wwPDB X-ray Structure Validation Summary Report (i)

Sep 24, 2023 – 03:27 AM EDT

PDB ID	:	5L1H
Title	:	AMPA subtype ionotropic glutamate receptor GluA2 in complex with non-competitive inhibitor GYKI53655
Authors	:	Yelshanskaya, M.V.; Singh, A.K.; Sampson, J.M.; Sobolevsky, A.I.
Deposited on	:	2016-07-29
Resolution	:	3.80 Å(reported)

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

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

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

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

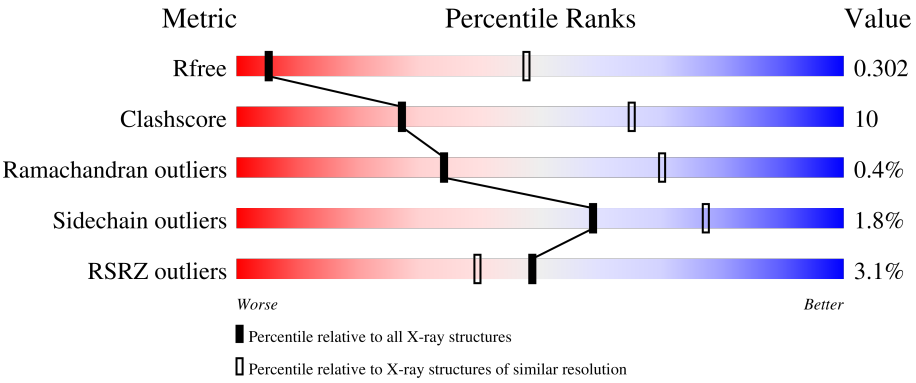
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 3.80 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	1212 (4.00-3.60)
Clashscore	141614	1288 (4.00-3.60)
Ramachandran outliers	138981	1243 (4.00-3.60)
Sidechain outliers	138945	1237 (4.00-3.60)
RSRZ outliers	127900	1121 (4.00-3.60)

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	803	2% 79% 17%
1	B	803	2% 73% 22%
1	C	803	3% 77% 18%
1	D	803	5% 80% 16%

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
2	NAG	A	901	-	-	-	X
2	NAG	C	901	-	-	-	X
3	GYK	C	902	-	-	-	X

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 24066 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 Glutamate receptor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	773	Total	C	N	O	S	0	0	0
			5970	3835	990	1116	29			
1	B	773	Total	C	N	O	S	0	0	0
			6001	3850	991	1131	29			
1	C	773	Total	C	N	O	S	0	0	0
			5960	3829	987	1116	28			
1	D	776	Total	C	N	O	S	0	0	0
			5975	3835	991	1121	28			

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	241	GLU	ASN	engineered mutation	UNP P19491
A	?	-	VAL	deletion	UNP P19491
A	?	-	THR	deletion	UNP P19491
A	?	-	LEU	deletion	UNP P19491
A	?	-	PRO	deletion	UNP P19491
A	?	-	SER	deletion	UNP P19491
A	?	-	GLY	deletion	UNP P19491
A	385	ASP	ASN	engineered mutation	UNP P19491
A	392	GLN	ASN	engineered mutation	UNP P19491
A	564	ASP	-	linker	UNP P19491
A	565	THR	-	linker	UNP P19491
A	566	ASP	-	linker	UNP P19491
A	589	ALA	CYS	engineered mutation	UNP P19491
A	827	GLY	-	cloning artifact	UNP P19491
A	828	LEU	-	cloning artifact	UNP P19491
A	829	VAL	-	cloning artifact	UNP P19491
A	830	PRO	-	cloning artifact	UNP P19491
A	831	ARG	-	cloning artifact	UNP P19491
B	241	GLU	ASN	engineered mutation	UNP P19491
B	?	-	VAL	deletion	UNP P19491
B	?	-	THR	deletion	UNP P19491

