E	421	ASP
1	E	439	LEU
1	E	506	PHE
1	E	509	THR
1	E	537	LYS
1	E	541	GLN
1	E	543	LEU
1	E	544	VAL
1	E	566	LEU
1	E	568	LEU
1	E	579	ASN
1	E	581	LEU
1	E	587	ASP
1	E	592	LEU
1	E	596	SER
1	E	599	LEU
1	E	641	LEU
1	E	648	ARG
1	E	655	VAL
1	E	660	ASN
1	E	704	LEU
1	E	713	GLN
1	E	728	VAL
1	E	730	ASN
1	E	745	LEU
1	E	749	SER
1	E	757	GLN
1	E	763	ARG
1	E	779	LEU
1	E	827	ILE
1	E	832	GLU
1	E	833	LYS
1	E	855	PHE
1	E	861	VAL
1	E	865	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	867	GLN
1	E	898	LYS
1	E	908	ARG
1	E	916	ASP
1	E	936	VAL
1	E	941	GLN
1	E	950	VAL
1	E	954	TRP
1	E	955	GLU
1	E	956	ASN
1	E	984	LEU
2	F	6	LEU
2	F	10	THR
2	F	13	ILE
2	F	14	THR
2	F	58	VAL
2	F	98	ILE
2	F	119	VAL
2	F	186	VAL
2	F	189	SER
2	F	233	LYS
2	F	234	GLU
2	F	246	GLU
2	F	255	ARG
2	F	257	LYS
2	F	286	ASP
2	F	302	LEU
2	F	365	SER
2	F	400	LYS
2	F	425	LYS
2	F	435	ILE
2	F	437	ASN
2	F	444	CYS
2	F	463	THR
2	F	472	THR
2	F	495	CYS
2	F	496	ASP
2	F	507	LYS
2	F	510	GLN
2	F	517	VAL
2	F	522	LEU
2	F	525	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	F	550	MET
2	F	554	ILE
2	F	561	HIS
2	F	562	VAL
2	F	568	LEU
2	F	569	GLU
2	F	577	ILE
2	F	593	MET
2	F	599	SER
2	F	678	LEU
2	F	683	ARG
2	F	686	ILE
2	F	690	SER
2	F	701	THR
2	F	705	ASN
2	F	709	THR
2	F	713	LEU
2	F	719	LEU
2	F	739	ARG
2	F	740	VAL
2	F	753	ILE
2	F	780	MET
2	F	793	GLN
2	F	795	LYS
2	F	800	ARG
2	F	806	GLU
2	F	824	GLU
2	F	844	ILE
2	F	854	SER
2	F	869	ASP
2	F	882	GLN
2	F	885	GLU
2	F	891	VAL
2	F	907	GLN
2	F	915	VAL
2	F	923	ILE
2	F	926	SER
2	F	932	SER
2	F	938	ARG
1	G	8	ASP
1	G	10	SER
1	G	47	ASP

Continued from previous page...

Mol	Chain	Res	Type
1	G	69	SER
1	G	70	GLU
1	G	71	VAL
1	G	78	ARG
1	G	79	GLU
1	G	88	VAL
1	G	92	SER
1	G	95	LEU
1	G	96	LEU
1	G	112	LEU
1	G	121	ASN
1	G	123	LEU
1	G	127	VAL
1	G	135	ASP
1	G	143	GLU
1	G	159	SER
1	G	167	VAL
1	G	185	ASP
1	G	216	ILE
1	G	262	GLU
1	G	272	LEU
1	G	286	GLU
1	G	306	ASP
1	G	324	ARG
1	G	346	GLU
1	G	359	SER
1	G	382	GLU
1	G	383	LEU
1	G	390	THR
1	G	412	LEU
1	G	421	ASP
1	G	439	LEU
1	G	506	PHE
1	G	509	THR
1	G	537	LYS
1	G	541	GLN
1	G	543	LEU
1	G	544	VAL
1	G	566	LEU
1	G	568	LEU
1	G	579	ASN
1	G	581	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	587	ASP
1	G	592	LEU
1	G	596	SER
1	G	599	LEU
1	G	641	LEU
1	G	648	ARG
1	G	655	VAL
1	G	660	ASN
1	G	704	LEU
1	G	713	GLN
1	G	728	VAL
1	G	730	ASN
1	G	745	LEU
1	G	749	SER
1	G	757	GLN
1	G	763	ARG
1	G	779	LEU
1	G	827	ILE
1	G	832	GLU
1	G	833	LYS
1	G	855	PHE
1	G	861	VAL
1	G	865	VAL
1	G	867	GLN
1	G	898	LYS
1	G	908	ARG
1	G	916	ASP
1	G	936	VAL
1	G	941	GLN
1	G	950	VAL
1	G	954	TRP
1	G	955	GLU
1	G	956	ASN
1	G	984	LEU
2	H	6	LEU
2	H	10	THR
2	H	13	ILE
2	H	14	THR
2	H	58	VAL
2	H	98	ILE
2	H	119	VAL
2	H	181	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	H	186	VAL
2	H	189	SER
2	H	233	LYS
2	H	234	GLU
2	H	246	GLU
2	H	255	ARG
2	H	257	LYS
2	H	286	ASP
2	H	302	LEU
2	H	365	SER
2	H	400	LYS
2	H	425	LYS
2	H	435	ILE
2	H	437	ASN
2	H	444	CYS
2	H	463	THR
2	H	472	THR
2	H	495	CYS
2	H	496	ASP
2	H	507	LYS
2	H	508	GLU
2	H	510	GLN
2	H	517	VAL
2	H	522	LEU
2	H	525	GLN
2	H	550	MET
2	H	554	ILE
2	H	561	HIS
2	H	562	VAL
2	H	568	LEU
2	H	569	GLU
2	H	577	ILE
2	H	593	MET
2	H	599	SER
2	H	678	LEU
2	H	683	ARG
2	H	686	ILE
2	H	690	SER
2	H	701	THR
2	H	705	ASN
2	H	709	THR
2	H	713	LEU

Continued from previous page...

Mol	Chain	Res	Type
2	H	719	LEU
2	H	739	ARG
2	H	740	VAL
2	H	753	ILE
2	H	780	MET
2	H	793	GLN
2	H	795	LYS
2	H	800	ARG
2	H	806	GLU
2	H	824	GLU
2	H	844	ILE
2	H	854	SER
2	H	869	ASP
2	H	882	GLN
2	H	885	GLU
2	H	891	VAL
2	H	907	GLN
2	H	915	VAL
2	H	923	ILE
2	H	926	SER
2	H	932	SER
2	H	938	ARG
3	I	6	SER
3	I	27	LEU
3	I	39	GLU
3	I	73	ASN
3	I	85	PHE
3	I	87	LEU
3	I	95	LEU
3	I	97	ILE
3	I	105	LEU
3	I	128	ASN
3	I	133	LYS
3	I	141	LEU
3	I	142	ILE
3	I	178	ASN
3	I	186	VAL
3	I	194	THR
3	I	197	LEU
3	I	211	ASP
3	I	215	ASP
3	I	217	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	I	220	ASP
3	I	225	THR
3	I	228	LEU
3	I	237	THR
3	I	238	LYS
3	I	241	ASP
3	I	242	LEU
3	I	243	LEU
3	I	245	LEU
3	I	247	ASN
3	I	286	THR
3	I	294	GLU
3	I	303	GLU
3	I	320	LEU
3	I	327	ARG
3	I	329	ASN
3	I	333	GLN
3	I	338	GLN
3	I	340	ASN
3	I	342	SER
3	J	6	SER
3	J	27	LEU
3	J	38	ILE
3	J	42	LYS
3	J	85	PHE
3	J	95	LEU
3	J	107	MET
3	J	111	LEU
3	J	118	LEU
3	J	121	ASP
3	J	127	ASN
3	J	128	ASN
3	J	141	LEU
3	J	142	ILE
3	J	176	LEU
3	J	178	ASN
3	J	186	VAL
3	J	190	ASP
3	J	194	THR
3	J	215	ASP
3	J	217	GLU
3	J	220	ASP

Continued from previous page...

