Full wwPDB X-ray Structure Validation Report (i)

Jun 24, 2021 – 01:26 PM BST

PDB ID	:	7NPH
Title	:	Crystal structure of Mycobacterium tuberculosis ArgC in complex with 5-methoxy-1,3-benzoxazole-2-carboxylic acid
Authors	:	Gupta, P.; Mendes, V.; Blundell, T.L.
Deposited on	:	2021-02-26
Resolution	:	2.57 Å(reported)

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

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

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.20
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)	:	2.20

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.57 Å.

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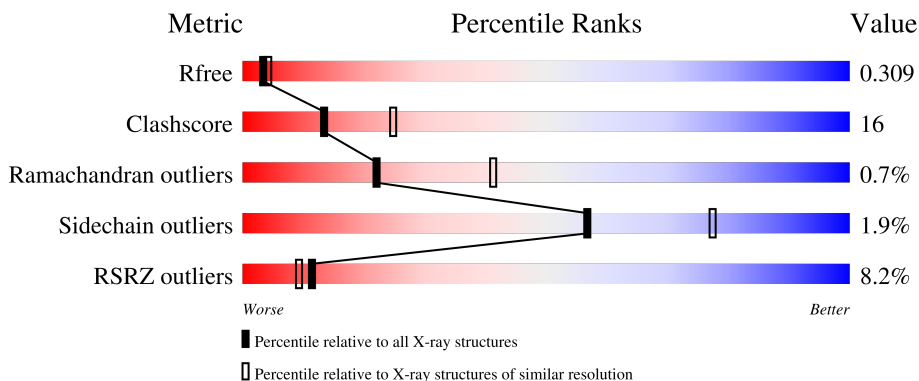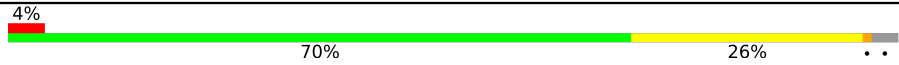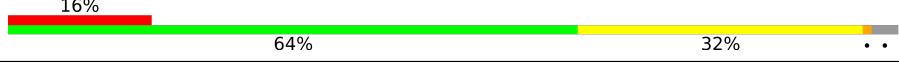

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3676 (2.60-2.56)
Clashscore	141614	4049 (2.60-2.56)
Ramachandran outliers	138981	3979 (2.60-2.56)
Sidechain outliers	138945	3979 (2.60-2.56)
RSRZ outliers	127900	3614 (2.60-2.56)

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	354	
1	B	354	
1	C	354	
1	D	354	
1	E	354	

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Mol	Chain	Length	Quality of chain
1	F	354	4% ▬▬ 70% ▬▬▬▬▬▬▬▬▬▬ 26% ▬▬▬ ··
1	G	354	16% ▬▬▬ 64% ▬▬▬▬▬▬▬▬ 32% ▬▬▬▬ ··
1	H	354	12% ▬▬▬ 68% ▬▬▬▬▬▬▬▬▬ 29% ▬▬▬▬ ··

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 19239 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 N-acetyl-gamma-glutamyl-phosphate reductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	344	Total 2396	C 1506	N 426	O 459	S 5	0	0	0
1	B	344	Total 2399	C 1518	N 428	O 448	S 5	0	0	0
1	C	344	Total 2423	C 1537	N 422	O 459	S 5	0	0	0
1	D	344	Total 2450	C 1551	N 429	O 465	S 5	0	0	0
1	E	344	Total 2343	C 1477	N 417	O 444	S 5	0	0	0
1	F	344	Total 2473	C 1563	N 440	O 465	S 5	0	0	0
1	G	344	Total 2437	C 1538	N 432	O 462	S 5	0	0	0
1	H	344	Total 2281	C 1420	N 415	O 441	S 5	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P9WPZ9
A	0	SER	-	expression tag	UNP P9WPZ9
B	-1	GLY	-	expression tag	UNP P9WPZ9
B	0	SER	-	expression tag	UNP P9WPZ9
C	-1	GLY	-	expression tag	UNP P9WPZ9
C	0	SER	-	expression tag	UNP P9WPZ9
D	-1	GLY	-	expression tag	UNP P9WPZ9
D	0	SER	-	expression tag	UNP P9WPZ9
E	-1	GLY	-	expression tag	UNP P9WPZ9
E	0	SER	-	expression tag	UNP P9WPZ9
F	-1	GLY	-	expression tag	UNP P9WPZ9
F	0	SER	-	expression tag	UNP P9WPZ9
G	-1	GLY	-	expression tag	UNP P9WPZ9

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Chain	Residue	Modelled	Actual	Comment	Reference
G	0	SER	-	expression tag	UNP P9WPZ9
H	-1	GLY	-	expression tag	UNP P9WPZ9
H	0	SER	-	expression tag	UNP P9WPZ9

- Molecule 2 is 5-methoxy-1,3-benzoxazole-2-carboxylic acid (three-letter code: UKE) (formula: $C_9H_7NO_4$) (labeled as "Ligand of Interest" by depositor).
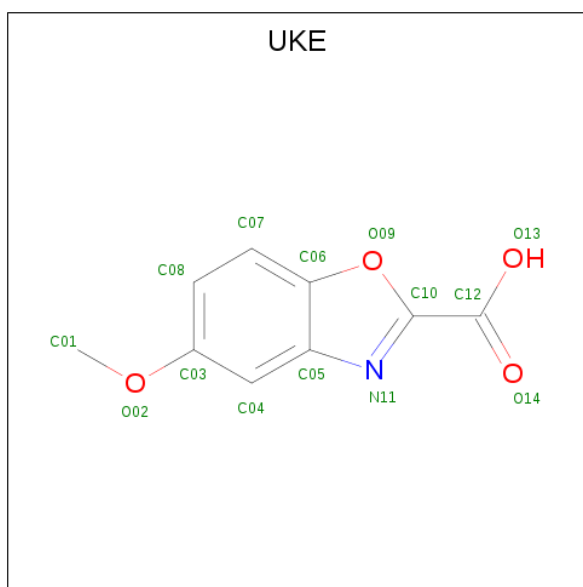
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	C	1	Total	C	N	O	0	0
			14	9	1	4		

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P) (labeled as "Ligand of Interest" by depositor).
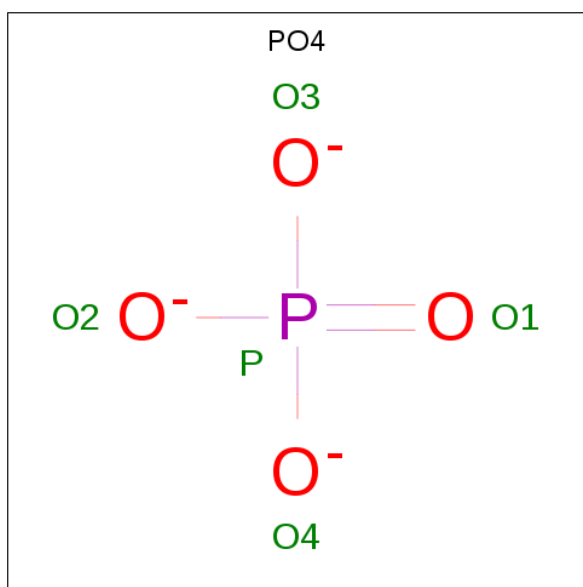
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total 5	O 4	P 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	3	Total 3	O 3	0	0
4	C	3	Total 3	O 3	0	0
4	D	2	Total 2	O 2	0	0
4	E	1	Total 1	O 1	0	0
4	F	7	Total 7	O 7	0	0
4	G	1	Total 1	O 1	0	0
4	H	1	Total 1	O 1	0	0

3 Residue-property plots ⓘ

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

- Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

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D112 T116 Y125 S132 P138 E139 L140 R152 I153 A154 V155 C158 Y159 P160 L165 A166 L167 F168 P169 A170 L171 A172 A173 D174 L175 I176 E177 V185 R193 A194 A195 T196 T197 D198 L199 L200 E203 S207 A208 R209 R218 H219 T220 P221 A224 R228

D234 I244 R248 G249 I250 L251 A252 T253 C254 T255 Y269 E270 K271 A272 Y273 H274 F278 I279 Y280 L281 I301 A309 F312 I315 A316 V322 G327 A328 Q331 S332 L335 E341 T342 P352

• Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

Chain D:

Chain D bar: 5% red, 66% green, 29% yellow

GLY SER MET GLN ASN ARG VAL ALA ASN A9 T10 K11 V12 A15 Y20 E24 Y35 I42 T46 A47 S50 H59 V70 E71 P72 T73 E74 A75 A76 V77 L78 V84 A87 Q99 L100 S101 E102 E103 T104 L105 I106 I107 D108 C109 D112 F113
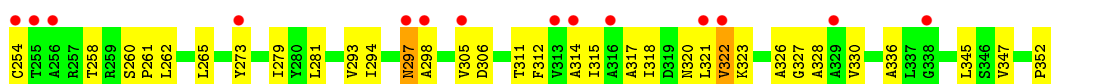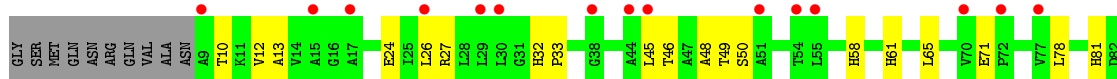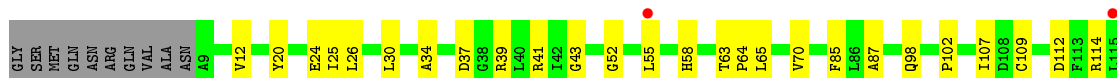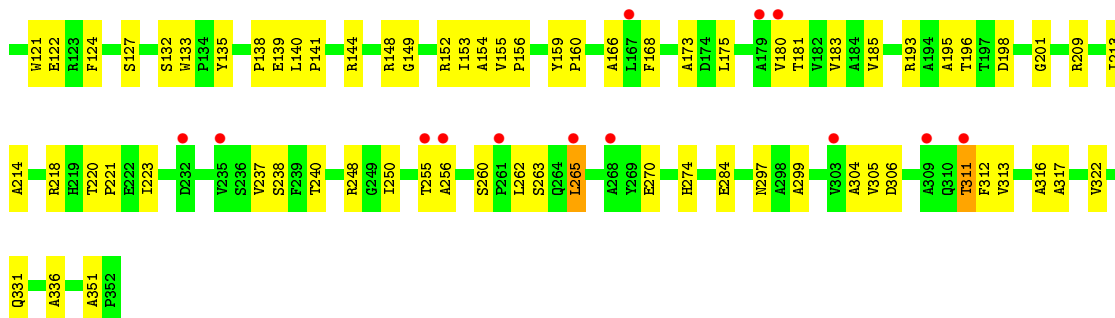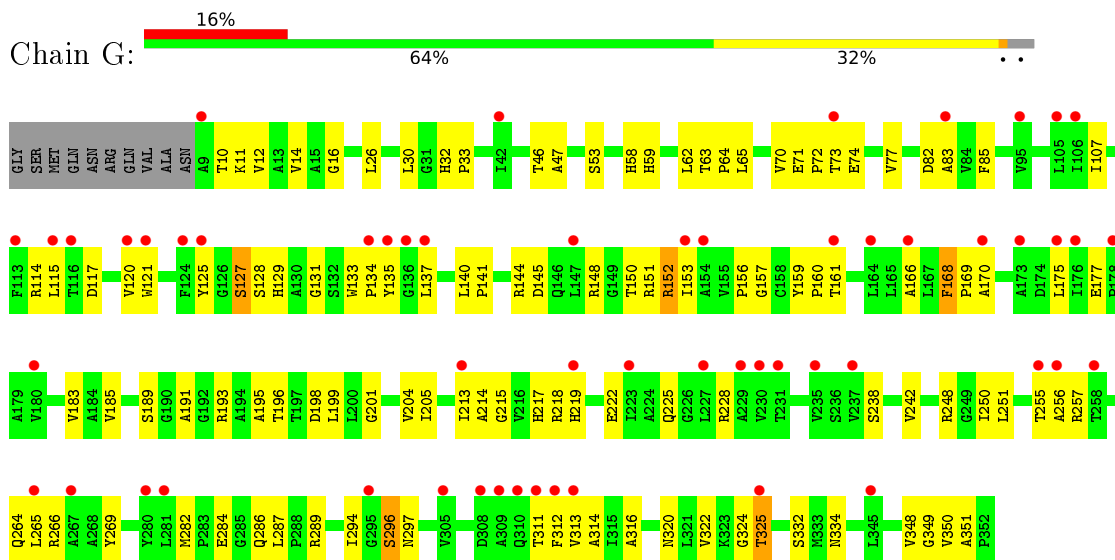
R114 L115 T116 W121 E122 R123 F124 S127 S128 H129 A130 G131 S132 W133 P134 Y135 G136 R152 I153 A154 V155 P156 Y159 P160 L164 L165 A166 L167 F168 P169 A170 V182 S189 R193 A194 A195 T196 L200 E203 V204 S207 Y211 N212 I213 V216 H217 R218