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	LEU	deletion	UNP P19491
B	?	-	PRO	deletion	UNP P19491
B	?	-	SER	deletion	UNP P19491
B	?	-	GLY	deletion	UNP P19491
B	385	ASP	ASN	engineered mutation	UNP P19491
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B	564	ASP	-	linker	UNP P19491
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B	829	VAL	-	cloning artifact	UNP P19491
B	830	PRO	-	cloning artifact	UNP P19491
B	831	ARG	-	cloning artifact	UNP P19491
C	241	GLU	ASN	engineered mutation	UNP P19491
C	?	-	VAL	deletion	UNP P19491
C	?	-	THR	deletion	UNP P19491
C	?	-	LEU	deletion	UNP P19491
C	?	-	PRO	deletion	UNP P19491
C	?	-	SER	deletion	UNP P19491
C	?	-	GLY	deletion	UNP P19491
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C	392	GLN	ASN	engineered mutation	UNP P19491
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C	565	THR	-	linker	UNP P19491
C	566	ASP	-	linker	UNP P19491
C	589	ALA	CYS	engineered mutation	UNP P19491
C	827	GLY	-	cloning artifact	UNP P19491
C	828	LEU	-	cloning artifact	UNP P19491
C	829	VAL	-	cloning artifact	UNP P19491
C	830	PRO	-	cloning artifact	UNP P19491
C	831	ARG	-	cloning artifact	UNP P19491
D	241	GLU	ASN	engineered mutation	UNP P19491
D	?	-	VAL	deletion	UNP P19491
D	?	-	THR	deletion	UNP P19491
D	?	-	LEU	deletion	UNP P19491
D	?	-	PRO	deletion	UNP P19491
D	?	-	SER	deletion	UNP P19491
D	?	-	GLY	deletion	UNP P19491
D	385	ASP	ASN	engineered mutation	UNP P19491
D	392	GLN	ASN	engineered mutation	UNP P19491

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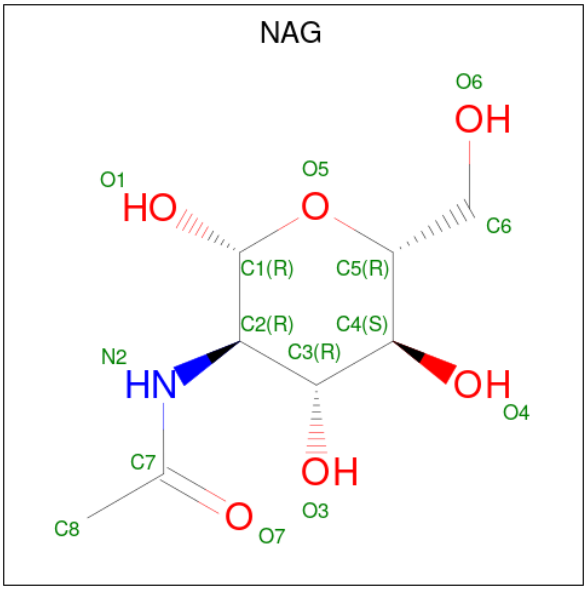
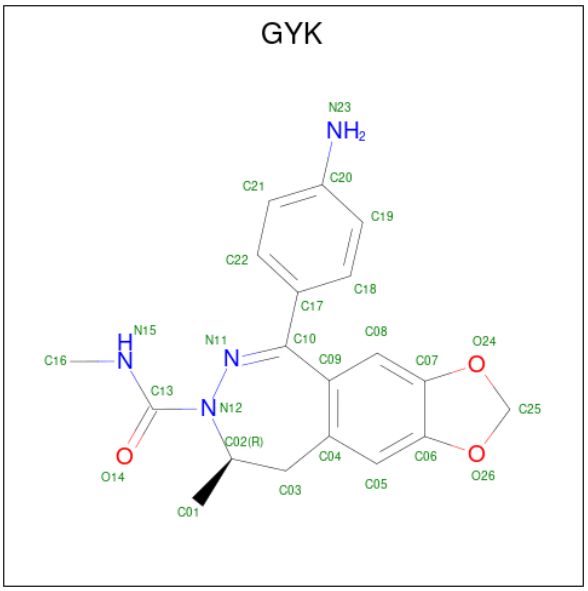
Chain	Residue	Modelled	Actual	Comment	Reference
D	564	ASP	-	linker	UNP P19491
D	565	THR	-	linker	UNP P19491
D	566	ASP	-	linker	UNP P19491
D	589	ALA	CYS	engineered mutation	UNP P19491
D	827	GLY	-	cloning artifact	UNP P19491
D	828	LEU	-	cloning artifact	UNP P19491
D	829	VAL	-	cloning artifact	UNP P19491
D	830	PRO	-	cloning artifact	UNP P19491
D	831	ARG	-	cloning artifact	UNP P19491