Mol	Chain	Res	Type
3	J	224	VAL
3	J	225	THR
3	J	228	LEU
3	J	236	THR
3	J	237	THR
3	J	238	LYS
3	J	239	LYS
3	J	242	LEU
3	J	243	LEU
3	J	245	LEU
3	J	247	ASN
3	J	253	MET
3	J	259	GLN
3	J	265	SER
3	J	270	LYS
3	J	286	THR
3	J	302	HIS
3	J	329	ASN
3	J	333	GLN
3	J	342	SER
3	J	350	LEU
3	K	19	GLU
3	K	56	GLN
3	K	64	ASN
3	K	68	ASP
3	K	70	LEU
3	K	82	VAL
3	K	87	LEU
3	K	105	LEU
3	K	107	MET
3	K	121	ASP
3	K	142	ILE
3	K	149	GLU
3	K	186	VAL
3	K	194	THR
3	K	197	LEU
3	K	198	LEU
3	K	211	ASP
3	K	215	ASP
3	K	217	GLU
3	K	228	LEU
3	K	236	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	K	237	THR
3	K	242	LEU
3	K	243	LEU
3	K	245	LEU
3	K	247	ASN
3	K	250	ASP
3	K	253	MET
3	K	275	VAL
3	K	282	VAL
3	K	291	SER
3	K	303	GLU
3	K	320	LEU
3	K	329	ASN
3	K	340	ASN
3	K	342	SER
3	K	350	LEU
3	L	6	SER
3	L	27	LEU
3	L	29	THR
3	L	44	GLN
3	L	47	THR
3	L	85	PHE
3	L	87	LEU
3	L	105	LEU
3	L	107	MET
3	L	121	ASP
3	L	133	LYS
3	L	142	ILE
3	L	149	GLU
3	L	176	LEU
3	L	178	ASN
3	L	194	THR
3	L	196	HIS
3	L	197	LEU
3	L	217	GLU
3	L	225	THR
3	L	228	LEU
3	L	236	THR
3	L	237	THR
3	L	238	LYS
3	L	243	LEU
3	L	245	LEU

Continued from previous page...

Mol	Chain	Res	Type
3	L	247	ASN
3	L	251	THR
3	L	253	MET
3	L	259	GLN
3	L	260	LEU
3	L	270	LYS
3	L	281	THR
3	L	282	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (138) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	ASN
1	A	85	GLN
1	A	350	ASN
1	A	541	GLN
1	A	686	GLN
1	A	802	GLN
1	A	805	GLN
1	A	831	ASN
1	A	867	GLN
1	A	952	GLN
2	B	81	ASN
2	B	121	GLN
2	B	148	ASN
2	B	250	ASN
2	B	320	HIS
2	B	453	ASN
2	B	490	ASN
2	B	534	ASN
2	B	557	ASN
2	B	561	HIS
2	B	705	ASN
2	B	720	ASN
2	B	731	GLN
2	B	758	GLN
2	B	777	GLN
2	B	922	ASN
1	C	44	ASN
1	C	85	GLN
1	C	541	GLN
1	C	686	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	802	GLN
1	C	831	ASN
1	C	867	GLN
1	C	952	GLN
1	C	972	GLN
2	D	81	ASN
2	D	121	GLN
2	D	148	ASN
2	D	250	ASN
2	D	320	HIS
2	D	490	ASN
2	D	534	ASN
2	D	557	ASN
2	D	561	HIS
2	D	705	ASN
2	D	720	ASN
2	D	731	GLN
2	D	758	GLN
2	D	777	GLN
2	D	922	ASN
1	E	44	ASN
1	E	85	GLN
1	E	350	ASN
1	E	541	GLN
1	E	686	GLN
1	E	802	GLN
1	E	805	GLN
1	E	831	ASN
1	E	867	GLN
1	E	899	HIS
1	E	900	ASN
1	E	952	GLN
2	F	81	ASN
2	F	121	GLN
2	F	148	ASN
2	F	250	ASN
2	F	320	HIS
2	F	490	ASN
2	F	534	ASN
2	F	561	HIS
2	F	705	ASN
2	F	720	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	F	731	GLN
2	F	758	GLN
2	F	777	GLN
2	F	922	ASN
1	G	44	ASN
1	G	85	GLN
1	G	350	ASN
1	G	541	GLN
1	G	686	GLN
1	G	802	GLN
1	G	831	ASN
1	G	867	GLN
1	G	900	ASN
1	G	952	GLN
1	G	972	GLN
2	H	81	ASN
2	H	121	GLN
2	H	148	ASN
2	H	250	ASN
2	H	320	HIS
2	H	490	ASN
2	H	534	ASN
2	H	557	ASN
2	H	561	HIS
2	H	705	ASN
2	H	720	ASN
2	H	731	GLN
2	H	758	GLN
2	H	777	GLN
2	H	922	ASN
3	I	62	ASN
3	I	81	ASN
3	I	128	ASN
3	I	247	ASN
3	I	288	ASN
3	I	329	ASN
3	I	338	GLN
3	J	25	ASN
3	J	77	ASN
3	J	81	ASN
3	J	128	ASN
3	J	247	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	J	267	ASN
3	J	288	ASN
3	J	290	ASN
3	J	329	ASN
3	J	338	GLN
3	J	340	ASN
3	K	81	ASN
3	K	128	ASN
3	K	247	ASN
3	K	329	ASN
3	K	337	HIS
3	L	62	ASN
3	L	73	ASN
3	L	81	ASN
3	L	127	ASN
3	L	128	ASN
3	L	247	ASN
3	L	248	ASN
3	L	259	GLN
3	L	288	ASN
3	L	329	ASN
3	L	333	GLN
3	L	337	HIS
3	L	338	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