H219 E222 I223 A224 Q225 V230 T231 D232 V235 S236 V237 T240 P241 V242 L243 S247 R248 A252 T253 C254 T255 P261 L262 S263 Q264 L265 R266 Y269 E270 Y273 L281 G295 S296 I301 V305 D306 Q310 T311 F312 V313 A314 I315 A316 D319 N320

L321 V322 K323 G327 Q331 S332 M333 N334 L335 E341 P352

• Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

Chain E:

Chain E bar: 18% red, 67% green, 29% yellow

GLY SER MET GLN ASN ARG VAL ALA ASN A9 T10 K11 V12 A13 V14 A15 G16 A17 E24 I25 L26 R27 L28 I29 L30 G31 H32 P33 G38 A44 L45 T46 A47 A48 T49 S50 A51 T54 L55 H58 H61 L65 V70 E71 P72 V77 L78 H81 D82

A83 V84 F85 L86 A87 A94 V95 L96 A97 Q98 Q99 L100 S101 P102 E103 T104 L105 I106 I107 F113 R114 L115 T116 D117 A118 E122 S127 S128 H129 A130 G131 S132 W133 P134 Y135 E139 D145 Q146 L147 R148 G149 T150 R151 R152 I153 P156 G157 C158 Y159 P160 L164 L165

A166 L167 F168 P169 A172 A179 V180 T181 V182 V183 A184 V185 R193 T197 D198 L199 L200 G201 I205 A208 R209 A210 Y211 N212 I213 A214 G215 V216 H217 R218 H219 T220 I223 A224 Q225 G226 A229 S238 F239 T240 P241 V242 L243 I244 R248 G249 I250 L251 A252 T253

C254 T255 A256 R257 T258 R259 S260 P261 L262 L265 Y273 I279 Y280 L281 V293 I294 N297 A298 V305 D306 T311 F312 V313 A314 I315 A316 A317 I318 D319 N320 L321 V322 K323 A326 G327 A328 A329 V330 A336 L337 G338 L345 S346 V347 P352

• Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

Chain F:

Chain F bar: 4% red, 70% green, 26% yellow

GLY SER MET GLN ASN ARG VAL ALA ASN A9 V12 Y20 E24 I25 L26 L30 A34 D37 G38 R39 L40 R41 I42 G43 G52 L55 H58 T63 P64 L65 V70 F85 L86 A87 Q98 P102 I107 D108 C109 D112 F113 R114 L115

W121 E122 R123 F124 S127 S132 W133 P134 Y135 P138 E139 L140 P141 R144 R148 G149 R152 I153 A154 V155 P156 Y159 P160 A166 L167 F168 A173 D174 L175 A179 V180 T181 V182 V183 A184 V185 R193 A194 A195 T196 T197 D198 G201 R209 I213

A214 R218 H219 T220 P221 E222 I223 D232 V235 S236 V237 S238 F239 T240 R248 G249 I250 T255 A256 S260 P261 L262 S263 Q264 L265 A268 Y269 E270 H274 E284 N297 A298 A299 V303 A304 V305 D306 A309 Q310 T311 F312 V313 A316 A317 V322

Q331 A336 A351 P352

• Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

Chain G:

16%

64% 32%

GLY SER MET GLN ASN ARG GLN VAL ALA ASN A9 T10 K11 V12 A13 V14 A15 G16 L26 L30 G31 H32 P33 I42 T46 A47 S53 H58 H59 L62 T63 P64 L65 V70 E71 P72 T73 E74 V77 D82 A83 V84 F85 V95 L105 I106 I107

F113 R114 L115 T116 D117 V120 W121 F124 Y125 G126 S127 S128 H129 A130 G131 S132 W133 P134 Y135 G136 L137 L140 P141 R144 D145 Q146 L147 R148 G149 T150 V155 P156 G157 C158 Y159 P160 T161 L164 L165 A166 L167 F168 P169 A170 A173 D174 L175 I176 E177 P178

A179 V180 V183 A184 V185 S189 G190 A191 G192 R193 A194 A195 T196 T197 D198 L199 L200 G201 V204 I205 I213 A214 G215 V216 H217 R218 H219 E222 I223 A224 Q225 G226 I227 R228 A229 V230 T231 V235 S236 V237 S238 V242 R248 G249 I250 L251 T255 A256 R257 T258

Q264 L265 R266 A267 A268 Y269 Y280 L281 M282 P283 E284 G285 Q286 L287 P288 R289 I294 G295 S296 N297 V305 D308 A309 Q310 T311 F312 V313 A314 I315 A316 N320 L321 V322 K323 G324 T325 S332 M333 N334 I345 V348 G349 V350 A351 P352

• Molecule 1: N-acetyl-gamma-glutamyl-phosphate reductase

Chain H:

12%

68% 29%

GLY SER MET GLN ASN ARG GLN VAL ALA ASN A9 V12 A13 V14 A15 G16 A17 S18 A21 G22 G23 L26 R27 H32 R41 I42 G43 T46 A47 A51 G56 E57 H58 H59 P60 H61 L62 T63 P64 V70 E71 P72 T73 L78 G79 G80 H81 A87

A97 T104 L105 I106 A111 R114 A119 V120 W121 E122 R123 H129 A130 G131 S132 W133 P134 E139 L140 P141 T150 R151 R152 I153 A154 V155 P156 Y159 P160 T161 A162 A163 L164 L165 A166 L167 F168 P169 A170 L175 I176 E177 P178 A179 V180 T181 V182 V183 A184 V185 S186

G187 T188 R193 L200 G201 A202 E203 V204 H217 T220 P221 E222 I223 L227 V230 T231 R232 D233 D234 V235 S236 V237 T240 P241 I244 P245 A246 G249 I250 L251 A252 T253 C254 T255 A256 R266 Y269 E270 K271 A272 Y273 E276 I279 M282 P288

R289 T290 I294 A298 A299 H300 V303 D306 T311 F312 V313 A314 I315 A316 V322 K323 G324 T325 A326 G327 A328 A329 V330 Q331 S332 M333 N334 L335 A336 D343 V347 V348 P352

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	84.29Å 132.78Å 122.82Å 90.00° 90.17° 90.00°	Depositor
Resolution (Å)	69.59 – 2.57 69.59 – 2.57	Depositor EDS
% Data completeness (in resolution range)	99.8 (69.59-2.57) 99.9 (69.59-2.57)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.46 (at 2.58Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.239 , 0.314 0.258 , 0.309	Depositor DCC
R_{free} test set	4226 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å^2)	72.7	Xtriage
Anisotropy	0.311	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 69.0	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.021 for h,-k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	19239	wwPDB-VP
Average B, all atoms (Å^2)	81.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.79% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: UKE, PO4

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	0.55	0/2451	0.69	0/3367
1	B	0.56	0/2454	0.73	0/3373
1	C	0.54	0/2478	0.67	0/3405
1	D	0.49	0/2506	0.66	0/3440
1	E	0.47	0/2394	0.64	0/3295
1	F	0.50	0/2529	0.68	0/3468
1	G	0.44	0/2490	0.63	0/3417
1	H	0.46	0/2333	0.64	0/3214
All	All	0.50	0/19635	0.67	0/26979

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2396	0	2279	66	0
1	B	2399	0	2312	86	0
1	C	2423	0	2373	65	0
1	D	2450	0	2409	87	0
1	E	2343	0	2211	91	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2473	0	2451	74	0
1	G	2437	0	2396	102	0
1	H	2281	0	2037	88	0
2	C	14	0	0	0	0
3	C	5	0	0	0	0
4	B	3	0	0	0	0
4	C	3	0	0	0	0
4	D	2	0	0	0	0
4	E	1	0	0	0	0
4	F	7	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
All	All	19239	0	18468	608	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 16.

