Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2024 – 09:13 pm GMT

PDB ID	:	8QD2
Title	:	Ayg1p in complex with 1,3-Dihydroxynaphthalene
Authors	:	Schmalhofer, M.; Vagstad, A.L.; Zhou, Q.; Bode, H.B.; Groll, M.
Deposited on	:	2023-08-28
Resolution	:	1.75 Å(reported)

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

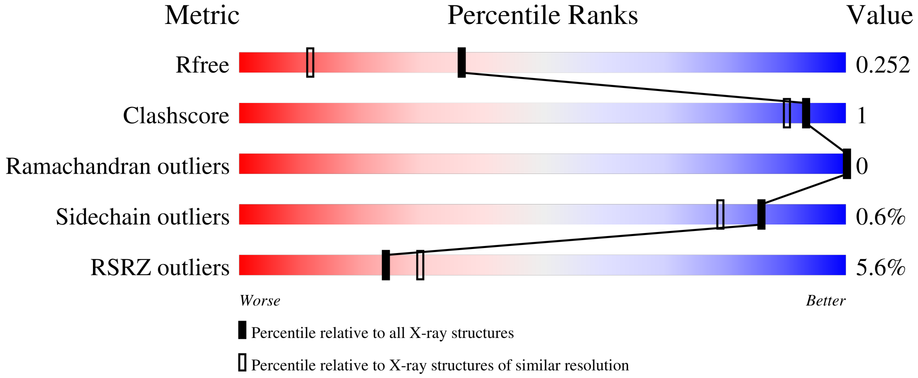
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance

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

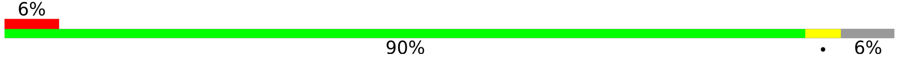
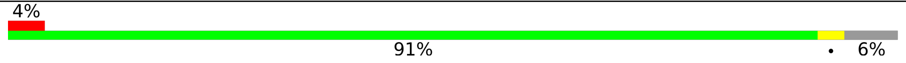
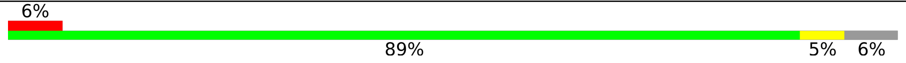
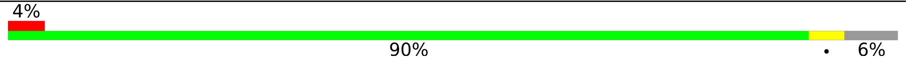
The reported resolution of this entry is 1.75 Å.

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	2340 (1.76-1.76)
Clashscore	141614	2466 (1.76-1.76)
Ramachandran outliers	138981	2437 (1.76-1.76)
Sidechain outliers	138945	2437 (1.76-1.76)
RSRZ outliers	127900	2298 (1.76-1.76)

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	423	
1	B	423	
1	C	423	
1	D	423	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 13723 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 Pigment biosynthesis protein yellowish-green 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	398	Total 3147	C 2021	N 541	O 576	S 9	0	4	0
1	B	398	Total 3119	C 2000	N 538	O 572	S 9	0	2	0
1	C	398	Total 3090	C 1983	N 530	O 568	S 9	0	2	0
1	D	398	Total 3122	C 2003	N 535	O 575	S 9	0	2	0

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	MET	-	initiating methionine	UNP Q9UVV1
A	-15	ARG	-	expression tag	UNP Q9UVV1
A	-14	GLY	-	expression tag	UNP Q9UVV1
A	-13	SER	-	expression tag	UNP Q9UVV1
A	-12	HIS	-	expression tag	UNP Q9UVV1
A	-11	HIS	-	expression tag	UNP Q9UVV1
A	-10	HIS	-	expression tag	UNP Q9UVV1
A	-9	HIS	-	expression tag	UNP Q9UVV1
A	-8	HIS	-	expression tag	UNP Q9UVV1
A	-7	HIS	-	expression tag	UNP Q9UVV1
A	-6	GLU	-	expression tag	UNP Q9UVV1
A	-5	ASN	-	expression tag	UNP Q9UVV1
A	-4	LEU	-	expression tag	UNP Q9UVV1
A	-3	TYR	-	expression tag	UNP Q9UVV1
A	-2	PHE	-	expression tag	UNP Q9UVV1
A	-1	GLN	-	expression tag	UNP Q9UVV1
A	0	GLY	-	expression tag	UNP Q9UVV1
A	1	SER	-	expression tag	UNP Q9UVV1
B	-16	MET	-	initiating methionine	UNP Q9UVV1
B	-15	ARG	-	expression tag	UNP Q9UVV1
B	-14	GLY	-	expression tag	UNP Q9UVV1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-13	SER	-	expression tag	UNP Q9UVV1
B	-12	HIS	-	expression tag	UNP Q9UVV1
B	-11	HIS	-	expression tag	UNP Q9UVV1
B	-10	HIS	-	expression tag	UNP Q9UVV1
B	-9	HIS	-	expression tag	UNP Q9UVV1
B	-8	HIS	-	expression tag	UNP Q9UVV1
B	-7	HIS	-	expression tag	UNP Q9UVV1
B	-6	GLU	-	expression tag	UNP Q9UVV1
B	-5	ASN	-	expression tag	UNP Q9UVV1
B	-4	LEU	-	expression tag	UNP Q9UVV1
B	-3	TYR	-	expression tag	UNP Q9UVV1
B	-2	PHE	-	expression tag	UNP Q9UVV1
B	-1	GLN	-	expression tag	UNP Q9UVV1
B	0	GLY	-	expression tag	UNP Q9UVV1
B	1	SER	-	expression tag	UNP Q9UVV1
C	-16	MET	-	initiating methionine	UNP Q9UVV1
C	-15	ARG	-	expression tag	UNP Q9UVV1
C	-14	GLY	-	expression tag	UNP Q9UVV1
C	-13	SER	-	expression tag	UNP Q9UVV1
C	-12	HIS	-	expression tag	UNP Q9UVV1
C	-11	HIS	-	expression tag	UNP Q9UVV1
C	-10	HIS	-	expression tag	UNP Q9UVV1
C	-9	HIS	-	expression tag	UNP Q9UVV1
C	-8	HIS	-	expression tag	UNP Q9UVV1
C	-7	HIS	-	expression tag	UNP Q9UVV1
C	-6	GLU	-	expression tag	UNP Q9UVV1
C	-5	ASN	-	expression tag	UNP Q9UVV1
C	-4	LEU	-	expression tag	UNP Q9UVV1
C	-3	TYR	-	expression tag	UNP Q9UVV1
C	-2	PHE	-	expression tag	UNP Q9UVV1
C	-1	GLN	-	expression tag	UNP Q9UVV1
C	0	GLY	-	expression tag	UNP Q9UVV1
C	1	SER	-	expression tag	UNP Q9UVV1
D	-16	MET	-	initiating methionine	UNP Q9UVV1
D	-15	ARG	-	expression tag	UNP Q9UVV1
D	-14	GLY	-	expression tag	UNP Q9UVV1
D	-13	SER	-	expression tag	UNP Q9UVV1
D	-12	HIS	-	expression tag	UNP Q9UVV1
D	-11	HIS	-	expression tag	UNP Q9UVV1
D	-10	HIS	-	expression tag	UNP Q9UVV1
D	-9	HIS	-	expression tag	UNP Q9UVV1
D	-8	HIS	-	expression tag	UNP Q9UVV1