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	B	1	Total	C	N	O	0	0
			14	8	1	5		
2	C	1	Total	C	N	O	0	0
			14	8	1	5		
2	D	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is (8R)-5-(4-aminophenyl)-N,8-dimethyl-8,9-dihydro-2H,7H-[1,3]dioxolo[4,5-h][2,3]benzodiazepine-7-carboxamide (three-letter code: GYK) (formula: $C_{19}H_{20}N_4O_3$).



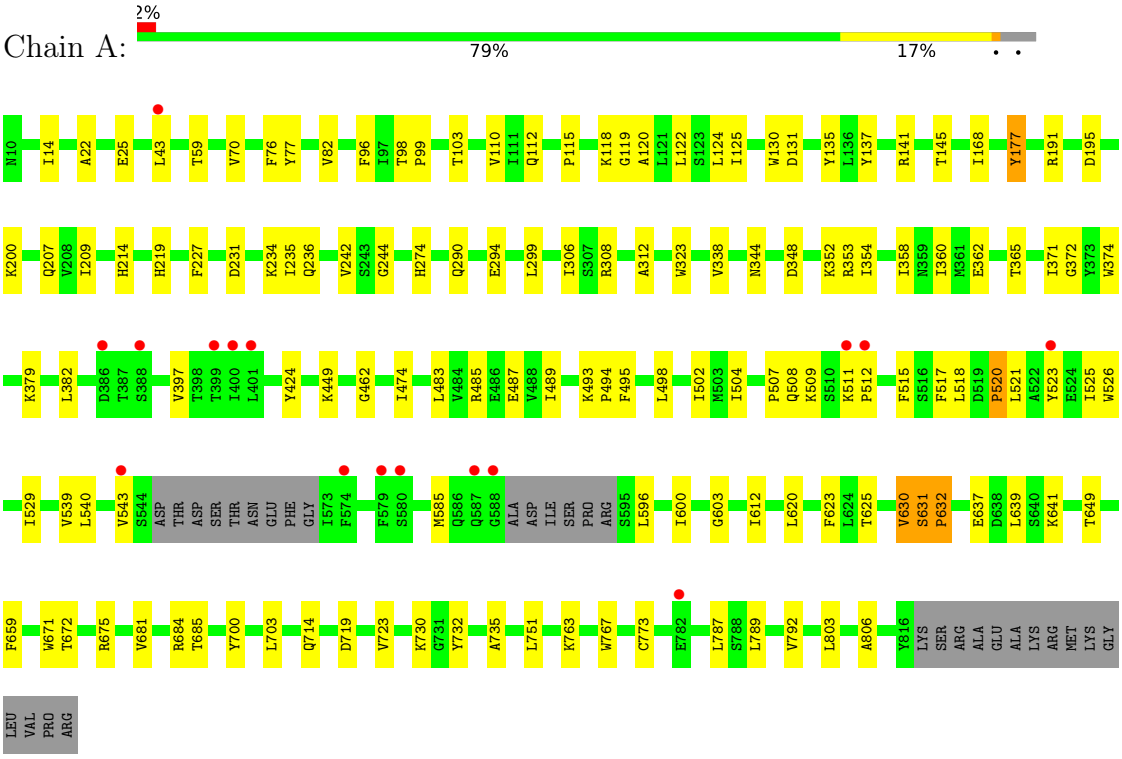
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O 26 19 4 3	0	0
3	B	1	Total C N O 26 19 4 3	0	0
3	C	1	Total C N O 26 19 4 3	0	0
3	D	1	Total C N O 26 19 4 3	0	0