All (608) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:63:THR:OG1	1:F:64:PRO:HD3	1.27	1.31
1:D:102:PRO:HA	1:D:152:ARG:NH2	1.58	1.19
1:H:168:PHE:CD1	1:H:169:PRO:HD3	1.79	1.17
1:B:137:LEU:HD23	1:B:140:LEU:HG	1.21	1.13
1:B:12:VAL:HG21	1:B:40:LEU:HD21	1.32	1.11
1:B:12:VAL:CG2	1:B:40:LEU:HD21	1.82	1.10
1:G:137:LEU:HD23	1:G:140:LEU:HD12	1.43	1.01
1:B:124:PHE:CE2	1:B:221:PRO:HG3	1.96	1.00
1:F:63:THR:OG1	1:F:64:PRO:CD	2.11	0.97
1:H:150:THR:O	1:H:336:ALA:HB1	1.65	0.96
1:A:158:CYS:HB2	1:A:250:ILE:CD1	1.97	0.93
1:B:137:LEU:CD2	1:B:140:LEU:HG	1.97	0.93
1:D:102:PRO:HA	1:D:152:ARG:HH22	1.17	0.90
1:B:137:LEU:HD23	1:B:140:LEU:CG	2.02	0.90
1:G:175:LEU:HD21	1:G:264:GLN:HG2	1.55	0.88
1:D:107:ILE:HD11	1:D:333:MET:HB3	1.55	0.88
1:B:15:ALA:HA	1:B:46:THR:OG1	1.74	0.87
1:B:12:VAL:CG2	1:B:40:LEU:CD2	2.52	0.87
1:D:101:SER:O	1:D:104:THR:HG22	1.75	0.86
1:H:165:LEU:HD23	1:H:279:ILE:CD1	2.05	0.86
1:A:13:ALA:HB3	1:A:84:VAL:HG22	1.60	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:180:VAL:HG22	1:H:237:VAL:HA	1.56	0.84
1:H:141:PRO:HG2	1:H:230:VAL:HG12	1.58	0.83
1:E:114:ARG:HD3	1:E:156:PRO:HA	1.57	0.83
1:A:158:CYS:HB2	1:A:250:ILE:HD11	1.59	0.82
1:B:102:PRO:HA	1:B:152:ARG:HH22	1.43	0.82
1:D:153:ILE:HD13	1:D:332:SER:HB3	1.62	0.82
1:H:150:THR:HG22	1:H:336:ALA:HB2	1.61	0.81
1:C:10:THR:HA	1:C:82:ASP:OD2	1.80	0.80
1:B:12:VAL:HG23	1:B:40:LEU:CD2	2.12	0.79
1:H:168:PHE:HD1	1:H:169:PRO:HD3	1.44	0.79
1:B:32:HIS:ND1	1:B:33:PRO:HD2	1.97	0.79
1:F:63:THR:HG1	1:F:64:PRO:HD3	1.43	0.79
1:D:121:TRP:HE1	1:D:127:SER:HB2	1.44	0.79
1:E:243:LEU:HD12	1:E:243:LEU:O	1.84	0.78
1:E:306:ASP:HB3	1:E:311:THR:HB	1.66	0.77
1:H:166:ALA:HB2	1:H:316:ALA:HB2	1.65	0.77
1:H:330:VAL:HA	1:H:333:MET:HB3	1.67	0.77
1:F:26:LEU:O	1:F:30:LEU:HD12	1.85	0.76
1:H:165:LEU:HD23	1:H:279:ILE:HD11	1.65	0.76
1:D:116:THR:HG23	1:D:225:GLN:HE22	1.50	0.76
1:B:22:GLY:HA2	1:B:25:ILE:HD12	1.68	0.76
1:H:164:LEU:N	1:H:164:LEU:HD23	2.00	0.75
1:D:115:LEU:HD12	1:D:121:TRP:HE3	1.52	0.75
1:E:46:THR:HG22	1:E:71:GLU:HB2	1.68	0.75
1:G:255:THR:HG22	1:G:313:VAL:HG12	1.68	0.74
1:F:181:THR:HG23	1:F:238:SER:HB3	1.69	0.74
1:G:256:ALA:O	1:G:312:PHE:N	2.20	0.74
1:H:165:LEU:CD2	1:H:279:ILE:HD11	2.17	0.73
1:F:305:VAL:HG23	1:F:305:VAL:O	1.88	0.73
1:E:273:TYR:HB2	1:E:281:LEU:HD21	1.69	0.73
1:D:109:CYS:HA	1:D:155:VAL:HG22	1.71	0.72
1:G:156:PRO:HB2	1:G:161:THR:HG22	1.71	0.72
1:D:129:HIS:NE2	1:D:131:GLY:O	2.22	0.72
1:F:139:GLU:N	1:F:139:GLU:OE1	2.23	0.71
1:E:24:GLU:HG2	1:E:321:LEU:HB3	1.71	0.71
1:H:151:ARG:NH1	1:H:336:ALA:O	2.21	0.71
1:F:12:VAL:HG23	1:F:41:ARG:O	1.90	0.71
1:A:32:HIS:CG	1:A:33:PRO:HD2	2.26	0.71
1:A:13:ALA:HB2	1:A:81:HIS:CD2	2.26	0.70
1:B:12:VAL:HG23	1:B:40:LEU:HD21	1.67	0.70
1:E:322:VAL:O	1:E:327:GLY:N	2.24	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:138:PRO:HG2	1:C:331:GLN:NE2	2.06	0.70
1:B:124:PHE:CZ	1:B:221:PRO:HG3	2.26	0.70
1:G:137:LEU:HD23	1:G:140:LEU:CD1	2.19	0.70
1:A:87:ALA:O	1:A:88:LEU:HD12	1.91	0.70
1:E:243:LEU:HD12	1:E:243:LEU:C	2.13	0.69
1:G:144:ARG:HD3	1:G:148:ARG:HH12	1.56	0.69
1:C:139:GLU:OE1	1:C:139:GLU:N	2.24	0.69
1:E:273:TYR:HD2	1:E:281:LEU:HD11	1.57	0.69
1:D:24:GLU:OE1	1:D:24:GLU:HA	1.91	0.69
1:A:335:LEU:HG	1:A:341:GLU:HG3	1.76	0.69
1:B:46:THR:HG21	1:B:78:LEU:CD1	2.24	0.68
1:E:12:VAL:HG22	1:E:83:ALA:HB3	1.76	0.68
1:B:10:THR:HG23	1:B:82:ASP:HB2	1.76	0.67
1:E:240:THR:HG21	1:H:253:THR:HG21	1.76	0.67
1:G:137:LEU:CD2	1:G:140:LEU:HD12	2.23	0.67
1:D:102:PRO:CA	1:D:152:ARG:HH22	2.00	0.67
1:G:137:LEU:HD23	1:G:140:LEU:HB2	1.77	0.67
1:D:121:TRP:NE1	1:D:127:SER:HB2	2.09	0.66
1:E:213:ILE:HG21	1:H:315:ILE:HD11	1.76	0.66
1:A:160:PRO:HD3	1:A:219:HIS:ND1	2.09	0.66
1:D:24:GLU:CD	1:D:248:ARG:HH22	1.98	0.66
1:F:220:THR:HB	1:F:221:PRO:CD	2.25	0.66
1:F:313:VAL:HG11	1:G:213:ILE:HD12	1.78	0.66
1:D:107:ILE:CD1	1:D:333:MET:HB3	2.24	0.65
1:G:168:PHE:CD2	1:G:169:PRO:HD3	2.31	0.65
1:F:195:ALA:HA	1:H:200:LEU:HD21	1.77	0.65
1:G:140:LEU:HD23	1:G:141:PRO:HD2	1.77	0.64
1:C:107:ILE:HG12	1:C:153:ILE:HD12	1.79	0.64
1:A:87:ALA:C	1:A:88:LEU:HD12	2.18	0.64
1:F:183:VAL:HG11	1:G:183:VAL:HB	1.80	0.64
1:H:139:GLU:N	1:H:139:GLU:OE1	2.28	0.64
1:B:158:CYS:HB2	1:B:250:ILE:CD1	2.29	0.63
1:B:46:THR:HG21	1:B:78:LEU:HD11	1.79	0.63
1:C:270:GLU:O	1:C:274:HIS:HB3	1.99	0.63
1:H:322:VAL:HG13	1:H:327:GLY:HA3	1.81	0.63
1:B:51:ALA:HA	1:B:70:VAL:O	1.99	0.63
1:F:138:PRO:HG2	1:F:331:GLN:NE2	2.14	0.63
1:B:54:THR:OG1	1:B:57:GLU:HG3	1.99	0.63
1:D:189:SER:OG	1:D:321:LEU:HD11	1.98	0.63
1:A:159:TYR:HB2	1:A:160:PRO:HD3	1.81	0.63
1:E:323:LYS:O	1:E:328:ALA:HB2	1.98	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:262:LEU:HA	1:E:265:LEU:HD12	1.80	0.63
1:C:13:ALA:HB2	1:C:81:HIS:CD2	2.35	0.62
1:G:58:HIS:O	1:G:193:ARG:NH2	2.20	0.62
1:A:96:LEU:N	1:A:96:LEU:HD22	2.14	0.62
1:A:189:SER:HB3	1:A:247:SER:O	2.00	0.62
1:G:135:TYR:CZ	1:G:156:PRO:HB3	2.34	0.62
1:G:30:LEU:HD11	1:G:65:LEU:HD13	1.82	0.61
1:H:217:HIS:HD2	1:H:241:PRO:HG3	1.65	0.61
1:A:109:CYS:HA	1:A:155:VAL:HB	1.82	0.61
1:G:71:GLU:HG2	1:G:72:PRO:HD2	1.82	0.61
1:G:137:LEU:CD2	1:G:140:LEU:HB2	2.30	0.61
1:G:217:HIS:ND1	1:G:219:HIS:HB2	2.14	0.61
1:E:293:VAL:HG11	1:E:318:ILE:HA	1.80	0.61
1:G:129:HIS:NE2	1:G:131:GLY:O	2.34	0.61
1:E:209:ARG:HA	1:H:251:LEU:CD1	2.31	0.61
1:E:24:GLU:HB2	1:E:321:LEU:HD23	1.83	0.60
1:A:27:ARG:NH1	1:A:27:ARG:HG2	2.17	0.60
1:B:270:GLU:O	1:B:274:HIS:HB3	2.01	0.60
1:E:104:THR:O	1:E:152:ARG:NH1	2.35	0.60
1:H:217:HIS:CD2	1:H:241:PRO:HG3	2.36	0.60
1:E:352:PRO:HG3	1:F:20:TYR:CE1	2.37	0.59
1:F:262:LEU:HD13	1:F:305:VAL:HG13	1.84	0.59
1:E:185:VAL:HA	1:E:242:VAL:O	2.03	0.59
1:C:173:ALA:HB3	1:C:175:LEU:HD12	1.82	0.59
1:E:135:TYR:CZ	1:E:156:PRO:HB3	2.37	0.59
1:F:213:ILE:HG12	1:G:287:LEU:HD11	1.83	0.59
1:G:63:THR:OG1	1:H:347:VAL:HG23	2.02	0.59
1:B:78:LEU:O	1:B:81:HIS:ND1	2.25	0.59
1:D:102:PRO:HA	1:D:152:ARG:HH21	1.64	0.59
1:F:223:ILE:HG22	1:F:237:VAL:HG21	1.85	0.58
1:H:141:PRO:HG2	1:H:230:VAL:CG1	2.32	0.58
1:H:178:PRO:O	1:H:235:VAL:HA	2.03	0.58
1:F:12:VAL:O	1:F:43:GLY:N	2.33	0.58
1:F:25:ILE:HD12	1:F:87:ALA:HB2	1.85	0.58
1:F:299:ALA:HA	1:F:317:ALA:O	2.03	0.58
1:B:159:TYR:HB2	1:B:160:PRO:HD3	1.85	0.58
1:D:124:PHE:HB3	1:D:218:ARG:HG2	1.85	0.58
1:E:215:GLY:HA2	1:E:220:THR:HG21	1.85	0.58
1:G:85:PHE:CE1	1:G:107:ILE:HD12	2.37	0.58
1:G:282:MET:HE2	1:G:286:GLN:HB3	1.85	0.58
1:A:15:ALA:HB3	1:A:86:LEU:HD23	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:46:THR:OG1	1:D:73:THR:HG22	2.04	0.58
1:B:220:THR:HB	1:B:221:PRO:HD3	1.84	0.58
1:E:115:LEU:O	1:E:129:HIS:NE2	2.31	0.58
1:G:153:ILE:HD13	1:G:332:SER:HB3	1.84	0.58
1:E:168:PHE:CD2	1:E:169:PRO:HD3	2.39	0.58
1:G:127:SER:OG	1:G:128:SER:N	2.36	0.57
1:H:17:ALA:O	1:H:59:HIS:NE2	2.28	0.57
1:F:262:LEU:HD22	1:F:305:VAL:HG22	1.86	0.57
1:G:16:GLY:N	1:G:46:THR:O	2.32	0.57
1:C:278:PHE:CZ	1:C:342:THR:HG22	2.39	0.57
1:D:213:ILE:HG22	1:D:240:THR:HG23	1.86	0.57
1:F:102:PRO:HA	1:F:152:ARG:HH22	1.67	0.57
1:E:273:TYR:CD2	1:E:281:LEU:HD11	2.39	0.57
1:E:320:ASN:OD1	1:E:320:ASN:N	2.38	0.57
1:A:85:PHE:HE1	1:A:329:ALA:HB1	1.68	0.57
1:H:168:PHE:CD1	1:H:169:PRO:CD	2.71	0.57
1:C:54:THR:HA	1:C:68:ARG:O	2.05	0.57
1:G:166:ALA:HB2	1:G:316:ALA:HB2	1.86	0.57
1:E:94:ALA:O	1:E:98:GLN:HG2	2.03	0.57
1:E:254:CYS:HB2	1:E:314:ALA:HB3	1.86	0.57
1:G:348:VAL:CG1	1:H:27:ARG:HG3	2.35	0.57
1:G:32:HIS:NE2	1:G:334:ASN:OD1	2.35	0.57
1:G:133:TRP:CE2	1:G:152:ARG:HG3	2.40	0.57
1:C:20:TYR:CE2	1:C:193:ARG:HG2	2.40	0.56
1:C:159:TYR:HB2	1:C:219:HIS:ND1	2.19	0.56
1:E:244:ILE:HG21	1:H:244:ILE:HG21	1.86	0.56
1:G:46:THR:OG1	1:G:73:THR:HG22	2.05	0.56
1:C:160:PRO:HD3	1:C:219:HIS:CG	2.40	0.56
1:A:166:ALA:HB2	1:A:316:ALA:HB2	1.87	0.56
1:E:209:ARG:HA	1:H:251:LEU:HD13	1.87	0.56
1:F:138:PRO:HG2	1:F:331:GLN:HE21	1.71	0.56
1:D:112:ASP:HA	1:D:121:TRP:CH2	2.41	0.56
1:A:269:TYR:HB3	1:A:281:LEU:HD21	1.87	0.56
1:E:217:HIS:O	1:E:220:THR:HG23	2.06	0.56
1:D:102:PRO:CA	1:D:152:ARG:NH2	2.51	0.56
1:A:139:GLU:HG3	1:A:276:GLU:OE1	2.07	0.55
1:C:102:PRO:HA	1:C:152:ARG:HH22	1.72	0.55
1:B:124:PHE:CE2	1:B:221:PRO:CG	2.82	0.55
1:G:168:PHE:CG	1:G:169:PRO:HD3	2.42	0.55
1:E:118:ALA:HA	1:E:129:HIS:CG	2.41	0.55
1:E:122:GLU:HB3	1:E:127:SER:O	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:124:PHE:CD2	1:B:221:PRO:HG3	2.42	0.55
1:E:201:GLY:HA3	1:G:204:VAL:HG21	1.89	0.54
1:A:323:LYS:HD2	1:A:323:LYS:O	2.07	0.54
1:D:262:LEU:HD13	1:D:305:VAL:HG23	1.89	0.54
1:D:266:ARG:HG3	1:D:270:GLU:OE1	2.06	0.54
1:D:135:TYR:OH	1:D:222:GLU:OE2	2.22	0.54
1:G:196:THR:HG22	1:G:198:ASP:H	1.72	0.54
1:C:50:SER:O	1:C:53:SER:OG	2.21	0.54
1:C:269:TYR:HB3	1:C:281:LEU:HD21	1.89	0.54
1:F:209:ARG:HB3	1:G:289:ARG:HB3	1.90	0.54
1:A:350:VAL:HG12	1:A:350:VAL:O	2.07	0.54
1:H:51:ALA:HA	1:H:70:VAL:HG13	1.90	0.54
1:H:326:ALA:O	1:H:329:ALA:HB3	2.07	0.54
1:G:133:TRP:HB3	1:G:134:PRO:HD2	1.88	0.54
1:B:15:ALA:HB3	1:B:86:LEU:HD23	1.88	0.54
1:F:140:LEU:HD12	1:F:141:PRO:HD2	1.91	0.53
1:G:11:LYS:O	1:G:82:ASP:N	2.40	0.53
1:D:194:ALA:O	1:D:196:THR:HG23	2.08	0.53
1:A:158:CYS:CB	1:A:250:ILE:HD11	2.37	0.53
1:A:27:ARG:CG	1:A:27:ARG:HH11	2.22	0.53