69 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	SO4	B	943	-	4,4,4	0.63	0	6,6,6	0.30	0
4	SO4	J	352	-	4,4,4	0.32	0	6,6,6	0.22	0
4	SO4	E	995	-	4,4,4	0.35	0	6,6,6	0.21	0
4	SO4	A	993	-	4,4,4	0.33	0	6,6,6	0.19	0
4	SO4	H	943	-	4,4,4	0.26	0	6,6,6	0.34	0
4	SO4	L	353	-	4,4,4	0.34	0	6,6,6	0.15	0
4	SO4	A	992	-	4,4,4	0.39	0	6,6,6	0.18	0
4	SO4	C	995	-	4,4,4	0.37	0	6,6,6	0.18	0
4	SO4	D	944	-	4,4,4	0.39	0	6,6,6	0.35	0
4	SO4	I	353	-	4,4,4	0.34	0	6,6,6	0.32	0
4	SO4	K	354	-	4,4,4	0.28	0	6,6,6	0.19	0
4	SO4	F	943	-	4,4,4	0.49	0	6,6,6	0.23	0
4	SO4	A	999	-	4,4,4	0.81	0	6,6,6	0.19	0
4	SO4	C	990	-	4,4,4	0.86	0	6,6,6	0.39	0
4	SO4	A	1002	-	4,4,4	0.35	0	6,6,6	0.16	0
4	SO4	A	994	-	4,4,4	0.22	0	6,6,6	0.38	0
4	SO4	E	997	-	4,4,4	0.19	0	6,6,6	0.19	0
4	SO4	E	990	-	4,4,4	0.37	0	6,6,6	0.14	0
4	SO4	C	993	-	4,4,4	0.24	0	6,6,6	0.41	0
4	SO4	C	994	-	4,4,4	0.50	0	6,6,6	0.30	0
4	SO4	G	997	-	4,4,4	0.19	0	6,6,6	0.21	0
4	SO4	E	992	-	4,4,4	0.28	0	6,6,6	0.26	0
4	SO4	C	992	-	4,4,4	1.21	0	6,6,6	0.23	0
4	SO4	C	996	-	4,4,4	0.63	0	6,6,6	0.44	0
4	SO4	H	944	-	4,4,4	0.20	0	6,6,6	0.33	0
4	SO4	C	999	-	4,4,4	0.32	0	6,6,6	0.08	0
4	SO4	G	991	-	4,4,4	0.53	0	6,6,6	0.49	0
4	SO4	K	352	-	4,4,4	0.34	0	6,6,6	0.35	0
4	SO4	I	356	-	4,4,4	0.36	0	6,6,6	0.13	0
4	SO4	A	995	-	4,4,4	0.60	0	6,6,6	0.26	0
4	SO4	A	990	-	4,4,4	0.71	0	6,6,6	0.33	0
4	SO4	C	997	-	4,4,4	0.36	0	6,6,6	0.21	0
4	SO4	G	990	-	4,4,4	0.44	0	6,6,6	0.41	0
4	SO4	D	945	-	4,4,4	0.22	0	6,6,6	0.38	0
4	SO4	H	946	-	4,4,4	0.32	0	6,6,6	0.26	0
4	SO4	F	944	-	4,4,4	0.45	0	6,6,6	0.27	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	SO4	K	353	-	4,4,4	0.34	0	6,6,6	0.15	0
4	SO4	E	994	-	4,4,4	0.41	0	6,6,6	0.12	0
4	SO4	E	991	-	4,4,4	0.83	0	6,6,6	0.27	0
5	ATP	D	942	-	28,33,33	1.68	8 (28%)	34,52,52	1.51	7 (20%)
4	SO4	I	355	-	4,4,4	0.42	0	6,6,6	0.16	0
4	SO4	J	353	-	4,4,4	0.39	0	6,6,6	0.16	0
4	SO4	I	352	-	4,4,4	0.65	0	6,6,6	0.51	0
4	SO4	L	352	-	4,4,4	0.20	0	6,6,6	0.12	0
5	ATP	H	942	-	28,33,33	1.45	5 (17%)	34,52,52	1.50	6 (17%)
4	SO4	E	993	-	4,4,4	0.28	0	6,6,6	0.41	0
4	SO4	G	992	-	4,4,4	0.57	0	6,6,6	0.13	0
4	SO4	B	944	-	4,4,4	0.62	0	6,6,6	0.57	0
4	SO4	C	998	-	4,4,4	0.30	0	6,6,6	0.21	0
4	SO4	H	945	-	4,4,4	0.37	0	6,6,6	0.38	0
4	SO4	A	1001	-	4,4,4	0.59	0	6,6,6	0.23	0
4	SO4	D	943	-	4,4,4	0.92	0	6,6,6	0.42	0
4	SO4	L	354	-	4,4,4	0.27	0	6,6,6	0.14	0
4	SO4	C	991	-	4,4,4	0.62	0	6,6,6	0.25	0
5	ATP	B	942	-	28,33,33	1.44	7 (25%)	34,52,52	1.19	4 (11%)
4	SO4	A	996	-	4,4,4	0.57	0	6,6,6	0.29	0
4	SO4	A	997	-	4,4,4	0.32	0	6,6,6	0.24	0
4	SO4	A	998	-	4,4,4	0.68	0	6,6,6	0.37	0
4	SO4	F	945	-	4,4,4	0.30	0	6,6,6	0.24	0
4	SO4	G	994	-	4,4,4	0.39	0	6,6,6	0.26	0
4	SO4	A	1000	-	4,4,4	0.32	0	6,6,6	0.21	0
4	SO4	I	354	-	4,4,4	0.26	0	6,6,6	0.05	0
4	SO4	J	354	-	4,4,4	0.39	0	6,6,6	0.14	0
4	SO4	G	996	-	4,4,4	0.28	0	6,6,6	0.09	0
5	ATP	F	942	-	28,33,33	1.49	3 (10%)	34,52,52	1.22	2 (5%)
4	SO4	G	995	-	4,4,4	0.19	0	6,6,6	0.26	0
4	SO4	E	996	-	4,4,4	0.25	0	6,6,6	0.12	0
4	SO4	G	993	-	4,4,4	0.38	0	6,6,6	0.26	0
4	SO4	A	991	-	4,4,4	0.96	0	6,6,6	0.28	0

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
5	ATP	F	942	-	-	4/18/38/38	0/3/3/3

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	ATP	H	942	-	-	1/18/38/38	0/3/3/3
5	ATP	B	942	-	-	0/18/38/38	0/3/3/3
5	ATP	D	942	-	-	1/18/38/38	0/3/3/3

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	F	942	ATP	O4'-C1'	4.80	1.47	1.40
5	D	942	ATP	O2'-C2'	4.04	1.53	1.43
5	F	942	ATP	C2-N3	3.47	1.37	1.32
5	D	942	ATP	C1'-N9	-3.46	1.41	1.49
5	H	942	ATP	C4-N3	3.38	1.40	1.35
5	F	942	ATP	C2-N1	2.94	1.39	1.33
5	H	942	ATP	C2-N1	2.85	1.39	1.33
5	D	942	ATP	C2-N3	2.84	1.36	1.32
5	H	942	ATP	C2-N3	2.79	1.36	1.32
5	D	942	ATP	O4'-C1'	2.76	1.44	1.40
5	B	942	ATP	C2-N3	2.71	1.36	1.32
5	D	942	ATP	C4-N3	2.62	1.39	1.35
5	B	942	ATP	PB-O3B	-2.58	1.56	1.59
5	D	942	ATP	PA-O1A	2.40	1.59	1.50
5	H	942	ATP	O4'-C1'	2.25	1.43	1.40
5	D	942	ATP	C2-N1	2.16	1.37	1.33
5	B	942	ATP	O4'-C1'	2.16	1.43	1.40
5	B	942	ATP	O4'-C4'	-2.15	1.40	1.45
5	D	942	ATP	PB-O3B	2.13	1.61	1.59
5	B	942	ATP	O2'-C2'	2.10	1.48	1.43
5	B	942	ATP	C4-N3	2.08	1.38	1.35
5	H	942	ATP	PG-O1G	2.03	1.56	1.50
5	B	942	ATP	PA-O1A	2.02	1.57	1.50

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	942	ATP	O2G-PG-O3B	3.71	117.06	104.64
5	D	942	ATP	O3A-PA-O1A	3.38	120.89	110.70
5	H	942	ATP	C5-C6-N6	3.33	125.38	120.31
5	B	942	ATP	N3-C2-N1	-3.24	124.28	128.67
5	H	942	ATP	O2G-PG-O3B	3.14	115.18	104.64
5	H	942	ATP	O2A-PA-O3A	2.84	114.94	107.27
5	D	942	ATP	C5-C6-N6	2.78	124.54	120.31
5	D	942	ATP	N3-C2-N1	-2.77	124.91	128.67

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	D	942	ATP	O2B-PB-O3A	2.70	114.56	107.27
5	D	942	ATP	O4'-C1'-N9	2.58	112.17	108.75
5	B	942	ATP	O2B-PB-O3A	2.46	113.94	107.27
5	F	942	ATP	C4-C5-N7	2.30	111.77	109.34
5	H	942	ATP	O3B-PB-O1B	-2.22	104.03	110.70
5	H	942	ATP	O3'-C3'-C4'	2.19	117.37	111.08
5	D	942	ATP	C1'-N9-C4	-2.15	122.86	126.64
5	D	942	ATP	O5'-C5'-C4'	-2.13	101.73	108.99
5	H	942	ATP	O3A-PB-O1B	-2.12	104.33	110.70
5	B	942	ATP	C5-C6-N6	2.09	123.49	120.31
5	B	942	ATP	O3'-C3'-C4'	2.02	116.87	111.08

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	F	942	ATP	PB-O3A-PA-O5'
5	H	942	ATP	PB-O3A-PA-O5'
5	F	942	ATP	O4'-C4'-C5'-O5'
5	F	942	ATP	C5'-O5'-PA-O1A
5	D	942	ATP	PG-O3B-PB-O2B
5	F	942	ATP	C3'-C4'-C5'-O5'

There are no ring outliers.