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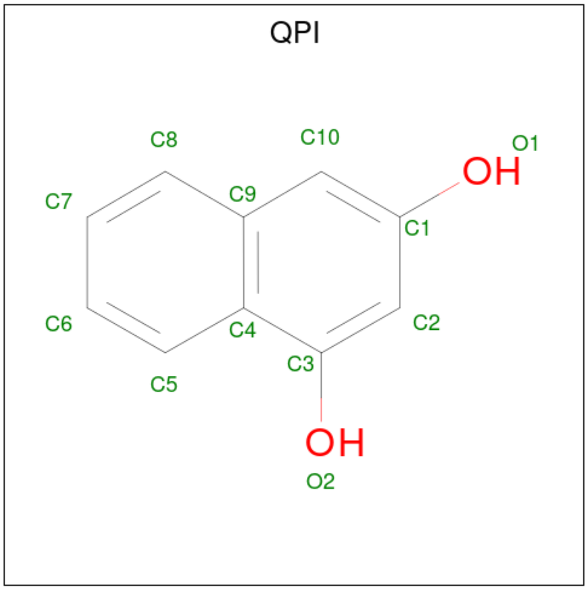
Chain	Residue	Modelled	Actual	Comment	Reference
D	-7	HIS	-	expression tag	UNP Q9UVV1
D	-6	GLU	-	expression tag	UNP Q9UVV1
D	-5	ASN	-	expression tag	UNP Q9UVV1
D	-4	LEU	-	expression tag	UNP Q9UVV1
D	-3	TYR	-	expression tag	UNP Q9UVV1
D	-2	PHE	-	expression tag	UNP Q9UVV1
D	-1	GLN	-	expression tag	UNP Q9UVV1
D	0	GLY	-	expression tag	UNP Q9UVV1
D	1	SER	-	expression tag	UNP Q9UVV1

- Molecule 2 is naphthalene-1,3-diol (three-letter code: QPI) (formula: $C_{10}H_8O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 12 10 2	0	0
2	B	1	Total C O 12 10 2	0	0
2	C	1	Total C O 12 10 2	0	0
2	D	1	Total C O 12 10 2	0	0

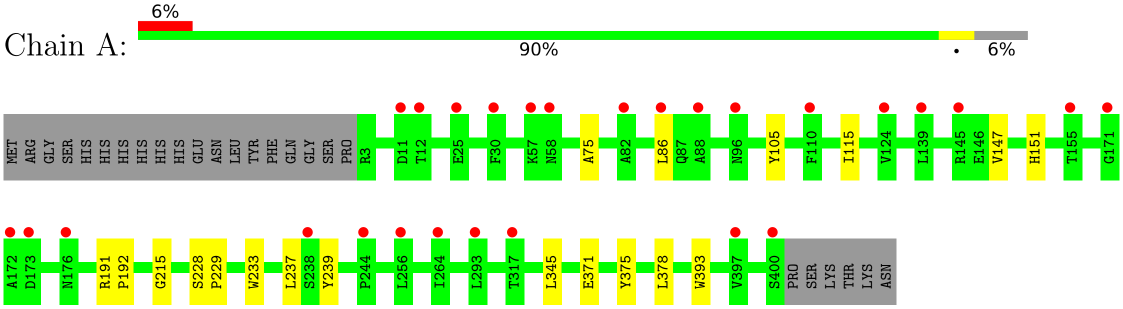
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	281	Total O 281 281	0	0
3	B	312	Total O 312 312	0	0
3	C	287	Total O 287 287	0	0
3	D	317	Total O 317 317	0	0

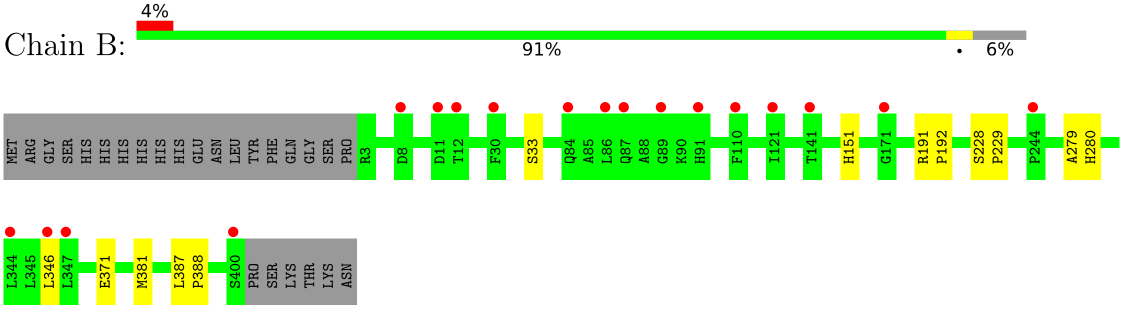
3 Residue-property plots

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.

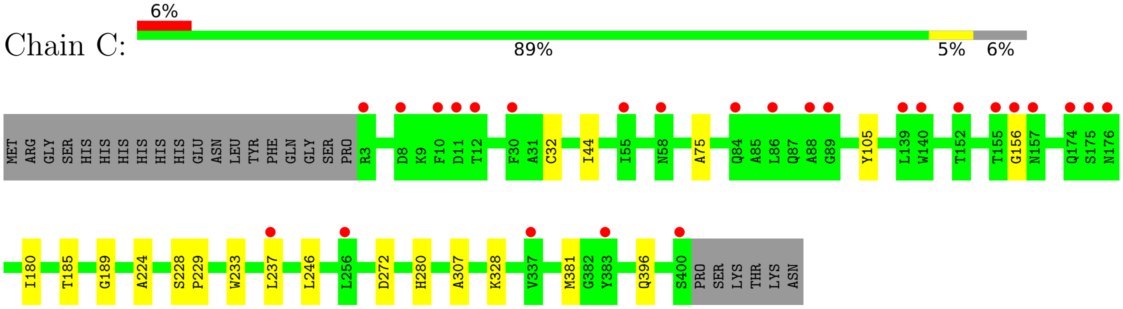
- Molecule 1: Pigment biosynthesis protein yellowish-green 1



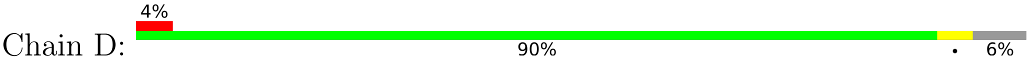
- Molecule 1: Pigment biosynthesis protein yellowish-green 1