1:H:129:HIS:NE2	1:H:131:GLY:O	2.41	0.53
1:D:255:THR:HB	1:D:311:THR:CG2	2.38	0.53
1:H:159:TYR:OH	1:H:186:SER:HB3	2.09	0.53
1:D:78:LEU:HD22	1:D:84:VAL:HG13	1.89	0.53
1:G:10:THR:HA	1:G:82:ASP:OD2	2.07	0.53
1:B:158:CYS:HB2	1:B:250:ILE:HD11	1.91	0.53
1:E:133:TRP:CD2	1:E:152:ARG:HB3	2.44	0.53
1:F:122:GLU:HG3	1:F:127:SER:O	2.09	0.53
1:A:105:LEU:HD13	1:A:151:ARG:HA	1.90	0.52
1:D:71:GLU:OE2	1:D:77:VAL:HG13	2.10	0.52
1:G:140:LEU:HD23	1:G:141:PRO:CD	2.39	0.52
1:F:107:ILE:HG12	1:F:153:ILE:HD12	1.90	0.52
1:A:15:ALA:O	1:A:87:ALA:N	2.40	0.52
1:F:144:ARG:O	1:F:148:ARG:HG3	2.09	0.52
1:E:352:PRO:HB2	1:H:202:ALA:O	2.09	0.52
1:F:133:TRP:HB2	1:F:154:ALA:HB2	1.91	0.52
1:H:106:ILE:HB	1:H:152:ARG:HD3	1.92	0.52
1:F:24:GLU:OE1	1:F:248:ARG:NH2	2.42	0.52
1:G:115:LEU:HD12	1:G:121:TRP:HB2	1.92	0.52
1:H:153:ILE:HG21	1:H:332:SER:HB3	1.91	0.52
1:A:96:LEU:N	1:A:96:LEU:CD2	2.73	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:220:THR:N	1:B:221:PRO:CD	2.72	0.52
1:E:61:HIS:CG	1:F:351:ALA:HB3	2.44	0.52
1:E:182:VAL:HG12	1:E:254:CYS:SG	2.49	0.52
1:E:197:THR:HA	1:E:200:LEU:HG	1.92	0.52
1:H:114:ARG:HD3	1:H:222:GLU:OE2	2.10	0.52
1:C:335:LEU:HD21	1:C:341:GLU:HB2	1.91	0.52
1:E:298:ALA:HB2	1:E:347:VAL:HG13	1.92	0.52
1:G:157:GLY:O	1:G:161:THR:HG23	2.09	0.52
1:A:200:LEU:HD23	1:C:199:LEU:HB2	1.93	0.51
1:C:116:THR:HA	1:C:132:SER:OG	2.10	0.51
1:D:170:ALA:HB2	1:D:269:TYR:HE1	1.74	0.51
1:F:34:ALA:HB1	1:F:39:ARG:HG3	1.91	0.51
1:F:85:PHE:CE1	1:F:107:ILE:HD12	2.45	0.51
1:H:133:TRP:HB3	1:H:134:PRO:CD	2.40	0.51
1:D:133:TRP:CZ2	1:D:152:ARG:HD2	2.45	0.51
1:D:265:LEU:HD22	1:D:312:PHE:CD1	2.46	0.51
1:E:135:TYR:OH	1:E:156:PRO:HB3	2.10	0.51
1:G:351:ALA:HB3	1:H:61:HIS:CG	2.45	0.51
1:C:11:LYS:O	1:C:82:ASP:N	2.40	0.51
1:G:59:HIS:CE1	1:G:193:ARG:NH1	2.78	0.51
1:H:132:SER:O	1:H:132:SER:OG	2.23	0.51
1:H:223:ILE:HG22	1:H:237:VAL:HG11	1.91	0.51
1:A:322:VAL:O	1:A:327:GLY:N	2.41	0.51
1:B:278:PHE:CE1	1:B:297:ASN:HB3	2.45	0.51
1:E:254:CYS:O	1:E:314:ALA:N	2.37	0.51
1:B:124:PHE:CD2	1:B:221:PRO:CG	2.93	0.51
1:B:186:SER:HB2	1:B:250:ILE:HG12	1.92	0.51
1:G:62:LEU:HD23	1:H:348:VAL:CG1	2.40	0.51
1:H:71:GLU:HB3	1:H:72:PRO:HD2	1.91	0.51
1:D:334:ASN:HB3	1:D:341:GLU:HA	1.91	0.51
1:B:12:VAL:HG11	1:B:85:PHE:HE1	1.75	0.51
1:F:138:PRO:HG2	1:F:331:GLN:HG2	1.93	0.51
1:F:196:THR:OG1	1:F:198:ASP:OD1	2.29	0.51
1:H:176:ILE:HG21	1:H:312:PHE:CD2	2.46	0.51
1:C:159:TYR:HD2	1:C:219:HIS:HD1	1.59	0.51
1:D:261:PRO:HG2	1:D:264:GLN:HB2	1.92	0.51
1:G:74:GLU:HG2	1:G:77:VAL:HG23	1.94	0.50
1:F:270:GLU:O	1:F:274:HIS:HB3	2.11	0.50
1:B:115:LEU:HD12	1:B:121:TRP:HE3	1.77	0.50
1:D:211:TYR:CE1	1:D:243:LEU:HG	2.46	0.50
1:G:189:SER:HB2	1:G:320:ASN:HD21	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:322:VAL:CG1	1:H:327:GLY:HA3	2.41	0.50
1:G:145:ASP:OD1	1:G:148:ARG:NH1	2.44	0.50
1:D:87:ALA:HA	1:D:109:CYS:HB2	1.93	0.50
1:B:12:VAL:HG23	1:B:40:LEU:HD22	1.91	0.50
1:C:125:TYR:CE1	1:C:218:ARG:HD3	2.47	0.50
1:D:295:GLY:N	1:D:319:ASP:OD2	2.25	0.50
1:H:164:LEU:HD23	1:H:164:LEU:H	1.74	0.50
1:B:253:THR:HA	1:B:315:ILE:HD13	1.93	0.50
1:D:135:TYR:OH	1:D:156:PRO:HB3	2.12	0.50
1:D:20:TYR:CE2	1:D:193:ARG:HG3	2.46	0.49
1:F:311:THR:HG21	1:G:238:SER:OG	2.12	0.49
1:H:58:HIS:O	1:H:193:ARG:NH2	2.34	0.49
1:A:12:VAL:HG22	1:A:83:ALA:HB3	1.93	0.49
1:A:347:VAL:HG12	1:A:347:VAL:O	2.12	0.49
1:E:273:TYR:CB	1:E:281:LEU:HD21	2.41	0.49
1:G:169:PRO:HB2	1:G:269:TYR:CZ	2.47	0.49
1:A:61:HIS:CG	1:B:351:ALA:HB3	2.48	0.49
1:B:200:LEU:HD21	1:D:195:ALA:HA	1.94	0.49
1:F:183:VAL:HA	1:F:240:THR:O	2.11	0.49
1:G:59:HIS:CE1	1:G:193:ARG:HH12	2.31	0.49
1:G:85:PHE:CZ	1:G:107:ILE:HD12	2.47	0.49
1:G:191:ALA:HB3	1:G:199:LEU:HD21	1.94	0.49
1:E:220:THR:HG22	1:E:239:PHE:CB	2.43	0.49
1:F:58:HIS:O	1:F:193:ARG:NH2	2.41	0.49
1:D:115:LEU:HD12	1:D:121:TRP:CE3	2.40	0.49
1:F:109:CYS:HA	1:F:155:VAL:HB	1.94	0.49
1:A:88:LEU:O	1:A:110:GLY:CA	2.61	0.49
1:B:113:PHE:CD1	1:B:133:TRP:NE1	2.81	0.49
1:G:266:ARG:NH2	1:G:266:ARG:HB3	2.28	0.49
1:D:182:VAL:HG22	1:D:254:CYS:SG	2.53	0.49
1:F:304:ALA:HB1	1:G:214:ALA:HB2	1.95	0.49
1:G:156:PRO:HB2	1:G:161:THR:CG2	2.42	0.49
1:G:191:ALA:CB	1:G:199:LEU:HD21	2.42	0.49
1:B:240:THR:HG21	1:C:253:THR:HG21	1.93	0.49
1:E:205:ILE:HG12	1:G:205:ILE:HD11	1.95	0.49
1:E:24:GLU:OE2	1:E:27:ARG:NH2	2.34	0.48
1:E:258:THR:HG21	1:E:312:PHE:HB2	1.95	0.48
1:F:255:THR:HA	1:F:312:PHE:O	2.12	0.48
1:E:297:ASN:O	1:E:297:ASN:ND2	2.45	0.48
1:G:150:THR:O	1:G:151:ARG:HD2	2.12	0.48
1:D:322:VAL:O	1:D:327:GLY:N	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:59:HIS:CE1	1:D:193:ARG:NH1	2.81	0.48
1:D:306:ASP:O	1:D:310:GLN:N	2.46	0.48
1:B:137:LEU:HD23	1:B:140:LEU:CD1	2.44	0.48
1:D:104:THR:HG23	1:D:104:THR:O	2.14	0.48
1:G:30:LEU:HD21	1:G:65:LEU:CD1	2.43	0.48
1:G:121:TRP:O	1:G:125:TYR:HB2	2.13	0.48
1:H:134:PRO:HD2	1:H:152:ARG:O	2.12	0.48
1:A:168:PHE:CD2	1:A:169:PRO:HD3	2.48	0.48
1:B:20:TYR:OH	1:D:203:GLU:HG2	2.14	0.48
1:E:95:VAL:HA	1:E:98:GLN:NE2	2.28	0.48
1:H:159:TYR:CZ	1:H:241:PRO:HB2	2.48	0.48
1:B:46:THR:HB	1:B:73:THR:HA	1.95	0.48
1:C:83:ALA:HA	1:C:105:LEU:HB3	1.96	0.48
1:C:328:ALA:O	1:C:332:SER:OG	2.28	0.48
1:E:213:ILE:HD13	1:H:315:ILE:HD12	1.96	0.48
1:F:26:LEU:C	1:F:30:LEU:HD12	2.34	0.48
1:A:141:PRO:HD3	1:A:168:PHE:CE1	2.48	0.48
1:E:159:TYR:N	1:E:160:PRO:HD2	2.29	0.48
1:A:86:LEU:HD13	1:A:93:SER:HB2	1.95	0.48
1:H:185:VAL:O	1:H:250:ILE:HA	2.14	0.48
1:H:165:LEU:O	1:H:273:TYR:OH	2.28	0.47
1:H:290:THR:O	1:H:294:ILE:HG12	2.14	0.47
1:D:165:LEU:HB3	1:D:301:ILE:HD11	1.96	0.47
1:G:257:ARG:HA	1:G:311:THR:HA	1.96	0.47
1:A:27:ARG:HG2	1:A:27:ARG:HH11	1.79	0.47
1:C:30:LEU:HD11	1:C:65:LEU:HD12	1.97	0.47
1:B:233:ARG:HH21	1:B:259:ARG:HH12	1.61	0.47
1:E:159:TYR:HB2	1:E:219:HIS:ND1	2.29	0.47
1:G:85:PHE:CD1	1:G:107:ILE:HB	2.50	0.47
1:B:144:ARG:O	1:B:147:LEU:HB2	2.15	0.47
1:D:182:VAL:HG22	1:D:254:CYS:CB	2.44	0.47
1:F:135:TYR:CZ	1:F:156:PRO:HB3	2.49	0.47
1:G:63:THR:OG1	1:G:64:PRO:HD3	2.14	0.47
1:A:195:ALA:HA	1:C:200:LEU:HD21	1.96	0.47
1:C:139:GLU:HG2	1:C:279:ILE:HD11	1.95	0.47
1:C:273:TYR:HD2	1:C:281:LEU:HD11	1.80	0.47
1:D:15:ALA:HA	1:D:46:THR:OG1	2.15	0.47
1:D:47:ALA:HB3	1:D:70:VAL:HG11	1.96	0.47
1:D:114:ARG:HD3	1:D:155:VAL:O	2.15	0.47
1:D:232:ASP:OD1	1:D:232:ASP:N	2.42	0.47
1:E:211:TYR:O	1:E:241:PRO:HG2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:117:ASP:HB3	1:B:120:VAL:HB	1.95	0.47
1:F:133:TRP:CD2	1:F:152:ARG:HB3	2.50	0.47
1:C:43:GLY:O	1:C:68:ARG:NH2	2.48	0.47
1:G:47:ALA:O	1:G:73:THR:HG23	2.14	0.47
1:B:144:ARG:HA	1:B:147:LEU:HD12	1.97	0.47
1:E:58:HIS:O	1:E:193:ARG:NH2	2.40	0.47
1:G:185:VAL:HA	1:G:242:VAL:HG23	1.96	0.47
1:G:135:TYR:OH	1:G:156:PRO:HB3	2.15	0.46
1:H:63:THR:OG1	1:H:64:PRO:HD3	2.15	0.46
1:H:188:THR:HG22	1:H:246:ALA:O	2.15	0.46
1:E:208:ALA:HB2	1:E:244:ILE:HG22	1.98	0.46
1:A:96:LEU:CD2	1:A:96:LEU:H	2.28	0.46
1:A:200:LEU:HD21	1:C:195:ALA:HA	1.97	0.46
1:E:95:VAL:HA	1:E:98:GLN:HE21	1.80	0.46
1:F:140:LEU:HD12	1:F:141:PRO:CD	2.46	0.46
1:A:188:THR:HG21	1:A:204:VAL:HG21	1.98	0.46
1:D:134:PRO:HD2	1:D:152:ARG:O	2.14	0.46
1:A:178:PRO:O	1:A:235:VAL:HG13	2.15	0.46
1:C:159:TYR:HD2	1:C:219:HIS:ND1	2.13	0.46
1:D:200:LEU:O	1:D:204:VAL:HG13	2.16	0.46
1:G:177:GLU:HG2	1:G:257:ARG:O	2.15	0.46
1:G:152:ARG:HD3	1:G:152:ARG:HA	1.36	0.46
1:A:181:THR:HG23	1:A:238:SER:HB3	1.97	0.46
1:D:75:ALA:HB2	1:D:99:GLN:OE1	2.16	0.46
1:D:270:GLU:OE2	1:D:281:LEU:CD1	2.64	0.46
1:E:26:LEU:HD21	1:E:45:LEU:HD21	1.97	0.46
1:E:240:THR:HG21	1:H:253:THR:CG2	2.45	0.46
1:A:250:ILE:HG13	1:A:320:ASN:HB3	1.97	0.46
1:G:248:ARG:HB2	1:G:294:ILE:HD12	1.97	0.46
1:G:296:SER:HB3	1:G:349:GLY:HA2	1.98	0.46
1:B:15:ALA:CB	1:B:86:LEU:HD23	2.45	0.46
1:B:46:THR:CG2	1:B:78:LEU:HD11	2.46	0.46
1:C:20:TYR:CZ	1:C:193:ARG:HG2	2.51	0.46
1:C:138:PRO:HG2	1:C:331:GLN:HE21	1.80	0.46
1:E:24:GLU:CG	1:E:321:LEU:HB3	2.44	0.46
1:E:210:ALA:HB2	1:E:242:VAL:HG22	1.98	0.46
1:F:173:ALA:HB3	1:F:175:LEU:HG	1.97	0.46
1:D:135:TYR:CZ	1:D:156:PRO:HB3	2.51	0.46
1:D:312:PHE:CZ	1:D:314:ALA:HB2	2.51	0.46
1:B:167:LEU:HD21	1:B:254:CYS:HB3	1.99	0.45
1:C:224:ALA:O	1:C:228:ARG:HG3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:37:ASP:OD1	1:F:39:ARG:HG2	2.15	0.45
1:G:175:LEU:HD23	1:G:265:LEU:HG	1.98	0.45
1:G:185:VAL:HG22	1:G:251:LEU:HB3	1.97	0.45
1:C:198:ASP:HB3	1:C:209:ARG:NH2	2.31	0.45
1:E:13:ALA:HB2	1:E:81:HIS:CD2	2.51	0.45
1:F:220:THR:HB	1:F:221:PRO:HD3	1.96	0.45
1:F:305:VAL:O	1:F:305:VAL:CG2	2.58	0.45
1:G:297:ASN:OD1	1:G:322:VAL:HG12	2.17	0.45
1:G:324:GLY:O	1:G:325:THR:OG1	2.31	0.45
1:A:207:SER:O	1:A:245:PRO:HD3	2.17	0.45
1:B:12:VAL:HG11	1:B:85:PHE:CE1	2.51	0.45
1:B:213:ILE:HG21	1:C:315:ILE:HD11	1.99	0.45
1:F:201:GLY:HA2	1:H:201:GLY:HA2	1.98	0.45
1:H:32:HIS:NE2	1:H:343:ASP:HB3	2.31	0.45
1:H:255:THR:CG2	1:H:311:THR:HG21	2.46	0.45
1:H:15:ALA:HA	1:H:46:THR:OG1	2.17	0.45
1:B:18:SER:O	1:B:193:ARG:NH1	2.50	0.45
1:E:150:THR:O	1:E:336:ALA:HB1	2.17	0.45
1:F:265:LEU:HD22	1:F:312:PHE:CE1	2.52	0.45
1:B:35:TYR:O	1:B:35:TYR:CG	2.69	0.45
1:A:135:TYR:CZ	1:A:156:PRO:HB3	2.52	0.45
1:B:145:ASP:C	1:B:147:LEU:H	2.19	0.45