7 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	993	SO4	1	0
4	E	990	SO4	1	0
4	C	996	SO4	1	0
4	E	991	SO4	1	0
5	H	942	ATP	1	0
4	C	991	SO4	2	0
5	F	942	ATP	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 D 942

Bond lengths　　　　　Bond angles

Torsions　　　　　Rings

Ligand ATP H 942

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 942

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP F 942

Bond lengths

Bond angles

Torsions

Rings
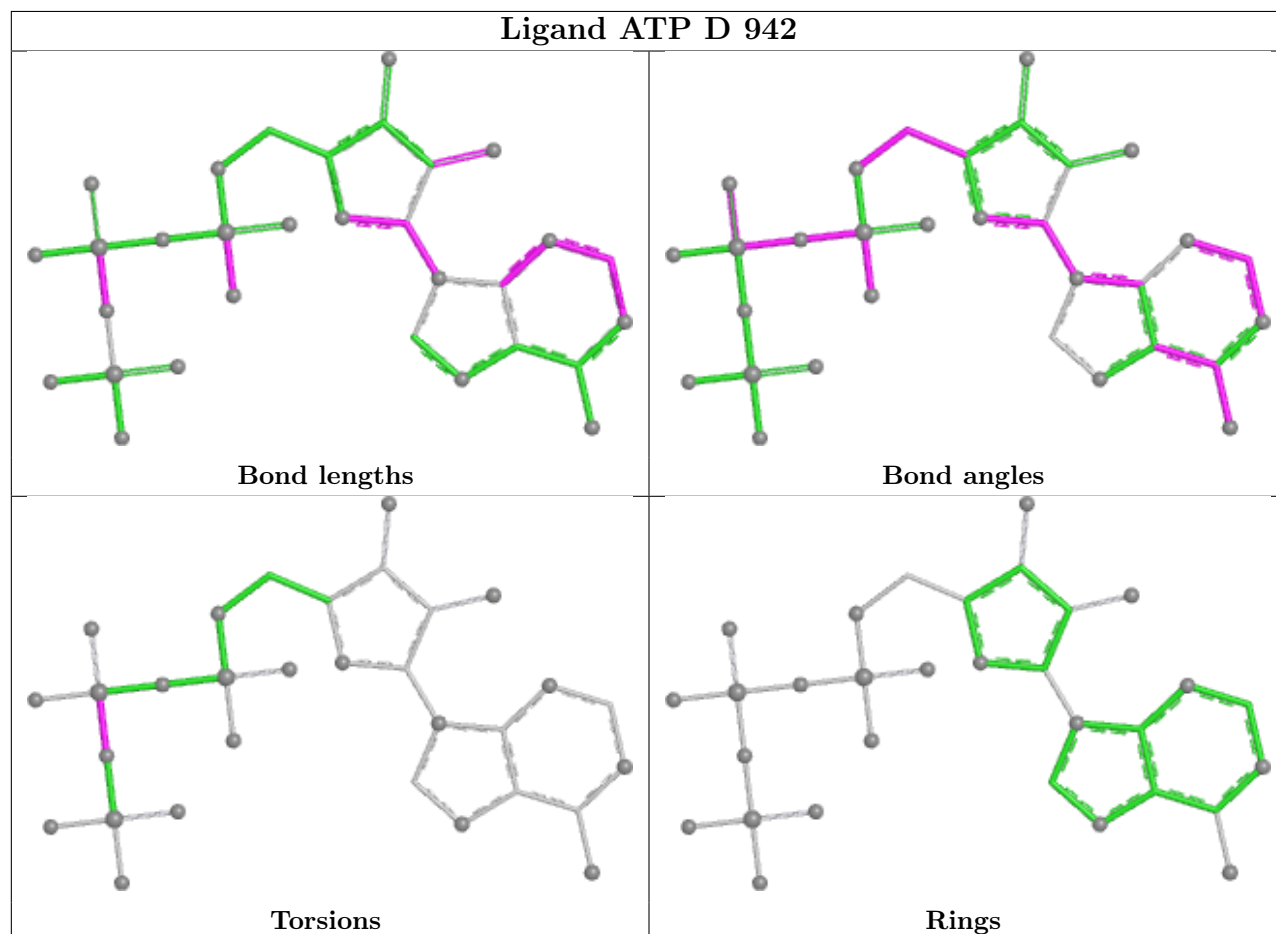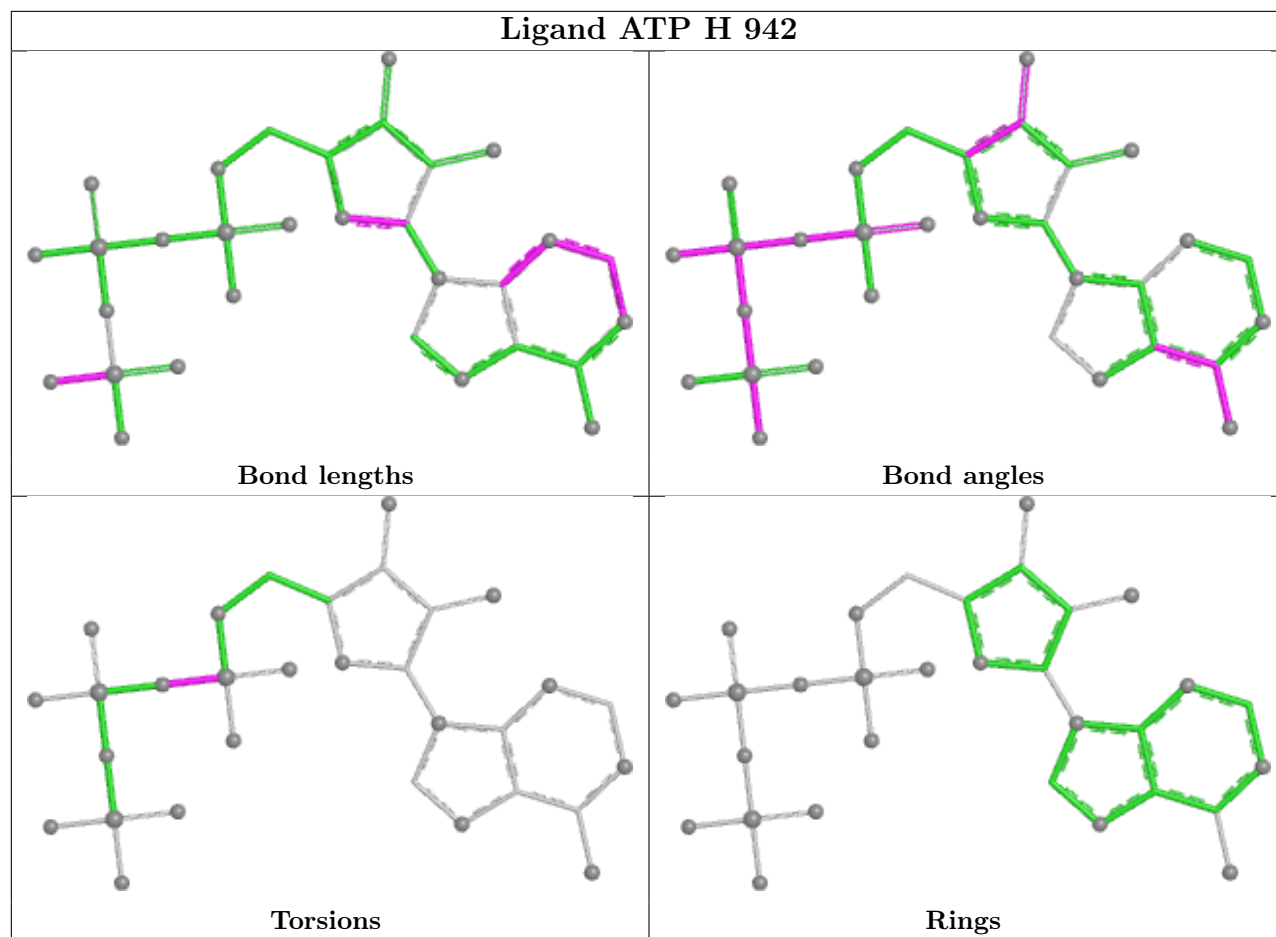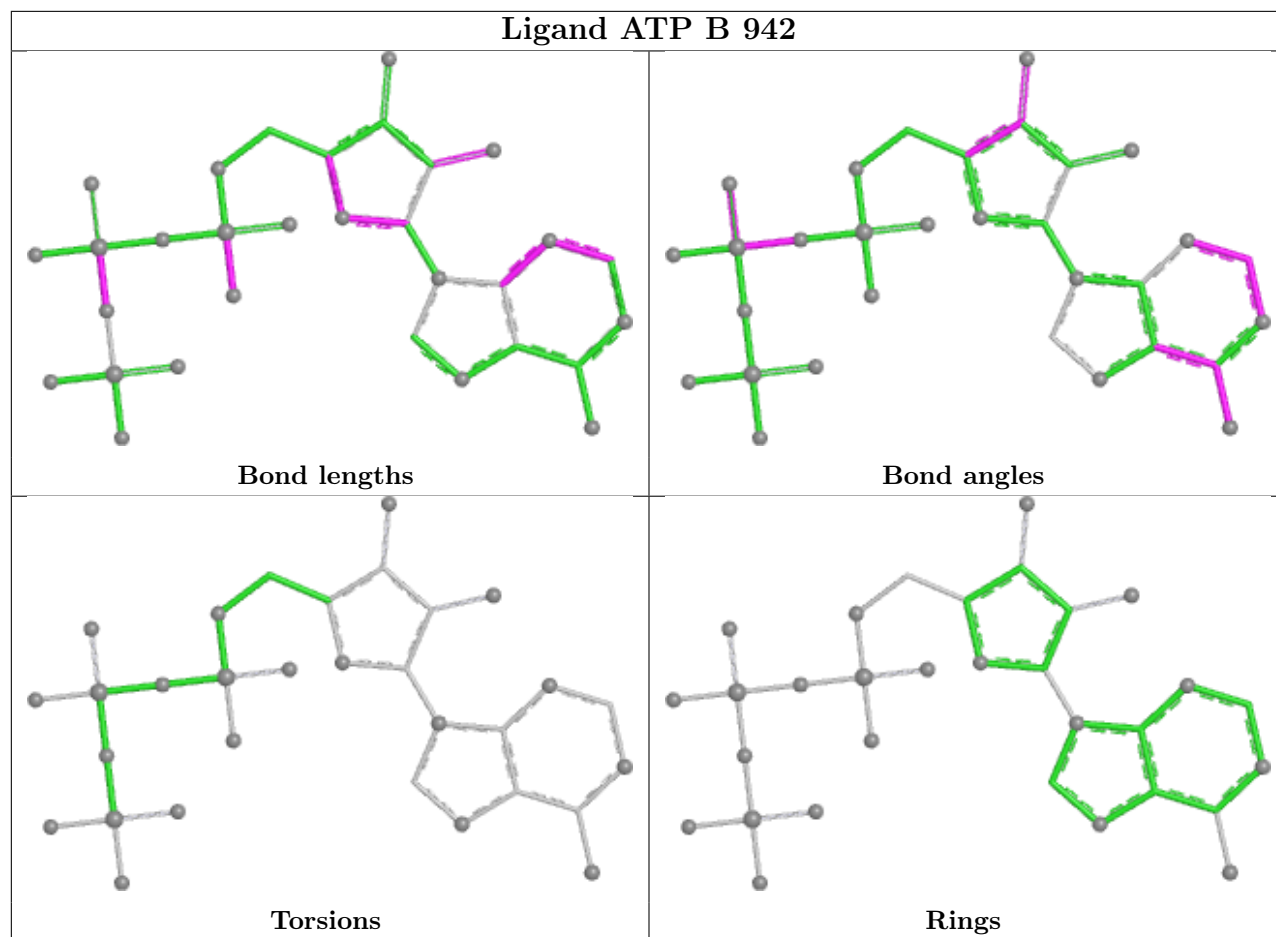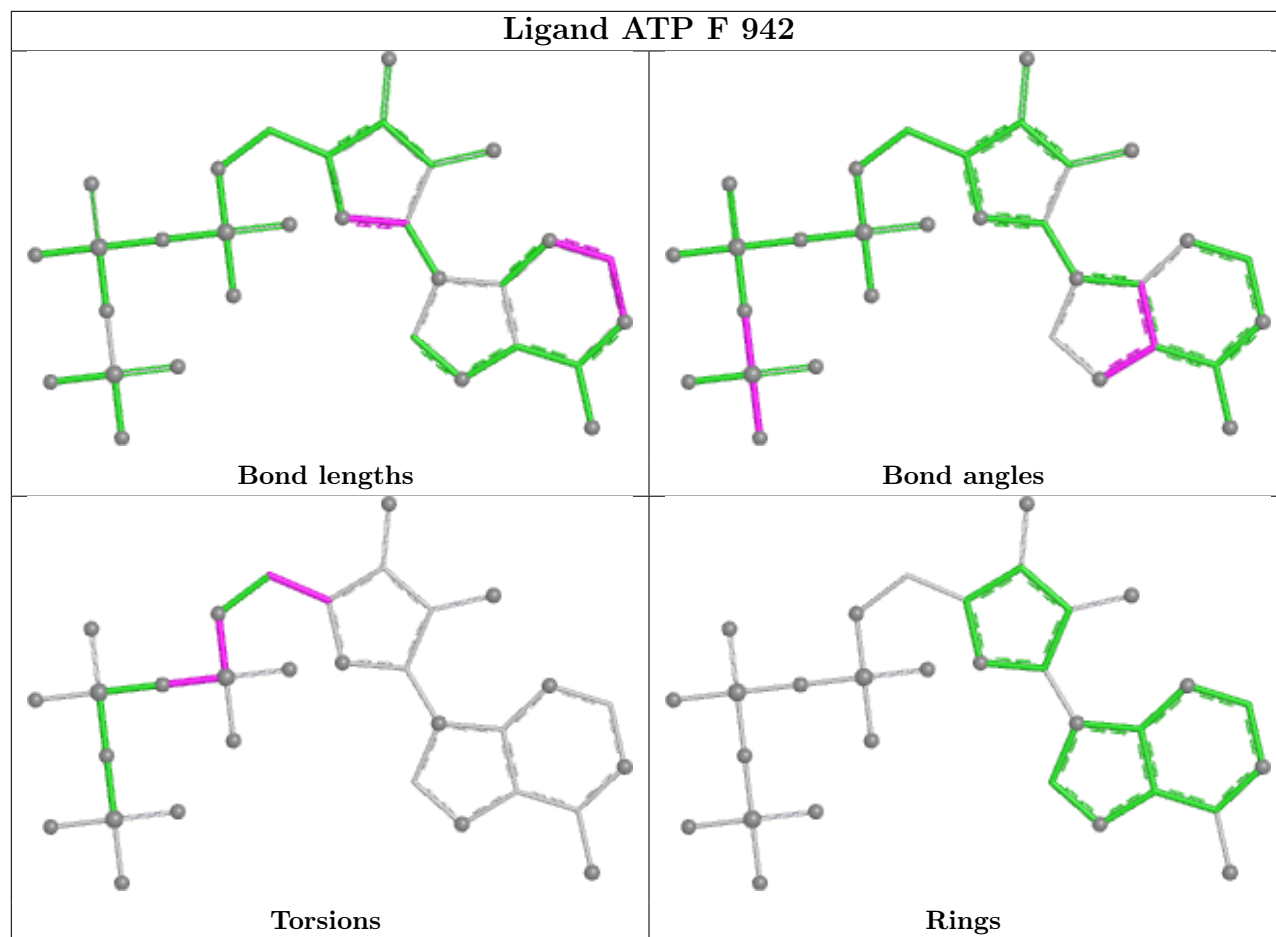
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data ⓘ