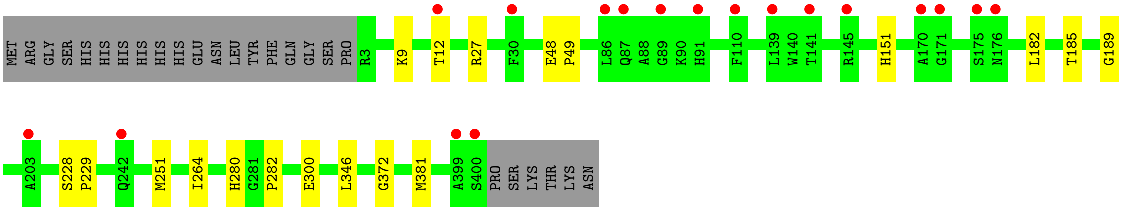


- Molecule 1: Pigment biosynthesis protein yellowish-green 1



- Molecule 1: Pigment biosynthesis protein yellowish-green 1




MET
ARG
GLY
SER
HIS
HIS
HIS
HIS
HIS
HIS
GLU
ASN
LEU
TYR
PHE
GLN
GLY
SER
PRO
R3
K9
T12
R27
F30
E48
P49
L86
Q87
A88
G89
K90
H91
F110
L139
W140
T141
R145
H151
A170
G171
S175
N176
L182
T185
G189
A203
S228
P229
Q242
M251
I264
H280
G281
P282
E300
L346
G372
M381
A399
S400
PRO
SER
LYS
THR
LYS
ASN

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	85.47Å 107.48Å 92.51Å 90.00° 90.14° 90.00°	Depositor
Resolution (Å)	46.47 – 1.75 46.47 – 1.75	Depositor EDS
% Data completeness (in resolution range)	94.3 (46.47-1.75) 98.7 (46.47-1.75)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.41 (at 1.75Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.229 , 0.239 0.241 , 0.252	Depositor DCC
R_{free} test set	8311 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å^2)	21.2	Xtriage
Anisotropy	0.084	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 33.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.59$, $< L^2 > = 0.44$	Xtriage
Estimated twinning fraction	0.026 for h,-k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13723	wwPDB-VP
Average B, all atoms (Å^2)	22.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 53.65 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.0889e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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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: QPI

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	0.64	0/3248	0.70	0/4434
1	B	0.64	0/3216	0.70	0/4394
1	C	0.64	0/3186	0.69	0/4357
1	D	0.64	0/3222	0.70	0/4401
All	All	0.64	0/12872	0.70	0/17586

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	3147	0	3042	10	0
1	B	3119	0	3005	8	0
1	C	3090	0	2950	11	0
1	D	3122	0	3014	9	0
2	A	12	0	0	0	0
2	B	12	0	0	1	0
2	C	12	0	0	1	0
2	D	12	0	0	1	0
3	A	281	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	312	0	0	0	0
3	C	287	0	0	2	0
3	D	317	0	0	0	0
All	All	13723	0	12011	35	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 1.

All (35) 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:A:371[A]:GLU:HG2	1:B:371:GLU:HG2	1.56	0.87
1:A:228:SER:N	1:A:229:PRO:HD2	2.23	0.53
1:D:228:SER:N	1:D:229:PRO:HD2	2.23	0.53
1:C:228:SER:N	1:C:229:PRO:HD2	2.24	0.52
1:B:228:SER:N	1:B:229:PRO:HD2	2.24	0.52
1:B:279:ALA:HB3	1:B:346:LEU:HD23	1.93	0.51
1:C:381:MET:HG3	2:C:1001:QPI:C4	2.44	0.48
1:D:9:LYS:HA	1:D:12:THR:HG23	1.95	0.48
1:A:75:ALA:HB1	1:A:105:TYR:CZ	2.48	0.48
1:C:185:THR:HB	1:C:189:GLY:O	2.14	0.48
1:A:375:TYR:HB3	1:A:378:LEU:HD12	1.97	0.46
1:D:27:ARG:NH2	1:D:300:GLU:O	2.46	0.46
1:D:264:ILE:HD11	1:D:282:PRO:HB2	1.99	0.45
1:A:191:ARG:N	1:A:192:PRO:CD	2.79	0.45
1:A:115:ILE:HD13	1:A:215:GLY:HA2	1.99	0.45
1:D:381:MET:HG3	2:D:1001:QPI:C4	2.47	0.44
1:C:233:TRP:O	1:C:237:LEU:HG	2.18	0.43
1:A:233:TRP:O	1:A:237:LEU:HG	2.18	0.43
1:D:185:THR:HB	1:D:189:GLY:O	2.18	0.43
1:B:381:MET:HG3	2:B:1001:QPI:C4	2.48	0.43
1:C:32:CYS:SG	1:C:44:ILE:HA	2.59	0.43
1:B:191:ARG:N	1:B:192:PRO:CD	2.82	0.43
1:A:371[A]:GLU:HG2	1:B:371:GLU:CG	2.39	0.42
1:A:345:LEU:HD22	1:A:393:TRP:CG	2.55	0.42
1:C:180:ILE:HD11	1:C:246:LEU:HB3	2.00	0.42
1:D:182:LEU:HB2	1:D:251:MET:HE3	2.00	0.42
1:A:147:VAL:HG11	1:A:239:TYR:CZ	2.54	0.42
1:C:307:ALA:HB3	3:C:1195:HOH:O	2.19	0.41
1:B:33:SER:OG	1:C:156:GLY:HA2	2.20	0.41
1:C:75:ALA:HB1	1:C:105:TYR:CZ	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387:LEU:HB3	1:B:388:PRO:HD3	2.03	0.41
1:D:346:LEU:O	1:D:372:GLY:HA2	2.21	0.40
1:C:224:ALA:O	1:C:328:LYS:CE	2.69	0.40
1:C:396[A]:GLN:NE2	3:C:1118:HOH:O	2.55	0.40
1:D:48:GLU:HB3	1:D:49:PRO:HD3	2.03	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	400/423 (95%)	386 (96%)	14 (4%)	0	100	100
1	B	398/423 (94%)	382 (96%)	16 (4%)	0	100	100
1	C	398/423 (94%)	385 (97%)	13 (3%)	0	100	100
1	D	398/423 (94%)	383 (96%)	15 (4%)	0	100	100
All	All	1594/1692 (94%)	1536 (96%)	58 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	327/354 (92%)	325 (99%)	2 (1%)	86	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	323/354 (91%)	321 (99%)	2 (1%)	86	79
1	C	315/354 (89%)	313 (99%)	2 (1%)	86	79
1	D	325/354 (92%)	323 (99%)	2 (1%)	86	79
All	All	1290/1416 (91%)	1282 (99%)	8 (1%)	86	79

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	86	LEU
1	A	151	HIS
1	B	151	HIS
1	B	280	HIS
1	C	272	ASP
1	C	280	HIS
1	D	151	HIS
1	D	280	HIS

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

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 ⓘ

4 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	QPI	B	1001	-	13,13,13	0.46	0	18,18,18	0.55	0
2	QPI	A	1001	-	13,13,13	0.46	0	18,18,18	0.51	0
2	QPI	D	1001	-	13,13,13	0.46	0	18,18,18	0.52	0
2	QPI	C	1001	-	13,13,13	0.49	0	18,18,18	0.51	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	QPI	B	1001	-	-	-	0/2/2/2
2	QPI	A	1001	-	-	-	0/2/2/2
2	QPI	D	1001	-	-	-	0/2/2/2
2	QPI	C	1001	-	-	-	0/2/2/2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