1:E:330:VAL:HG12	1:E:345:LEU:HD21	1.98	0.45
1:B:188:THR:HG21	1:B:204:VAL:HG11	1.99	0.45
1:B:213:ILE:HD13	1:C:315:ILE:HD11	1.98	0.45
1:F:112:ASP:HA	1:F:121:TRP:CH2	2.52	0.45
1:F:180:VAL:HG12	1:F:256:ALA:HB2	1.99	0.45
1:G:14:VAL:HG21	1:G:26:LEU:HD21	1.98	0.45
1:A:352:PRO:O	1:B:247:SER:CB	2.65	0.44
1:C:159:TYR:HB2	1:C:160:PRO:HD3	1.99	0.44
1:C:165:LEU:HB3	1:C:301:ILE:HD11	1.98	0.44
1:H:168:PHE:HD2	1:H:230:VAL:HG11	1.82	0.44
1:B:335:LEU:HG	1:B:341:GLU:HG3	1.99	0.44
1:D:47:ALA:HB3	1:D:70:VAL:CG1	2.48	0.44
1:D:213:ILE:O	1:D:216:VAL:HG22	2.18	0.44
1:E:151:ARG:O	1:E:152:ARG:HD3	2.17	0.44
1:A:32:HIS:ND1	1:A:33:PRO:HD2	2.32	0.44
1:A:186:SER:HA	1:A:249:GLY:O	2.18	0.44
1:F:306:ASP:OD2	1:G:215:GLY:HA3	2.17	0.44
1:H:276:GLU:OE1	1:H:276:GLU:HA	2.16	0.44
1:H:255:THR:HG23	1:H:311:THR:HG21	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:159:TYR:HB2	1:D:160:PRO:HD3	1.98	0.44
1:F:132:SER:O	1:F:133:TRP:HD1	2.00	0.44
1:B:202:ALA:O	1:C:352:PRO:HB2	2.17	0.44
1:B:245:PRO:HD2	1:C:244:ILE:HD12	2.00	0.44
1:D:35:TYR:CE1	1:D:42:ILE:HG13	2.53	0.44
1:E:13:ALA:HB1	1:E:78:LEU:HD12	1.99	0.44
1:F:306:ASP:OD2	1:G:215:GLY:CA	2.65	0.44
1:G:115:LEU:HD13	1:G:120:VAL:HG12	1.99	0.44
1:A:248:ARG:HH21	1:B:351:ALA:C	2.20	0.44
1:B:35:TYR:O	1:B:35:TYR:CD2	2.70	0.44
1:B:290:THR:OG1	1:C:207:SER:HA	2.17	0.44
1:B:296:SER:HB3	1:B:348:VAL:O	2.18	0.44
1:D:170:ALA:HB2	1:D:269:TYR:CE1	2.53	0.44
1:D:255:THR:HB	1:D:311:THR:HG21	1.99	0.44
1:D:335:LEU:HG	1:D:341:GLU:HG3	2.00	0.44
1:F:213:ILE:HG22	1:F:240:THR:HG23	1.99	0.44
1:G:53:SER:O	1:G:70:VAL:HG12	2.17	0.44
1:C:197:THR:O	1:C:203:GLU:HG3	2.17	0.44
1:E:273:TYR:CG	1:E:279:ILE:HG21	2.53	0.44
1:G:12:VAL:HG23	1:G:83:ALA:O	2.18	0.44
1:D:255:THR:HA	1:D:312:PHE:O	2.18	0.44
1:E:115:LEU:HD12	1:E:115:LEU:N	2.33	0.44
1:E:201:GLY:HA2	1:G:201:GLY:HA2	2.00	0.44
1:E:250:ILE:O	1:E:317:ALA:HA	2.18	0.44
1:A:133:TRP:HB2	1:A:154:ALA:HB2	1.99	0.43
1:E:200:LEU:HD21	1:G:195:ALA:HA	2.00	0.43
1:E:248:ARG:HB2	1:E:294:ILE:HD12	1.99	0.43
1:A:168:PHE:HE2	1:A:273:TYR:OH	2.01	0.43
1:A:330:VAL:CG1	1:A:345:LEU:HD21	2.48	0.43
1:B:93:SER:N	1:B:112:ASP:OD2	2.50	0.43
1:B:270:GLU:HA	1:B:281:LEU:HD11	2.00	0.43
1:F:183:VAL:HG23	1:F:240:THR:O	2.18	0.43
1:H:21:ALA:HB3	1:H:87:ALA:HB1	2.00	0.43
1:C:352:PRO:HG3	1:D:20:TYR:CE1	2.54	0.43
1:D:270:GLU:OE2	1:D:281:LEU:HD12	2.17	0.43
1:E:213:ILE:HD13	1:H:315:ILE:CD1	2.49	0.43
1:H:306:ASP:N	1:H:311:THR:O	2.48	0.43
1:H:322:VAL:O	1:H:327:GLY:N	2.51	0.43
1:A:95:VAL:O	1:A:99:GLN:HG3	2.18	0.43
1:A:197:THR:HA	1:A:200:LEU:HD12	2.01	0.43
1:A:211:TYR:O	1:A:241:PRO:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:59:HIS:HB3	1:C:62:LEU:HG	2.00	0.43
1:D:166:ALA:HB2	1:D:316:ALA:HB2	1.99	0.43
1:E:260:SER:HB3	1:E:261:PRO:HD2	1.99	0.43
1:G:32:HIS:ND1	1:G:33:PRO:HD2	2.34	0.43
1:G:133:TRP:HB3	1:G:134:PRO:CD	2.48	0.43
1:D:116:THR:HG23	1:D:225:GLN:NE2	2.26	0.43
1:F:135:TYR:OH	1:F:156:PRO:HB3	2.17	0.43
1:G:170:ALA:HB2	1:G:269:TYR:HE1	1.84	0.43
1:B:40:LEU:HD22	1:B:41:ARG:H	1.83	0.43
1:B:227:LEU:O	1:B:230:VAL:HG22	2.17	0.43
1:D:189:SER:HB3	1:D:247:SER:O	2.18	0.43
1:E:49:THR:OG1	1:E:50:SER:N	2.52	0.43
1:E:320:ASN:ND2	1:E:321:LEU:HD12	2.33	0.43
1:F:297:ASN:OD1	1:F:322:VAL:HG12	2.19	0.43
1:G:250:ILE:HG13	1:G:320:ASN:HB3	2.01	0.43
1:A:12:VAL:HA	1:A:83:ALA:O	2.19	0.43
1:E:113:PHE:O	1:E:132:SER:HA	2.18	0.43
1:H:217:HIS:O	1:H:220:THR:HG22	2.19	0.43
1:H:298:ALA:HB2	1:H:347:VAL:HB	2.01	0.43
1:B:210:ALA:HB3	1:C:315:ILE:HD13	2.01	0.43
1:E:321:LEU:O	1:E:326:ALA:HB3	2.18	0.43
1:H:58:HIS:HB3	1:H:193:ARG:HH12	1.84	0.43
1:B:138:PRO:O	1:B:144:ARG:CZ	2.66	0.43
1:E:135:TYR:O	1:E:147:LEU:HD21	2.19	0.43
1:H:266:ARG:HE	1:H:303:VAL:CG2	2.32	0.43
1:H:273:TYR:CG	1:H:279:ILE:HG21	2.54	0.43
1:A:288:PRO:HB3	1:A:300:HIS:CB	2.48	0.43
1:D:106:ILE:HG22	1:D:133:TRP:HZ3	1.84	0.43
1:E:116:THR:HA	1:E:132:SER:OG	2.18	0.43
1:B:188:THR:HG21	1:B:204:VAL:HG21	2.00	0.42
1:H:23:GLY:HA3	1:H:59:HIS:CE1	2.54	0.42
1:B:15:ALA:HA	1:B:46:THR:HG1	1.78	0.42
1:B:133:TRP:HB3	1:B:134:PRO:CD	2.49	0.42
1:B:138:PRO:HB2	1:B:144:ARG:NH2	2.34	0.42
1:B:140:LEU:HD23	1:B:140:LEU:HA	1.87	0.42
1:C:166:ALA:HB2	1:C:316:ALA:HB2	2.01	0.42
1:E:166:ALA:O	1:E:314:ALA:HB1	2.19	0.42
1:E:243:LEU:C	1:E:243:LEU:CD1	2.85	0.42
1:G:225:GLN:HA	1:G:228:ARG:HD2	2.01	0.42
1:B:166:ALA:HB2	1:B:316:ALA:HB2	2.01	0.42
1:C:176:ILE:HD12	1:C:177:GLU:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:211:TYR:O	1:D:241:PRO:HD2	2.18	0.42
1:E:32:HIS:CG	1:E:33:PRO:HD2	2.54	0.42
1:H:220:THR:O	1:H:237:VAL:HG21	2.19	0.42
1:F:109:CYS:O	1:F:114:ARG:NH2	2.52	0.42
1:G:114:ARG:HD3	1:G:222:GLU:OE1	2.20	0.42
1:G:133:TRP:CG	1:G:152:ARG:HB3	2.55	0.42
1:A:160:PRO:CD	1:A:219:HIS:ND1	2.81	0.42
1:B:46:THR:CG2	1:B:78:LEU:CD1	2.96	0.42
1:E:320:ASN:ND2	1:E:321:LEU:CD1	2.82	0.42
1:H:161:THR:O	1:H:165:LEU:HD13	2.19	0.42
1:A:264:GLN:O	1:A:267:ALA:HB3	2.20	0.42
1:C:24:GLU:CD	1:C:248:ARG:HH22	2.23	0.42
1:C:158:CYS:HB2	1:C:250:ILE:CD1	2.50	0.42
1:E:46:THR:HG21	1:E:78:LEU:HD21	2.02	0.42
1:E:244:ILE:HG21	1:H:244:ILE:CG2	2.49	0.42
1:E:306:ASP:CB	1:E:311:THR:HB	2.44	0.42
1:F:185:VAL:O	1:F:250:ILE:HA	2.20	0.42
1:H:155:VAL:HG11	1:H:325:THR:O	2.20	0.42
1:A:330:VAL:HG12	1:A:345:LEU:HD21	2.01	0.42
1:B:43:GLY:HA3	1:B:81:HIS:NE2	2.35	0.42
1:C:29:LEU:HD22	1:C:40:LEU:HD21	2.01	0.42
1:D:101:SER:O	1:D:103:GLU:N	2.53	0.42
1:G:135:TYR:CE2	1:G:156:PRO:HG3	2.55	0.42
1:B:133:TRP:HB3	1:B:134:PRO:HD2	2.02	0.42
1:C:170:ALA:HB2	1:C:269:TYR:HE1	1.84	0.42
1:D:104:THR:O	1:D:152:ARG:NH1	2.51	0.42
1:D:122:GLU:HG3	1:D:127:SER:O	2.20	0.42
1:D:167:LEU:HD23	1:D:167:LEU:HA	1.85	0.42
1:F:214:ALA:HB2	1:G:313:VAL:HG21	2.01	0.42
1:H:183:VAL:HG13	1:H:240:THR:HG23	2.01	0.42
1:C:255:THR:HA	1:C:312:PHE:O	2.20	0.41
1:H:13:ALA:HB2	1:H:81:HIS:ND1	2.34	0.41
1:B:113:PHE:CD1	1:B:133:TRP:CE2	3.09	0.41
1:C:12:VAL:HA	1:C:83:ALA:O	2.19	0.41
1:D:273:TYR:HD2	1:D:281:LEU:HD21	1.85	0.41
1:E:46:THR:HA	1:E:71:GLU:O	2.20	0.41
1:H:12:VAL:HG12	1:H:41:ARG:O	2.20	0.41
1:H:334:ASN:ND2	1:H:343:ASP:HB2	2.35	0.41
1:A:164:LEU:HD23	1:A:164:LEU:HA	1.94	0.41
1:C:108:ASP:O	1:C:155:VAL:HG23	2.20	0.41
1:C:168:PHE:CG	1:C:169:PRO:HD3	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:114:ARG:NE	1:F:155:VAL:O	2.47	0.41
1:G:117:ASP:HB3	1:G:120:VAL:HB	2.00	0.41
1:H:81:HIS:O	1:H:104:THR:HG22	2.20	0.41
1:A:255:THR:HA	1:A:312:PHE:O	2.19	0.41
1:C:17:ALA:O	1:C:59:HIS:NE2	2.52	0.41
1:C:322:VAL:O	1:C:327:GLY:N	2.53	0.41
1:D:217:HIS:ND1	1:D:219:HIS:HB2	2.35	0.41
1:F:149:GLY:HA2	1:F:336:ALA:O	2.20	0.41
1:G:140:LEU:HD23	1:G:141:PRO:N	2.36	0.41
1:G:282:MET:CE	1:G:286:GLN:HB3	2.50	0.41
1:A:95:VAL:HG12	1:A:96:LEU:HD22	2.02	0.41
1:B:245:PRO:CD	1:C:244:ILE:HD12	2.51	0.41
1:G:166:ALA:HB1	1:G:314:ALA:HB1	2.02	0.41
1:B:124:PHE:CD2	1:B:221:PRO:HG2	2.55	0.41
1:C:90:HIS:HA	1:C:112:ASP:OD1	2.20	0.41
1:D:164:LEU:O	1:D:168:PHE:HD2	2.03	0.41
1:D:262:LEU:CD1	1:D:305:VAL:HG23	2.50	0.41
1:E:265:LEU:CD1	1:E:305:VAL:HG21	2.50	0.41
1:G:159:TYR:HB2	1:G:160:PRO:HD3	2.02	0.41
1:G:284:GLU:OE1	1:G:284:GLU:HA	2.15	0.41
1:H:111:ALA:O	1:H:121:TRP:CZ3	2.73	0.41
1:D:114:ARG:HG2	1:D:154:ALA:HB1	2.03	0.41
1:D:169:PRO:HG2	1:D:269:TYR:CE2	2.56	0.41
1:E:105:LEU:HG	1:E:107:ILE:HD11	2.03	0.41
1:F:166:ALA:HB2	1:F:316:ALA:HB2	2.02	0.41
1:A:152:ARG:HD3	1:A:152:ARG:HA	1.86	0.41
1:A:32:HIS:CD2	1:A:33:PRO:HD2	2.56	0.41
1:C:159:TYR:HD2	1:C:219:HIS:CE1	2.39	0.41
1:E:26:LEU:HD22	1:E:65:LEU:HD13	2.01	0.41
1:F:34:ALA:CB	1:F:39:ARG:HG3	2.51	0.41
1:F:52:GLY:N	1:F:70:VAL:O	2.47	0.41
1:F:55:LEU:HD12	1:F:55:LEU:HA	1.95	0.41
1:G:169:PRO:HB2	1:G:269:TYR:CE2	2.56	0.41
1:G:286:GLN:NE2	1:H:56:GLY:O	2.53	0.41
1:H:282:MET:SD	1:H:288:PRO:HA	2.61	0.41
1:A:103:GLU:O	1:A:151:ARG:NH2	2.48	0.41
1:D:133:TRP:CD2	1:D:152:ARG:HB3	2.55	0.41
1:F:30:LEU:HD21	1:F:65:LEU:HG	2.03	0.41
1:F:124:PHE:CD2	1:F:221:PRO:HG3	2.56	0.41
1:H:182:VAL:HG22	1:H:254:CYS:SG	2.61	0.41
1:B:240:THR:HG21	1:C:253:THR:CG2	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:102:PRO:HA	1:E:152:ARG:NH2	2.36	0.40
1:D:327:GLY:O	1:D:331:GLN:HB2	2.21	0.40
1:F:133:TRP:CZ2	1:F:152:ARG:HD2	2.55	0.40
1:G:350:VAL:HG12	1:H:27:ARG:CZ	2.51	0.40
1:B:13:ALA:HB3	1:B:84:VAL:HG22	2.04	0.40
1:C:185:VAL:HG22	1:C:251:LEU:HB3	2.02	0.40
1:C:220:THR:N	1:C:221:PRO:HD2	2.36	0.40
1:D:101:SER:C	1:D:103:GLU:H	2.24	0.40
1:F:159:TYR:HB2	1:F:160:PRO:HD3	2.04	0.40
1:H:141:PRO:HG3	1:H:168:PHE:HE2	1.85	0.40
1:B:185:VAL:HA	1:B:242:VAL:O	2.22	0.40
1:C:84:VAL:HG13	1:C:106:ILE:HA	2.03	0.40
1:G:141:PRO:HD3	1:G:168:PHE:CE1	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	342/354 (97%)	316 (92%)	23 (7%)	3 (1%)	17	34
1	B	342/354 (97%)	316 (92%)	25 (7%)	1 (0%)	41	62
1	C	342/354 (97%)	320 (94%)	21 (6%)	1 (0%)	41	62
1	D	342/354 (97%)	315 (92%)	22 (6%)	5 (2%)	10	20
1	E	342/354 (97%)	318 (93%)	22 (6%)	2 (1%)	25	45
1	F	342/354 (97%)	325 (95%)	15 (4%)	2 (1%)	25	45
1	G	342/354 (97%)	323 (94%)	17 (5%)	2 (1%)	25	45
1	H	342/354 (97%)	315 (92%)	25 (7%)	2 (1%)	25	45
All	All	2736/2832 (97%)	2548 (93%)	170 (6%)	18 (1%)	22	41