6.1   Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	936/989 (94%)	-0.10	8 (0%)	84	66	19, 52, 102, 146	0
1	C	936/989 (94%)	-0.07	11 (1%)	79	58	21, 53, 107, 163	0
1	E	936/989 (94%)	0.13	21 (2%)	62	38	31, 75, 120, 163	0
1	G	936/989 (94%)	0.06	16 (1%)	70	46	31, 70, 114, 160	0
2	B	884/941 (93%)	-0.09	8 (0%)	84	66	20, 52, 109, 162	0
2	D	884/941 (93%)	-0.08	3 (0%)	94	85	20, 51, 113, 186	0
2	F	884/941 (93%)	0.19	26 (2%)	51	26	43, 83, 126, 191	0
2	H	884/941 (93%)	0.11	18 (2%)	65	41	38, 72, 133, 184	0
3	I	323/351 (92%)	-0.30	1 (0%)	94	85	22, 47, 84, 106	0
3	J	323/351 (92%)	-0.32	0	100	100	17, 47, 84, 113	0
3	K	323/351 (92%)	-0.17	2 (0%)	89	76	38, 66, 96, 121	0
3	L	323/351 (92%)	-0.07	1 (0%)	94	85	47, 72, 104, 125	0
All	All	8572/9124 (93%)	-0.02	115 (1%)	77	56	17, 64, 116, 191	0