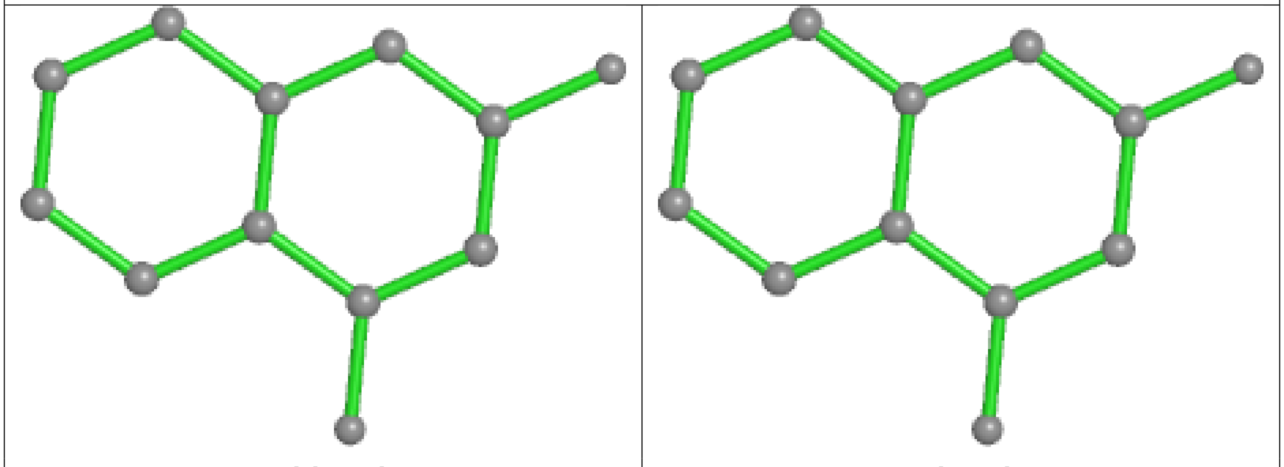
There are no ring outliers.

3 monomers are involved in 3 short contacts:

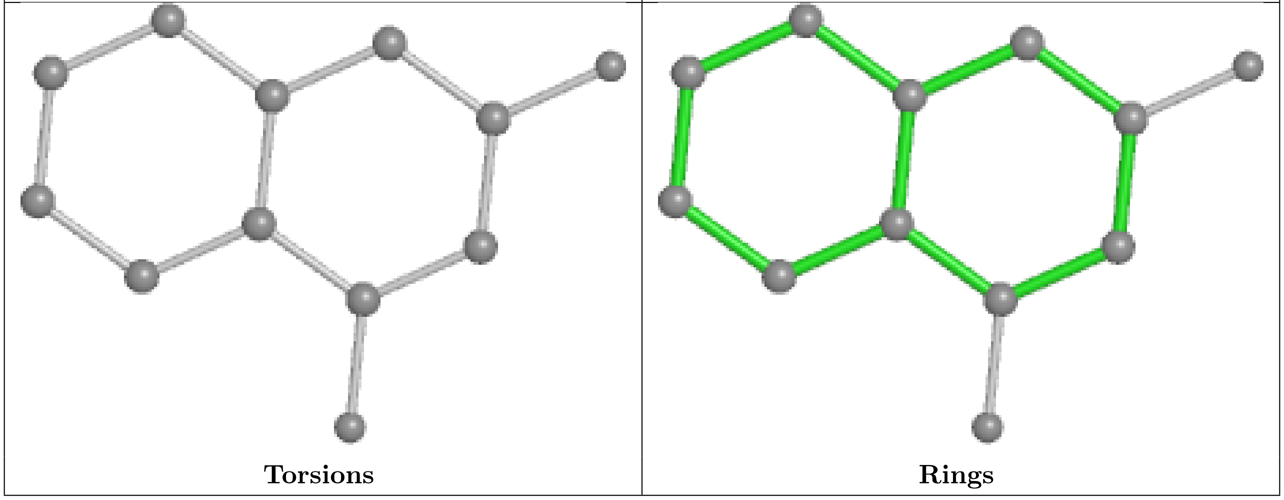
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1001	QPI	1	0
2	D	1001	QPI	1	0
2	C	1001	QPI	1	0