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	48	ALA
1	A	218	ARG
1	F	218	ARG
1	G	218	ARG
1	B	146	GLN
1	F	98	GLN
1	A	76	ALA
1	D	127	SER
1	D	10	THR
1	G	325	THR
1	H	43	GLY
1	D	194	ALA
1	H	271	LYS
1	D	136	GLY
1	D	322	VAL
1	E	322	VAL
1	A	43	GLY
1	C	322	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	221/255 (87%)	219 (99%)	2 (1%)	78	90
1	B	220/255 (86%)	218 (99%)	2 (1%)	78	90
1	C	232/255 (91%)	231 (100%)	1 (0%)	91	97
1	D	238/255 (93%)	231 (97%)	7 (3%)	42	66
1	E	207/255 (81%)	200 (97%)	7 (3%)	37	60
1	F	242/255 (95%)	236 (98%)	6 (2%)	47	70
1	G	234/255 (92%)	230 (98%)	4 (2%)	60	79
1	H	187/255 (73%)	183 (98%)	4 (2%)	53	75
All	All	1781/2040 (87%)	1748 (98%)	33 (2%)	57	77

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	168	PHE
1	A	323	LYS
1	B	158	CYS
1	B	168	PHE
1	C	193	ARG
1	D	10	THR
1	D	12	VAL
1	D	132	SER
1	D	168	PHE
1	D	207	SER
1	D	265	LEU
1	D	296	SER
1	E	10	THR
1	E	135	TYR
1	E	145	ASP
1	E	168	PHE
1	E	225	GLN
1	E	297	ASN
1	E	315	ILE
1	F	168	PHE
1	F	260	SER
1	F	263	SER
1	F	265	LEU
1	F	284	GLU
1	F	311	THR
1	G	127	SER
1	G	152	ARG
1	G	168	PHE
1	G	296	SER
1	H	104	THR
1	H	132	SER
1	H	168	PHE
1	H	300	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
2	UKE	C	401	-	9,15,15	1.09	0	11,21,21	1.59	2 (18%)
3	PO4	C	402	-	4,4,4	1.25	0	6,6,6	0.37	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
2	UKE	C	401	-	-	0/2/6/6	0/2/2/2