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	173	TYR	7.5
1	E	77	GLY	7.1
1	C	173	TYR	6.6
1	E	989	THR	6.3
1	E	764	ARG	5.8
2	H	54	ASP	5.7
1	A	173	TYR	5.6
1	G	762	SER	5.3
2	D	19	ASN	5.2
1	G	764	ARG	5.1
1	G	74	ALA	4.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	759	ALA	4.2
1	E	152	LYS	4.2
2	F	41	ASN	4.1
1	G	759	ALA	4.0
1	E	173	TYR	3.9
1	E	762	SER	3.9
2	B	43	ASN	3.9
1	E	118	GLU	3.8
2	H	95	GLN	3.8
1	A	166	ASP	3.8
1	E	112	LEU	3.7
2	F	31	THR	3.7
2	F	256	CYS	3.7
2	F	530	ILE	3.6
1	C	762	SER	3.6
1	C	150	PRO	3.5
1	E	186	PHE	3.5
1	C	186	PHE	3.5
1	E	168	ILE	3.4
1	E	962	TRP	3.3
2	F	58	VAL	3.3
1	G	286	GLU	3.3
2	H	561	HIS	3.3
1	E	169	SER	3.2
3	L	236	THR	3.2
2	H	136	PRO	3.2
2	B	19	ASN	3.2
2	F	881	ARG	3.2
1	E	287	PHE	3.0
1	E	33	GLY	2.9
2	F	879	SER	2.9
2	H	19	ASN	2.8
2	F	19	ASN	2.8
2	F	54	ASP	2.8
1	A	72	VAL	2.8
2	H	498	ASP	2.8
2	H	317	PHE	2.8
1	G	24	GLU	2.8
2	F	318	ASN	2.8
2	H	840	GLN	2.8
1	E	126	GLU	2.8
1	A	74	ALA	2.7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	B	18	PRO	2.7
2	H	57	ASN	2.7
1	C	169	SER	2.7
2	B	17	ALA	2.6
1	G	77	GLY	2.6
2	H	881	ARG	2.6
1	A	118	GLU	2.6
2	H	128	PRO	2.6
2	F	509	ASP	2.6
2	F	343	ILE	2.6
2	B	52	GLU	2.5
2	F	367	SER	2.5
1	A	113	SER	2.5
1	C	166	ASP	2.5
2	F	18	PRO	2.5
1	E	758	SER	2.5
1	G	169	SER	2.5
2	F	433	GLY	2.5
2	D	18	PRO	2.5
2	H	68	HIS	2.5
1	G	660	ASN	2.4
2	D	99	ALA	2.4
2	F	528	LYS	2.4
2	F	139	SER	2.4
2	H	180	VAL	2.4
1	C	140	LYS	2.4
3	I	150	ILE	2.4
1	E	85	GLN	2.4
2	F	539	ILE	2.4
3	K	234	VAL	2.3
1	G	168	ILE	2.3
2	F	42	SER	2.3
1	E	292	GLY	2.3
2	B	139	SER	2.3
2	B	255	ARG	2.3
1	G	127	VAL	2.3
2	H	123	PRO	2.3
1	G	126	GLU	2.2
2	F	13	ILE	2.2
1	G	186	PHE	2.2
2	F	702	ILE	2.2
1	G	960	HIS	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	F	749	ASN	2.2
3	K	235	GLY	2.2
2	B	42	SER	2.1
1	C	118	GLU	2.1
1	E	73	GLU	2.1
2	H	273	ILE	2.1
2	H	75	ILE	2.1
2	F	913	SER	2.1
1	C	149	ILE	2.1
2	F	841	GLN	2.1
1	E	184	PRO	2.1
2	F	518	ASP	2.1
1	C	72	VAL	2.1
2	H	841	GLN	2.1
1	A	140	LYS	2.1
2	H	81	ASN	2.1
1	A	79	GLU	2.0
1	G	58	ILE	2.0
2	F	15	LEU	2.0
1	E	142	ILE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	SO4	C	999	5/5	0.76	0.25	147,152,152,153	0
4	SO4	I	354	5/5	0.76	0.28	160,164,165,166	0
4	SO4	C	998	5/5	0.80	0.18	119,123,124,125	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\mathring{A}^2$)	Q<0.9
4	SO4	J	354	5/5	0.83	0.16	140,144,145,145	0
4	SO4	L	354	5/5	0.84	0.21	129,133,134,135	0
4	SO4	I	356	5/5	0.85	0.17	125,129,130,130	0
4	SO4	G	997	5/5	0.85	0.17	135,139,139,140	0
4	SO4	K	354	5/5	0.85	0.16	136,141,141,142	0
4	SO4	L	352	5/5	0.85	0.15	122,127,128,128	0
4	SO4	I	355	5/5	0.85	0.24	131,135,136,137	0
4	SO4	E	996	5/5	0.86	0.18	123,127,128,129	0
4	SO4	A	1000	5/5	0.88	0.13	105,109,110,110	0
4	SO4	L	353	5/5	0.88	0.21	165,169,170,170	0
4	SO4	A	995	5/5	0.88	0.16	116,120,121,122	0
4	SO4	E	990	5/5	0.89	0.21	110,114,115,115	0
4	SO4	A	1002	5/5	0.89	0.16	131,136,136,137	0
4	SO4	F	945	5/5	0.89	0.17	113,118,118,119	0
4	SO4	C	997	5/5	0.89	0.18	113,117,118,118	0
4	SO4	H	946	5/5	0.90	0.18	116,120,121,121	0