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 QPI B 1001

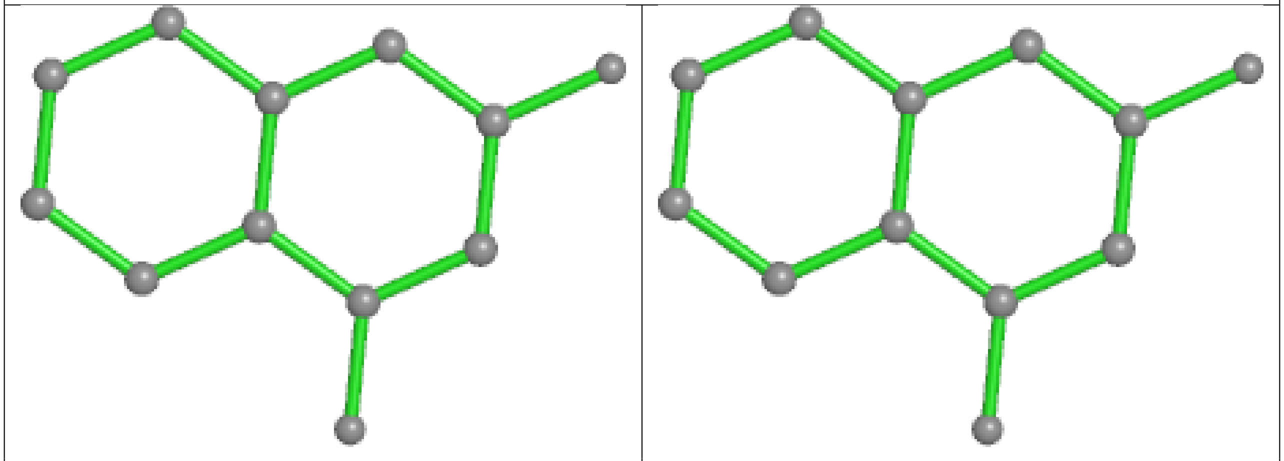


Bond lengths **Bond angles**

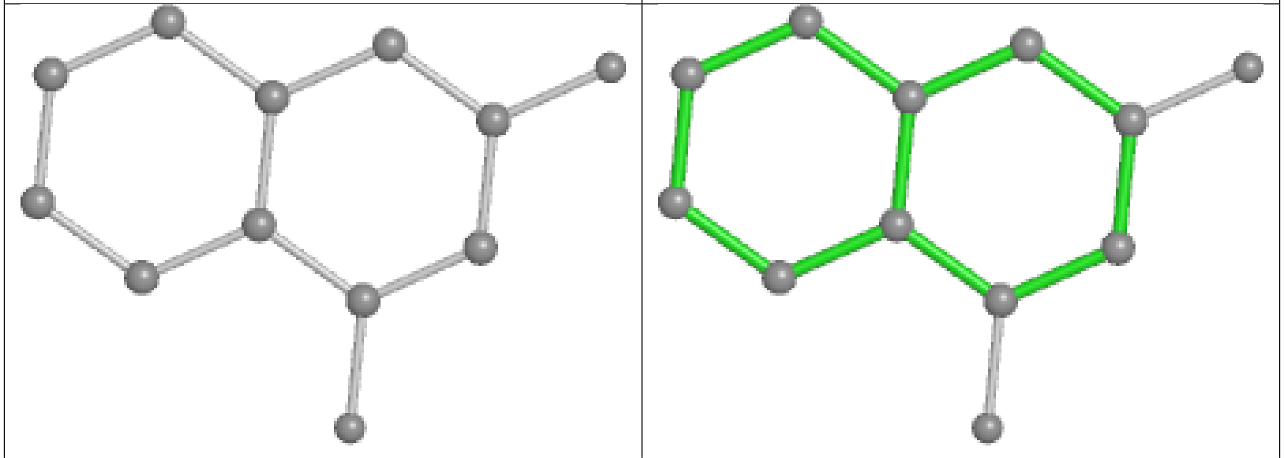


Torsions **Rings**

Ligand QPI A 1001

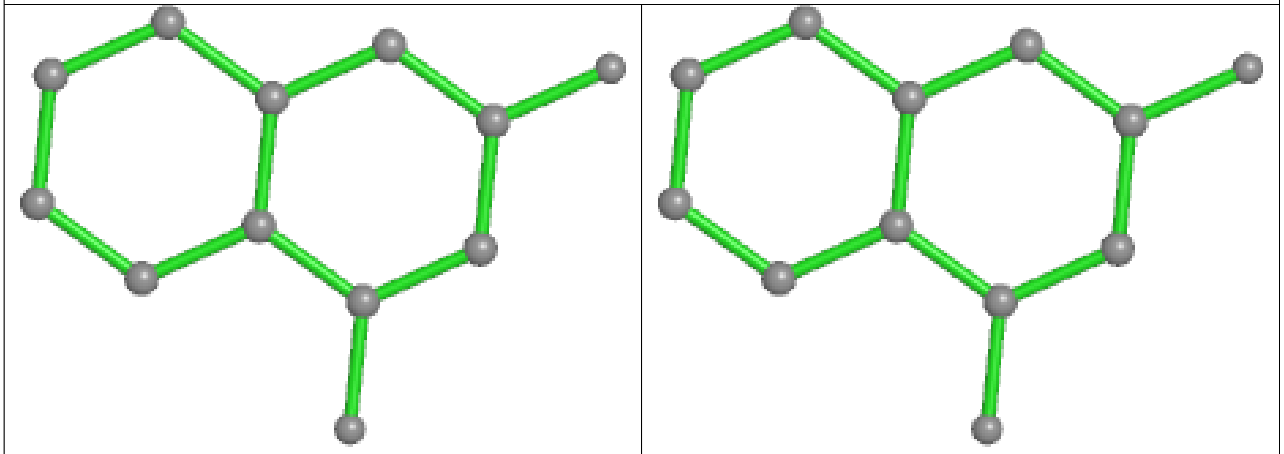


Bond lengths **Bond angles**



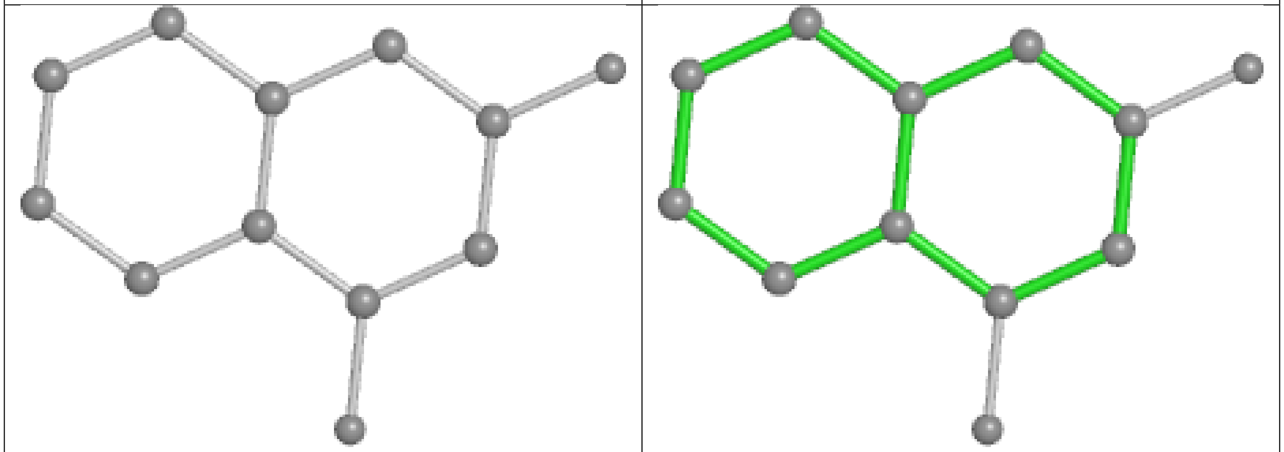
Torsions **Rings**

Ligand QPI D 1001



Bond lengths

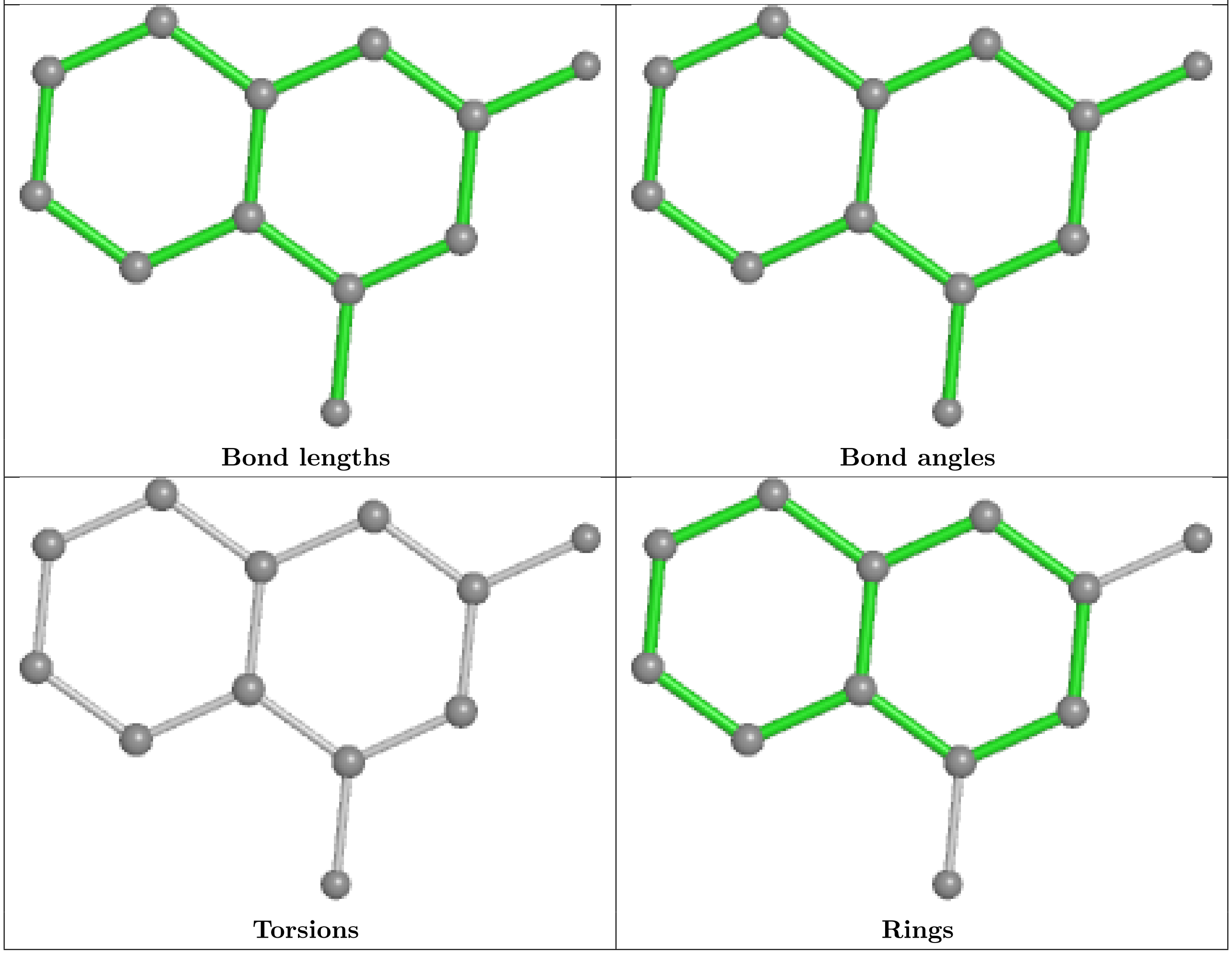
Bond angles



Torsions

Rings

Ligand QPI C 1001



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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	398/423 (94%)	0.76	27 (6%)	17	22	14, 23, 35, 40	0
1	B	398/423 (94%)	0.63	18 (4%)	33	39	13, 20, 29, 38	0
1	C	398/423 (94%)	0.85	26 (6%)	18	24	14, 22, 33, 38	0
1	D	398/423 (94%)	0.64	18 (4%)	33	39	13, 20, 29, 36	0
All	All	1592/1692 (94%)	0.72	89 (5%)	24	30	13, 21, 32, 40	0

All (89) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	400	SER	5.2
1	D	139	LEU	4.4
1	B	400	SER	4.3
1	D	399	ALA	4.2
1	C	400	SER	4.2
1	B	171	GLY	4.0
1	A	86	LEU	3.9
1	A	139	LEU	3.7
1	A	30[A]	PHE	3.6
1	B	86	LEU	3.5
1	C	176	ASN	3.5
1	D	86	LEU	3.5
1	C	89	GLY	3.5
1	A	400	SER	3.5
1	A	171	GLY	3.3
1	A	176	ASN	3.3
1	D	170	ALA	3.3
1	A	11	ASP	3.2
1	C	55	ILE	3.2