There are no bond length outliers.

All (2) bond angle outliers are listed below:

| Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	401	UKE	C04-C05-C06	-3.32	117.77	121.12
2	C	401	UKE	C01-O02-C03	-2.30	112.52	117.51

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 UKE C 401

Ligand PO4 C 402

Bond lengths

Bond angles

Torsions

Rings
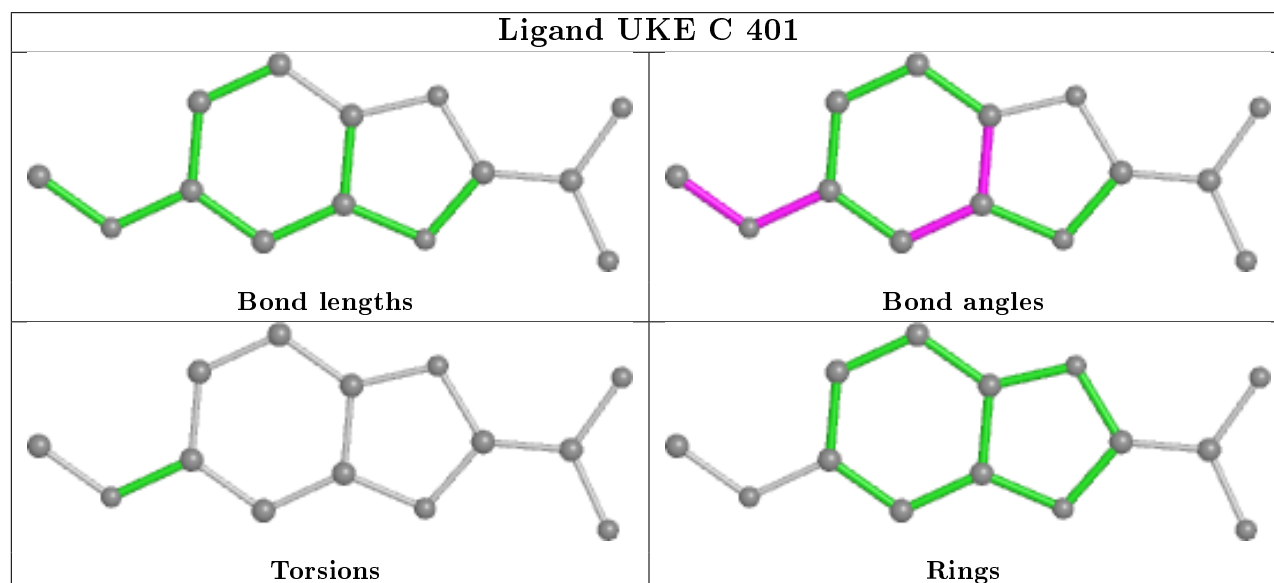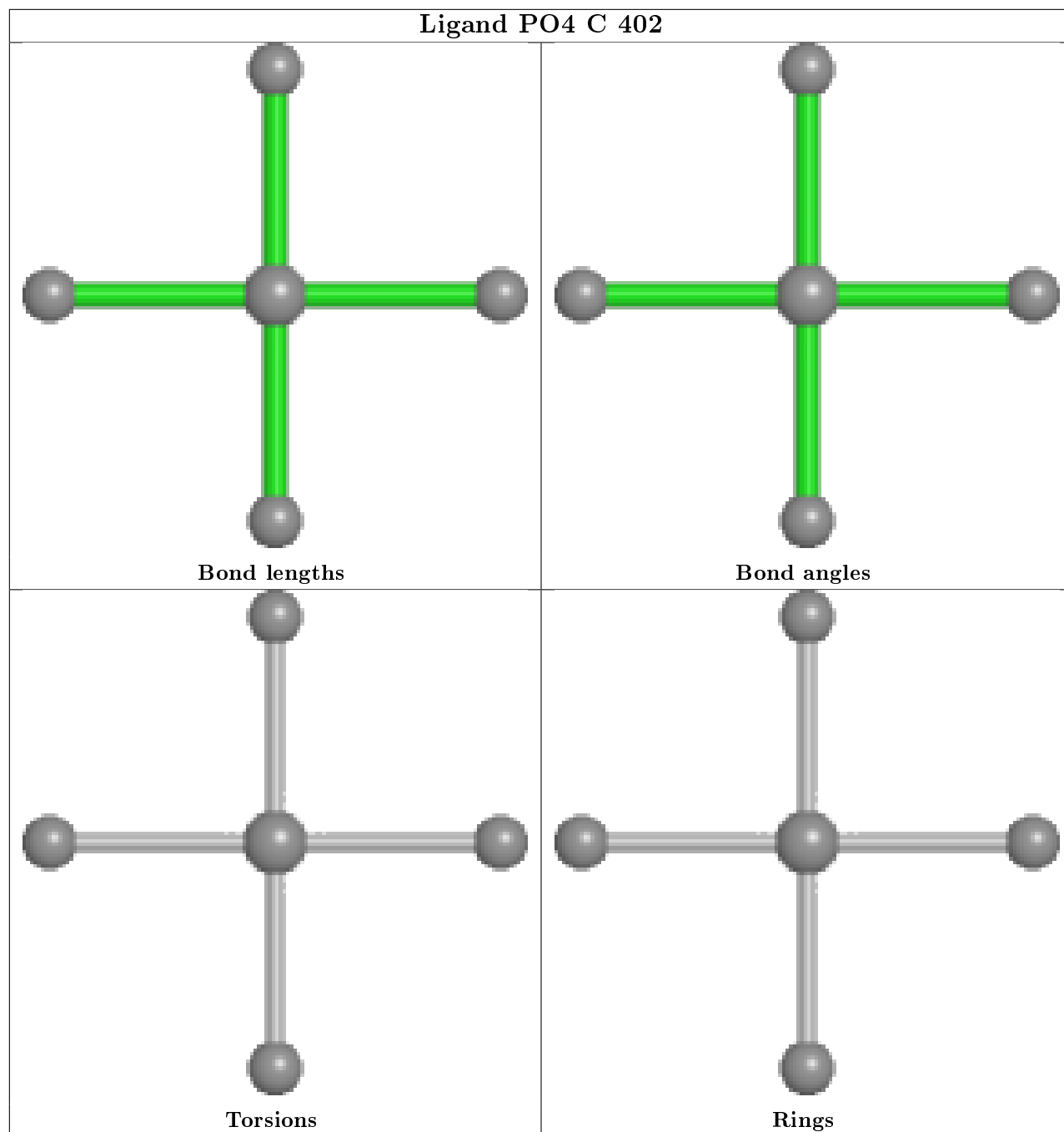
5.7 Other polymers ⓘ

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 (i)

6.1 Protein, DNA and RNA chains (i)

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	344/354 (97%)	0.40	20 (5%)	23	19	30, 69, 91, 100	0
1	B	344/354 (97%)	0.32	4 (1%)	79	77	30, 69, 95, 123	0
1	C	344/354 (97%)	0.36	8 (2%)	60	57	30, 69, 94, 102	0
1	D	344/354 (97%)	0.53	18 (5%)	27	23	30, 79, 106, 115	0
1	E	344/354 (97%)	0.94	62 (18%)	1	1	30, 95, 110, 121	0
1	F	344/354 (97%)	0.48	15 (4%)	34	30	59, 80, 97, 111	0
1	G	344/354 (97%)	0.88	56 (16%)	1	1	30, 89, 105, 112	0
1	H	344/354 (97%)	0.86	44 (12%)	3	2	30, 103, 120, 130	0
All	All	2752/2832 (97%)	0.60	227 (8%)	11	9	30, 82, 109, 130	0

All (227) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	73	THR	7.6
1	H	233	ARG	6.8
1	E	87	ALA	6.1
1	E	314	ALA	5.9
1	E	102	PRO	5.3
1	H	9	ALA	5.0
1	G	115	LEU	4.9
1	G	134	PRO	4.7
1	D	335	LEU	4.7
1	H	141	PRO	4.6
1	G	256	ALA	4.5
1	E	239	PHE	4.5
1	D	153	ILE	4.4
1	E	313	VAL	4.3
1	G	154	ALA	4.3
1	H	325	THR	4.3

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Mol	Chain	Res	Type	RSRZ
1	E	107	ILE	4.2
1	E	179	ALA	4.2
1	E	181	THR	4.2
1	H	150	THR	4.1
1	G	135	TYR	4.1
1	H	234	ASP	4.1
1	E	149	GLY	4.1
1	E	85	PHE	4.1
1	H	179	ALA	4.0
1	G	309	ALA	4.0
1	G	237	VAL	4.0
1	G	170	ALA	3.9
1	D	135	TYR	3.9
1	G	116	THR	3.9
1	E	252	ALA	3.9
1	G	120	VAL	3.8
1	E	223	ILE	3.8
1	F	179	ALA	3.8
1	E	182	VAL	3.7
1	E	164	LEU	3.7
1	H	181	THR	3.7
1	G	9	ALA	3.7
1	A	304	ALA	3.7
1	H	119	ALA	3.7
1	H	232	ASP	3.7
1	E	254	CYS	3.6
1	E	256	ALA	3.6
1	A	227	LEU	3.6
1	E	180	VAL	3.6
1	H	21	ALA	3.6
1	E	158	CYS	3.5
1	H	269	TYR	3.5
1	G	178	PRO	3.5
1	E	100	LEU	3.5
1	H	47	ALA	3.5
1	G	229	ALA	3.5
1	F	115	LEU	3.5
1	E	184	ALA	3.5
1	G	176	ILE	3.4
1	B	49	THR	3.4
1	E	9	ALA	3.4
1	H	255	THR	3.4