4	SO4	E	997	5/5	0.90	0.21	124,128,129,129	0
4	SO4	E	994	5/5	0.90	0.17	118,122,123,124	0
4	SO4	A	998	5/5	0.90	0.22	84,87,89,90	0
4	SO4	J	352	5/5	0.90	0.19	104,108,109,109	0
4	SO4	K	352	5/5	0.91	0.18	88,92,93,94	0
4	SO4	A	1001	5/5	0.92	0.15	90,94,95,96	0
4	SO4	G	996	5/5	0.92	0.11	133,137,138,139	0
5	ATP	H	942	31/31	0.92	0.17	69,70,102,104	0
4	SO4	G	993	5/5	0.93	0.17	97,101,102,103	0
4	SO4	D	944	5/5	0.94	0.14	79,83,83,85	0
4	SO4	H	944	5/5	0.94	0.15	94,99,99,100	0
4	SO4	K	353	5/5	0.95	0.17	95,100,100,100	0
5	ATP	F	942	31/31	0.95	0.17	83,87,104,105	0
4	SO4	A	997	5/5	0.95	0.17	102,106,107,108	0
4	SO4	E	991	5/5	0.96	0.15	66,70,72,72	0
4	SO4	E	992	5/5	0.96	0.16	94,99,100,100	0
4	SO4	C	992	5/5	0.96	0.17	61,65,65,66	0
4	SO4	E	995	5/5	0.96	0.14	95,99,100,100	0
4	SO4	J	353	5/5	0.96	0.17	83,87,88,88	0
4	SO4	I	352	5/5	0.96	0.19	66,69,71,71	0
4	SO4	I	353	5/5	0.96	0.22	91,95,97,97	0
4	SO4	G	995	5/5	0.97	0.16	96,101,101,102	0
4	SO4	A	994	5/5	0.97	0.19	61,65,66,68	0
4	SO4	E	993	5/5	0.97	0.16	93,97,99,99	0
4	SO4	C	994	5/5	0.97	0.17	87,91,92,92	0
4	SO4	G	990	5/5	0.97	0.20	63,66,69,70	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
5	ATP	D	942	31/31	0.97	0.16	38,42,53,56	0
4	SO4	C	995	5/5	0.97	0.17	85,89,90,90	0
4	SO4	G	994	5/5	0.97	0.17	86,89,92,92	0
4	SO4	G	992	5/5	0.98	0.15	79,83,84,85	0
4	SO4	A	990	5/5	0.98	0.14	70,74,75,76	0
4	SO4	C	996	5/5	0.98	0.21	46,49,51,53	0
4	SO4	A	991	5/5	0.98	0.15	57,61,62,64	0
4	SO4	A	996	5/5	0.98	0.19	45,48,50,53	0
4	SO4	C	990	5/5	0.98	0.19	43,45,48,50	0
4	SO4	H	943	5/5	0.98	0.20	69,73,74,75	0
4	SO4	A	992	5/5	0.98	0.15	76,80,80,82	0
4	SO4	F	943	5/5	0.98	0.18	68,73,74,74	0
4	SO4	F	944	5/5	0.98	0.18	79,84,84,85	0
5	ATP	B	942	31/31	0.98	0.18	34,36,55,57	0
4	SO4	C	993	5/5	0.98	0.17	57,60,61,64	0
4	SO4	A	993	5/5	0.98	0.14	82,87,88,88	0
4	SO4	G	991	5/5	0.98	0.18	55,58,60,61	0
4	SO4	C	991	5/5	0.99	0.17	58,61,63,65	0
4	SO4	H	945	5/5	0.99	0.17	59,64,65,66	0
4	SO4	D	943	5/5	0.99	0.22	33,36,38,40	0
4	SO4	B	943	5/5	0.99	0.21	45,49,50,50	0
4	SO4	D	945	5/5	0.99	0.19	49,53,55,55	0
4	SO4	B	944	5/5	0.99	0.21	36,40,41,42	0
4	SO4	A	999	5/5	0.99	0.19	46,50,51,52	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.
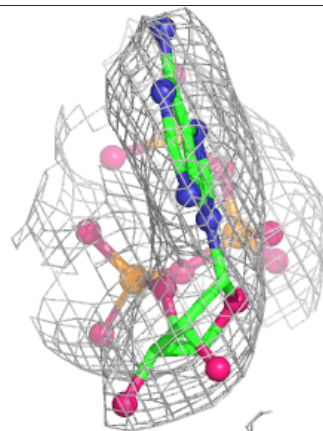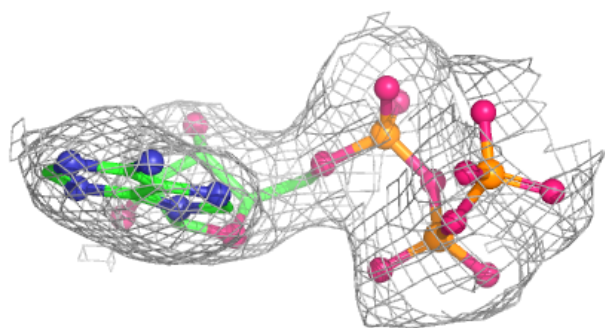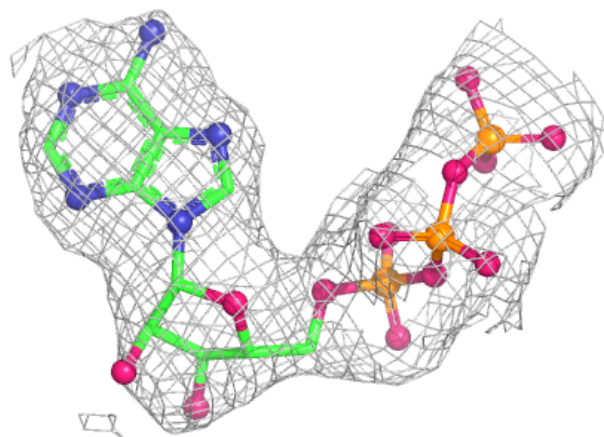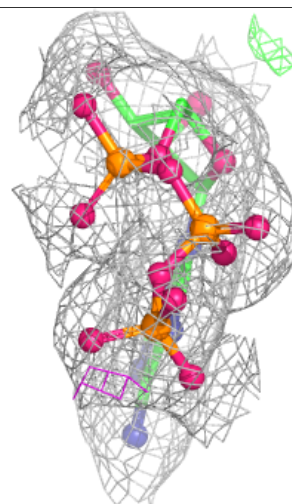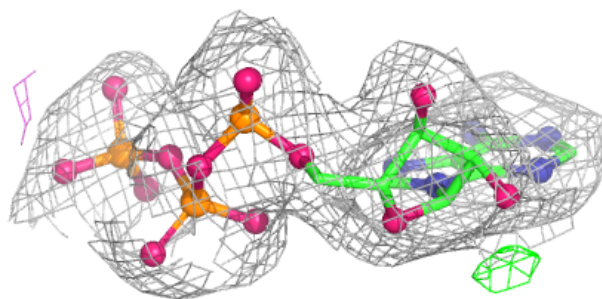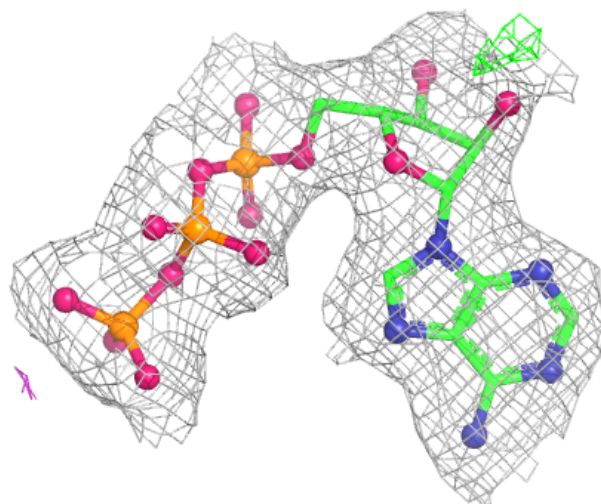
Electron density around ATP H 942:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
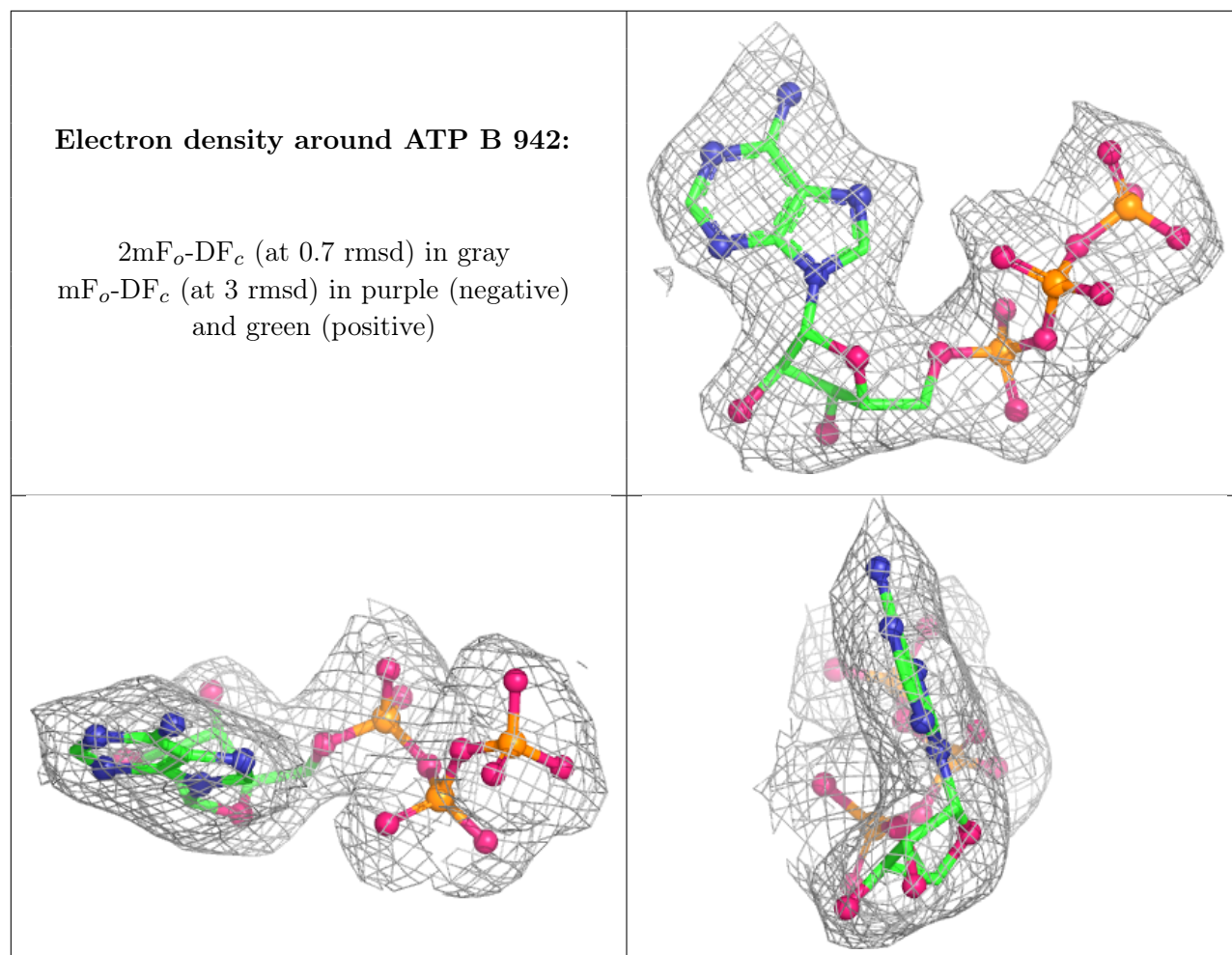and green (positive)
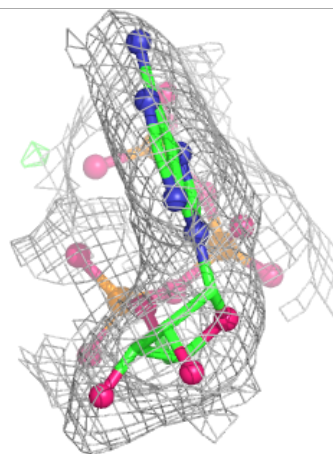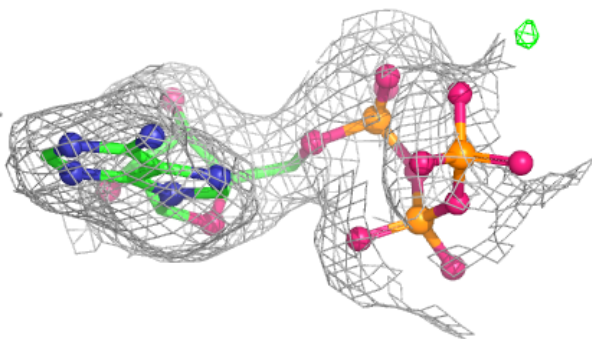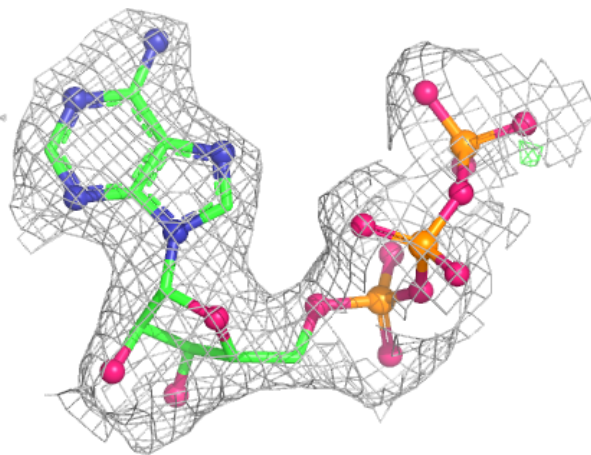
Electron density around ATP F 942:

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

Electron density around ATP D 942:

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

Electron density around ATP B 942:

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

6.5   Other polymers ⓘ

There are no such residues in this entry.