1	C	11	ASP	3.1
1	C	152	THR	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	176	ASN	2.9
1	C	84	GLN	2.9
1	B	30	PHE	2.9
1	A	173	ASP	2.9
1	B	11	ASP	2.9
1	C	174	GLN	2.9
1	A	110	PHE	2.8
1	B	89	GLY	2.8
1	B	244	PRO	2.8
1	A	264	ILE	2.7
1	B	110	PHE	2.7
1	C	86	LEU	2.7
1	C	155	THR	2.7
1	D	203	ALA	2.7
1	C	3	ARG	2.6
1	D	87	GLN	2.6
1	D	30	PHE	2.5
1	C	139	LEU	2.5
1	A	244	PRO	2.5
1	C	8	ASP	2.5
1	D	141	THR	2.5
1	B	91	HIS	2.5
1	A	317	THR	2.4
1	A	58	ASN	2.4
1	C	10	PHE	2.4
1	D	110	PHE	2.3
1	A	172	ALA	2.3
1	D	175	SER	2.3
1	B	346	LEU	2.3
1	D	145	ARG	2.3
1	D	91	HIS	2.3
1	C	383	TYR	2.3
1	B	8	ASP	2.3
1	B	87	GLN	2.3
1	C	58	ASN	2.3
1	C	140	TRP	2.3
1	C	88	ALA	2.3
1	C	157	ASN	2.3
1	C	12	THR	2.2
1	A	124	VAL	2.2
1	D	242	GLN	2.2
1	B	84	GLN	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	156	GLY	2.2
1	C	337	VAL	2.2
1	A	293	LEU	2.2
1	B	344	LEU	2.2
1	A	12	THR	2.2
1	C	175	SER	2.1
1	C	256	LEU	2.1
1	A	25	GLU	2.1
1	B	347	LEU	2.1
1	C	237	LEU	2.1
1	A	82	ALA	2.1
1	A	88	ALA	2.1
1	B	121	ILE	2.1
1	D	89	GLY	2.1
1	A	96	ASN	2.1
1	D	12	THR	2.1
1	A	57	LYS	2.0
1	B	141	THR	2.0
1	A	397	VAL	2.0
1	C	30	PHE	2.0
1	D	171	GLY	2.0
1	A	145	ARG	2.0
1	A	238	SER	2.0
1	A	256	LEU	2.0
1	A	155	THR	2.0
1	B	12	THR	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 ⓘ