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Mol	Chain	Res	Type	RSRZ
1	E	131	GLY	3.4
1	H	97	ALA	3.4
1	A	132	SER	3.3
1	G	147	LEU	3.3
1	G	113	PHE	3.3
1	H	323	LYS	3.3
1	B	106	ILE	3.3
1	E	172	ALA	3.3
1	F	255	THR	3.2
1	A	314	ALA	3.2
1	E	255	THR	3.2
1	G	42	ILE	3.2
1	D	104	THR	3.1
1	G	136	GLY	3.1
1	D	76	ALA	3.1
1	E	30	LEU	3.1
1	H	164	LEU	3.1
1	E	165	LEU	3.1
1	E	338	GLY	3.1
1	F	303	VAL	3.1
1	B	111	ALA	3.1
1	G	255	THR	3.1
1	H	223	ILE	3.0
1	D	252	ALA	3.0
1	G	267	ALA	3.0
1	A	170	ALA	3.0
1	A	345	LEU	3.0
1	D	73	THR	3.0
1	D	223	ILE	3.0
1	G	312	PHE	3.0
1	E	101	SER	3.0
1	E	238	SER	3.0
1	F	235	VAL	2.9
1	A	130	ALA	2.9
1	H	130	ALA	2.9
1	H	306	ASP	2.9
1	E	54	THR	2.9
1	G	235	VAL	2.9
1	E	305	VAL	2.9
1	G	95	VAL	2.9
1	G	180	VAL	2.9
1	E	44	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
1	E	103	GLU	2.9
1	H	163	ALA	2.9
1	E	226	GLY	2.8
1	E	297	ASN	2.8
1	A	143	ALA	2.8
1	E	26	LEU	2.8
1	F	232	ASP	2.8
1	D	323	LYS	2.8
1	E	72	PRO	2.8
1	F	311	THR	2.8
1	E	273	TYR	2.7
1	H	162	ALA	2.7
1	H	315	ILE	2.7
1	F	309	ALA	2.7
1	E	169	PRO	2.7
1	G	325	THR	2.7
1	H	178	PRO	2.7
1	E	298	ALA	2.7
1	A	309	ALA	2.6
1	E	229	ALA	2.6
1	G	105	LEU	2.6
1	G	223	ILE	2.6
1	H	175	LEU	2.6
1	H	18	SER	2.6
1	F	167	LEU	2.6
1	A	303	VAL	2.6
1	E	316	ALA	2.6
1	H	123	ARG	2.6
1	H	249	GLY	2.6
1	G	230	VAL	2.6
1	H	156	PRO	2.6
1	A	224	ALA	2.6
1	G	166	ALA	2.6
1	C	42	ILE	2.6
1	G	258	THR	2.5
1	G	305	VAL	2.5
1	G	311	THR	2.5
1	E	45	LEU	2.5
1	G	153	ILE	2.5
1	D	46	THR	2.5
1	G	73	THR	2.5
1	H	236	SER	2.5

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Mol	Chain	Res	Type	RSRZ
1	E	139	GLU	2.5
1	F	180	VAL	2.5
1	G	295	GLY	2.5
1	H	79	GLY	2.5
1	H	72	PRO	2.5
1	G	175	LEU	2.5
1	G	345	LEU	2.5
1	A	281	LEU	2.4
1	C	271	LYS	2.4
1	G	213	ILE	2.4
1	H	256	ALA	2.4
1	E	51	ALA	2.4
1	H	170	ALA	2.4
1	E	147	LEU	2.4
1	H	227	LEU	2.4
1	F	55	LEU	2.4
1	E	241	PRO	2.4
1	E	17	ALA	2.4
1	G	310	GLN	2.4
1	D	230	VAL	2.3
1	A	29	LEU	2.3
1	C	80	GLY	2.3
1	E	329	ALA	2.3
1	G	121	TRP	2.3
1	A	230	VAL	2.3
1	G	161	THR	2.3
1	G	308	ASP	2.3
1	H	303	VAL	2.3
1	H	182	VAL	2.3
1	G	125	TYR	2.3
1	G	281	LEU	2.3
1	F	268	ALA	2.3
1	D	78	LEU	2.3
1	E	321	LEU	2.2
1	E	38	GLY	2.2
1	D	235	VAL	2.2
1	A	90	HIS	2.2
1	A	166	ALA	2.2
1	F	261	PRO	2.2
1	G	164	LEU	2.2
1	H	251	LEU	2.2
1	G	219	HIS	2.2

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Mol	Chain	Res	Type	RSRZ
1	H	313	VAL	2.2
1	A	254	CYS	2.2
1	E	215	GLY	2.2
1	E	55	LEU	2.2
1	C	140	LEU	2.1
1	D	77	VAL	2.1
1	G	83	ALA	2.1
1	H	328	ALA	2.1
1	G	231	THR	2.1
1	D	107	ILE	2.1
1	G	106	ILE	2.1
1	H	78	LEU	2.1
1	E	70	VAL	2.1
1	G	313	VAL	2.1
1	C	171	LEU	2.1
1	F	265	LEU	2.1
1	G	227	LEU	2.1
1	C	234	ASP	2.1
1	D	122	GLU	2.1
1	C	77	VAL	2.1
1	C	309	ALA	2.1
1	G	280	TYR	2.1
1	G	137	LEU	2.1
1	A	167	LEU	2.1
1	B	113	PHE	2.1
1	G	124	PHE	2.1
1	G	265	LEU	2.1
1	G	173	ALA	2.1
1	E	77	VAL	2.1
1	A	269	TYR	2.1
1	E	153	ILE	2.1
1	H	204	VAL	2.0
1	E	96	LEU	2.0
1	E	199	LEU	2.0
1	E	15	ALA	2.0
1	D	237	VAL	2.0
1	E	322	VAL	2.0
1	A	88	LEU	2.0
1	H	26	LEU	2.0
1	F	256	ALA	2.0
1	E	150	THR	2.0
1	D	50	SER	2.0

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Mol	Chain	Res	Type	RSRZ
1	E	29	LEU	2.0

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

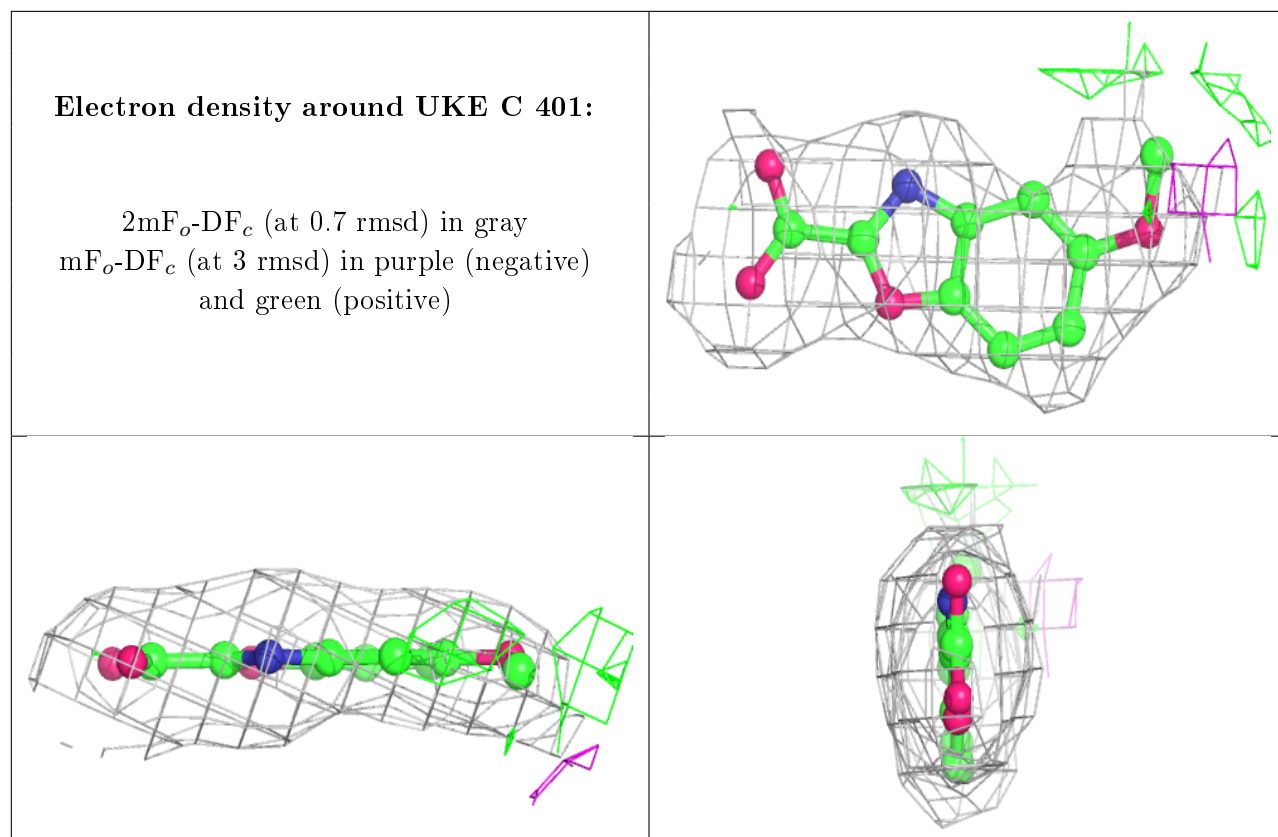There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

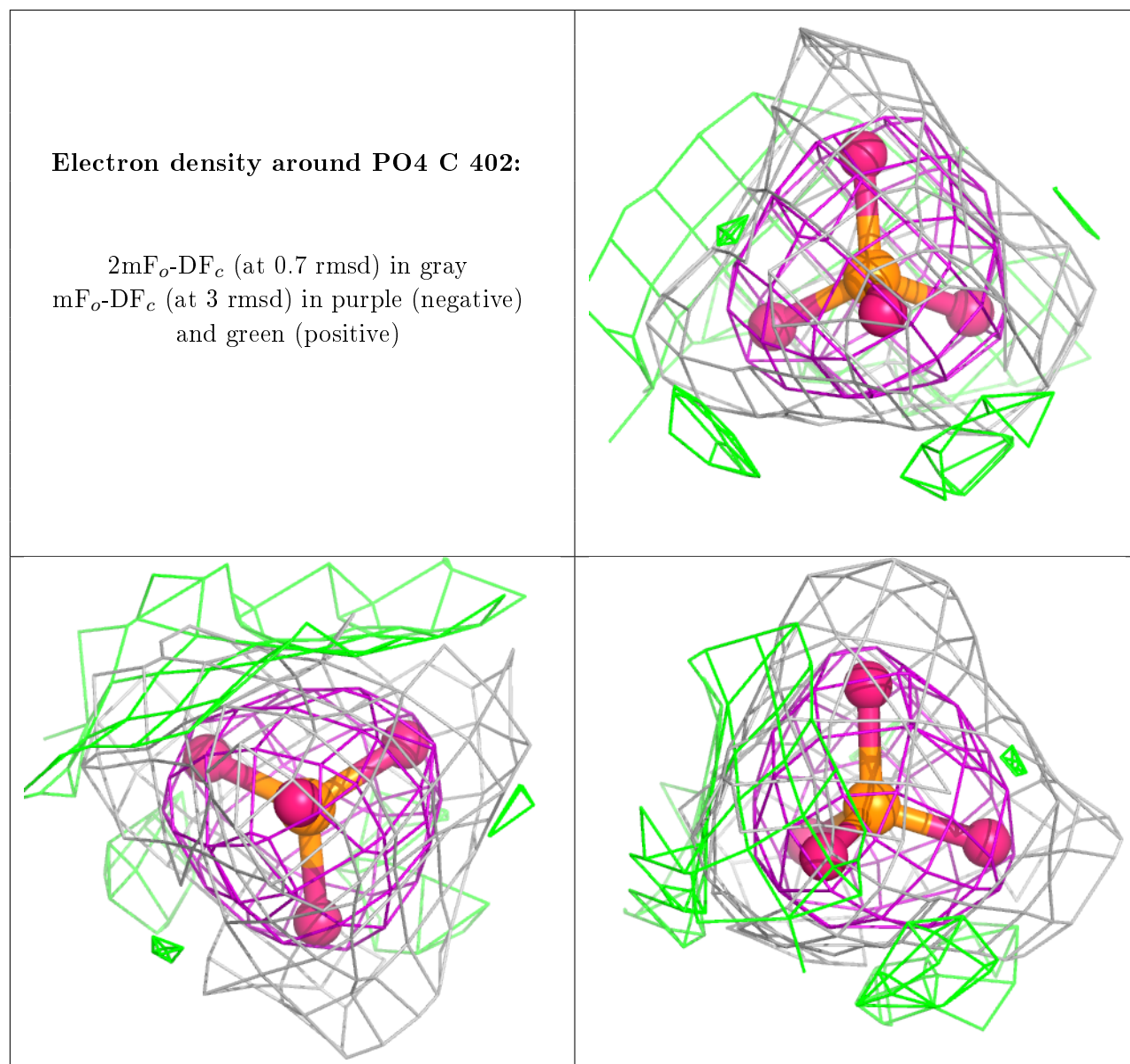There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	UKE	C	401	14/14	0.85	0.21	62,74,82,121	0
3	PO4	C	402	5/5	0.99	0.19	20,20,20,20	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 UKE C 401:

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

Electron density around PO4 C 402:

$2mF_o$-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.