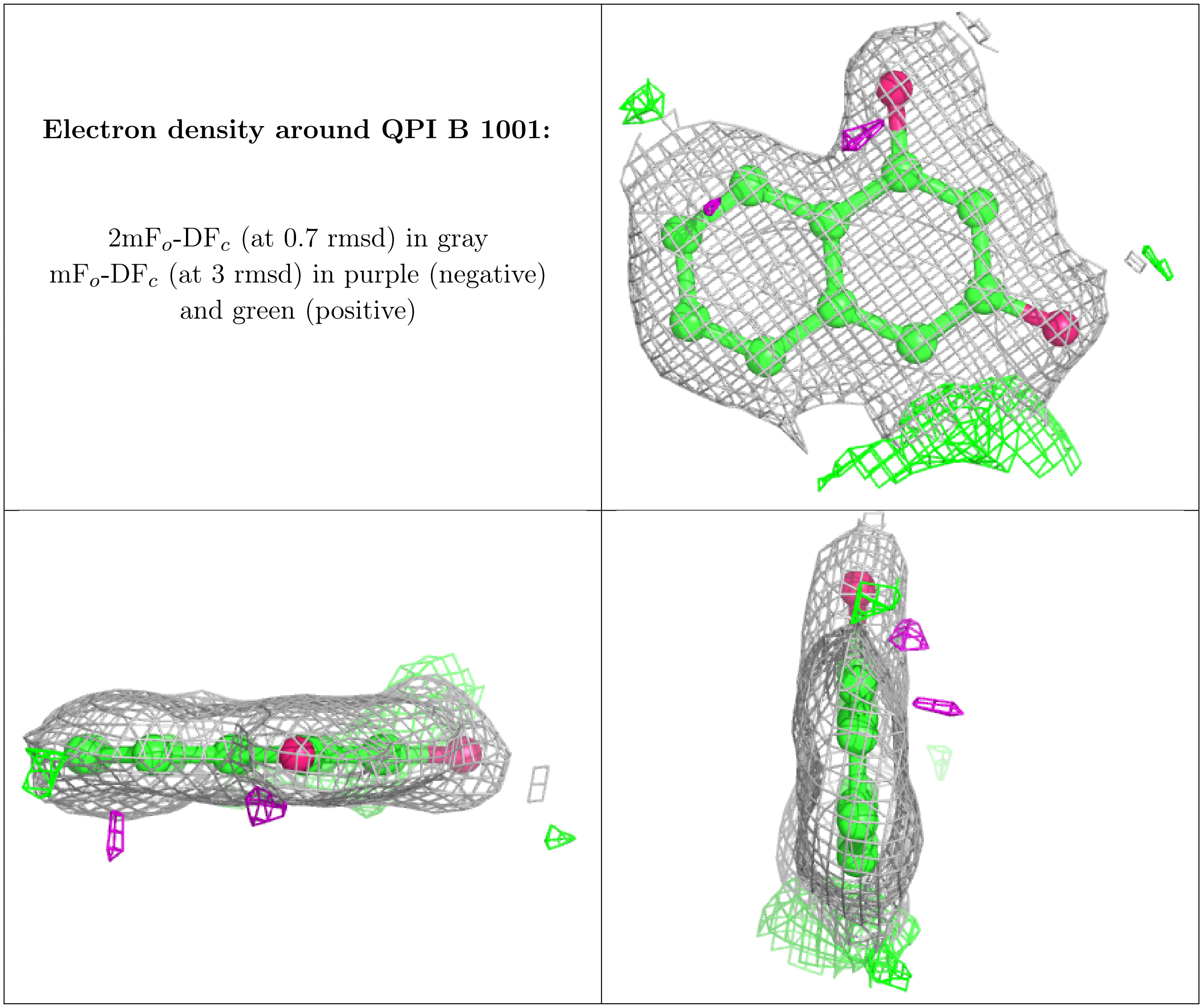
There are no monosaccharides in this entry.

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
2	QPI	B	1001	12/12	0.81	0.17	30,30,31,33	0
2	QPI	C	1001	12/12	0.81	0.17	30,32,32,32	0
2	QPI	A	1001	12/12	0.86	0.14	36,36,37,37	0
2	QPI	D	1001	12/12	0.87	0.13	28,28,29,30	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.

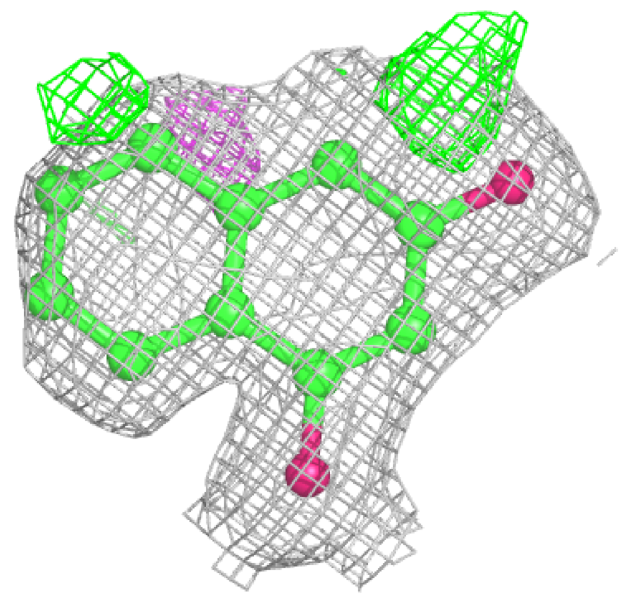


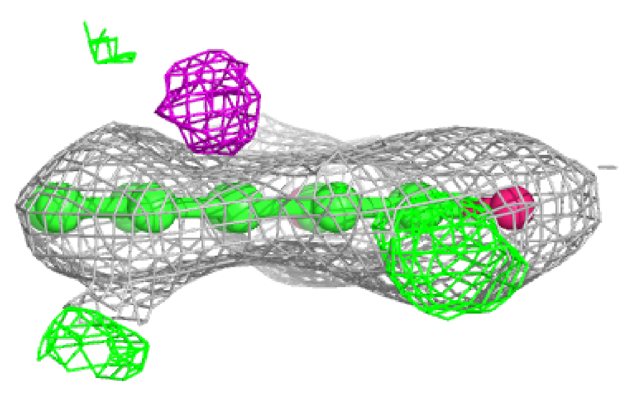
Electron density around QPI B 1001:

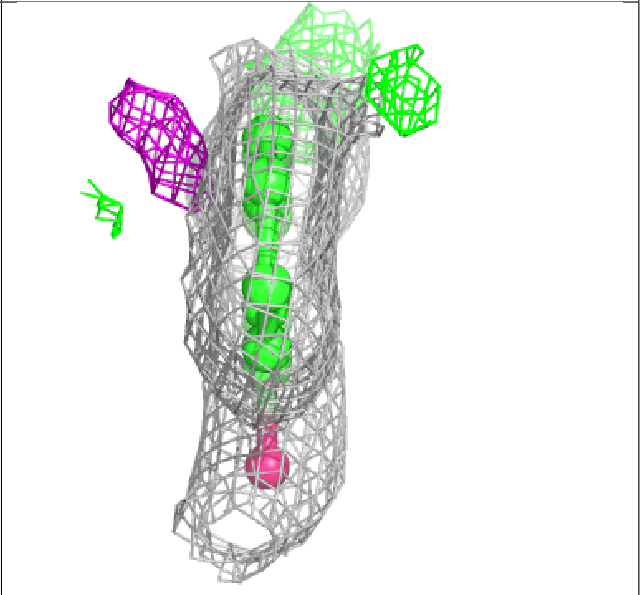
2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around QPI C 1001:

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

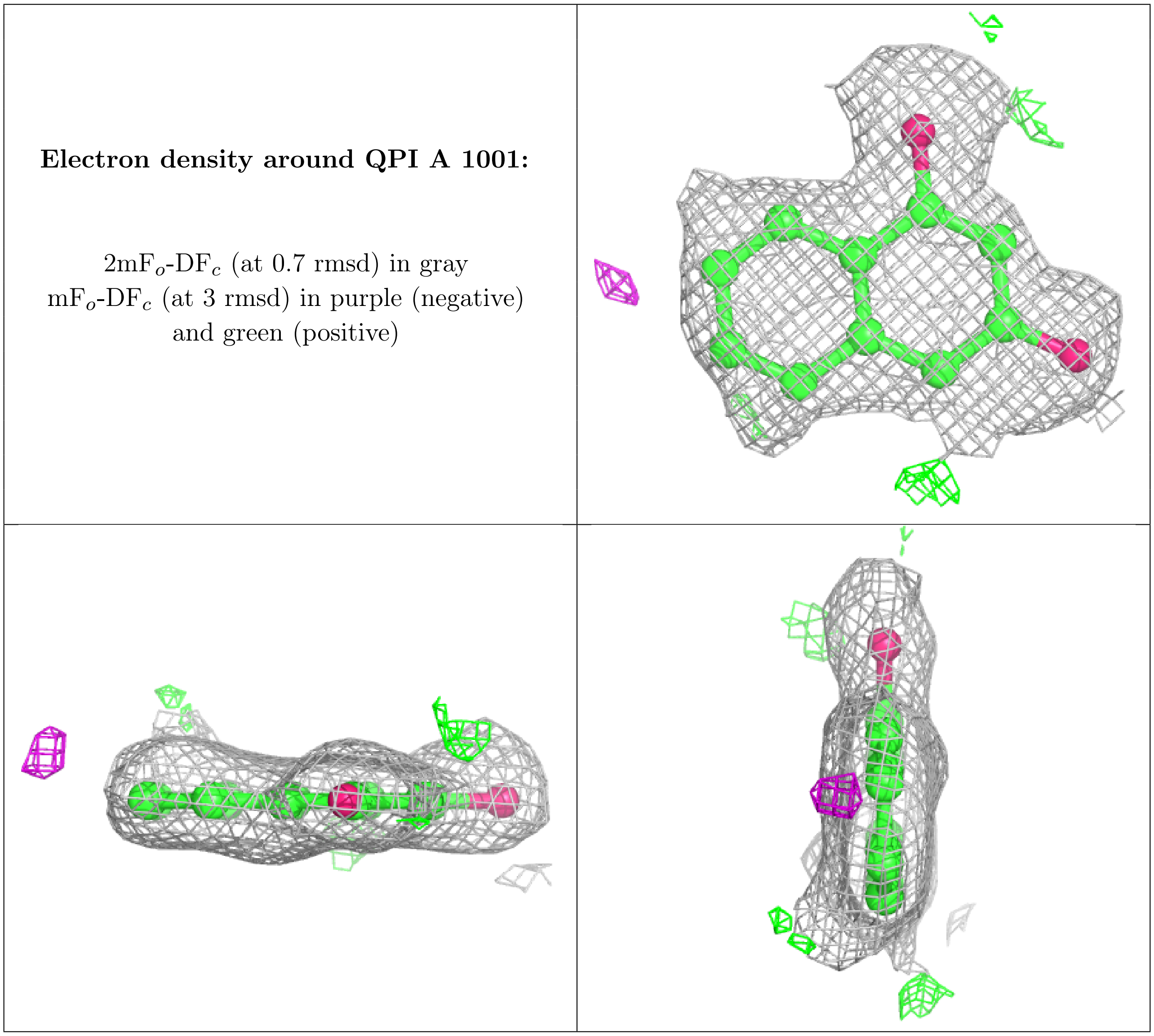


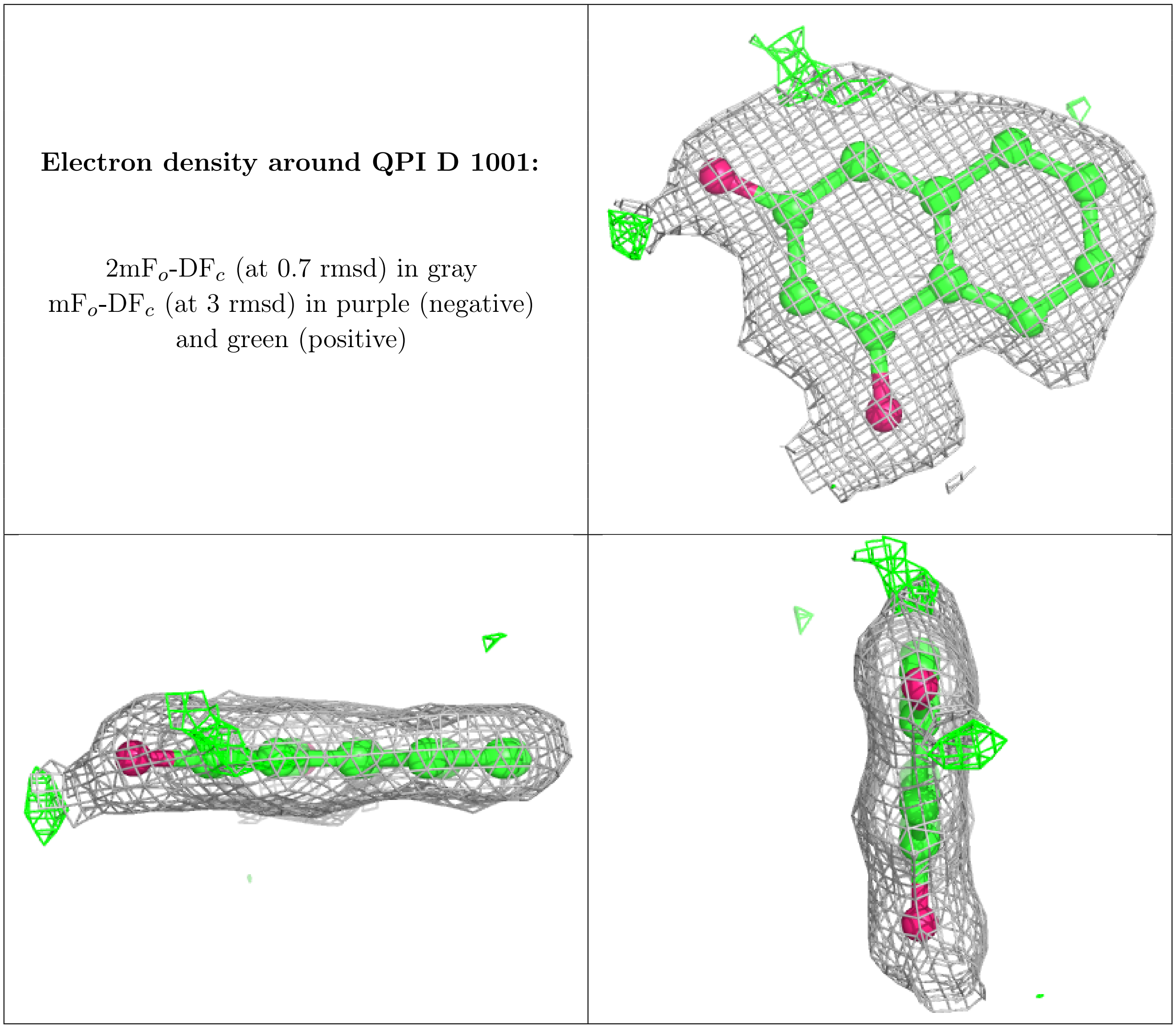




Electron density around QPI A 1001:

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





Electron density around QPI D 1001:

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.