3 Residue-property plots (i)

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

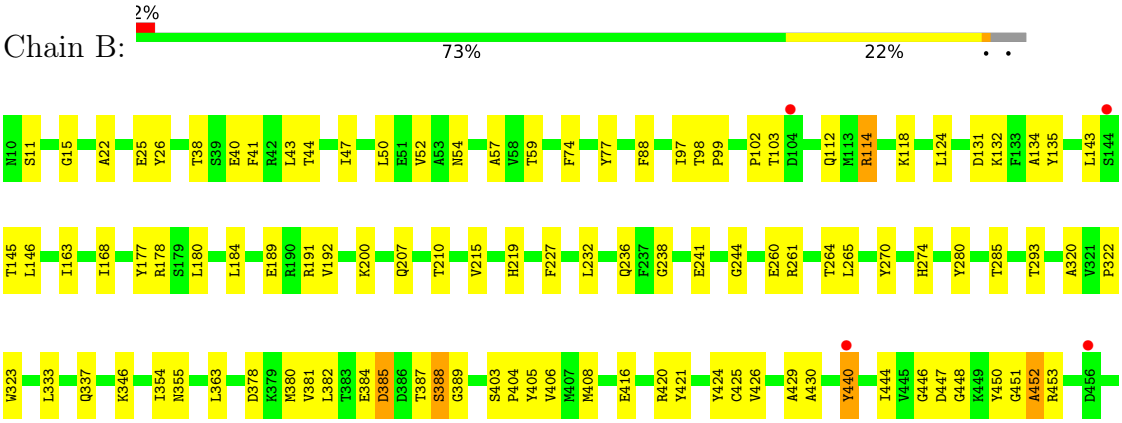
• Molecule 1: Glutamate receptor 2

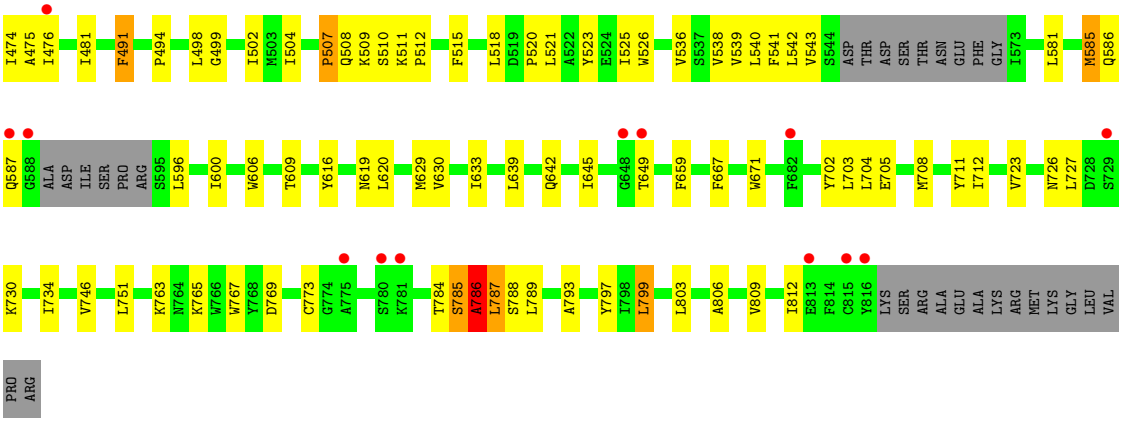
Chain A:



• Molecule 1: Glutamate receptor 2

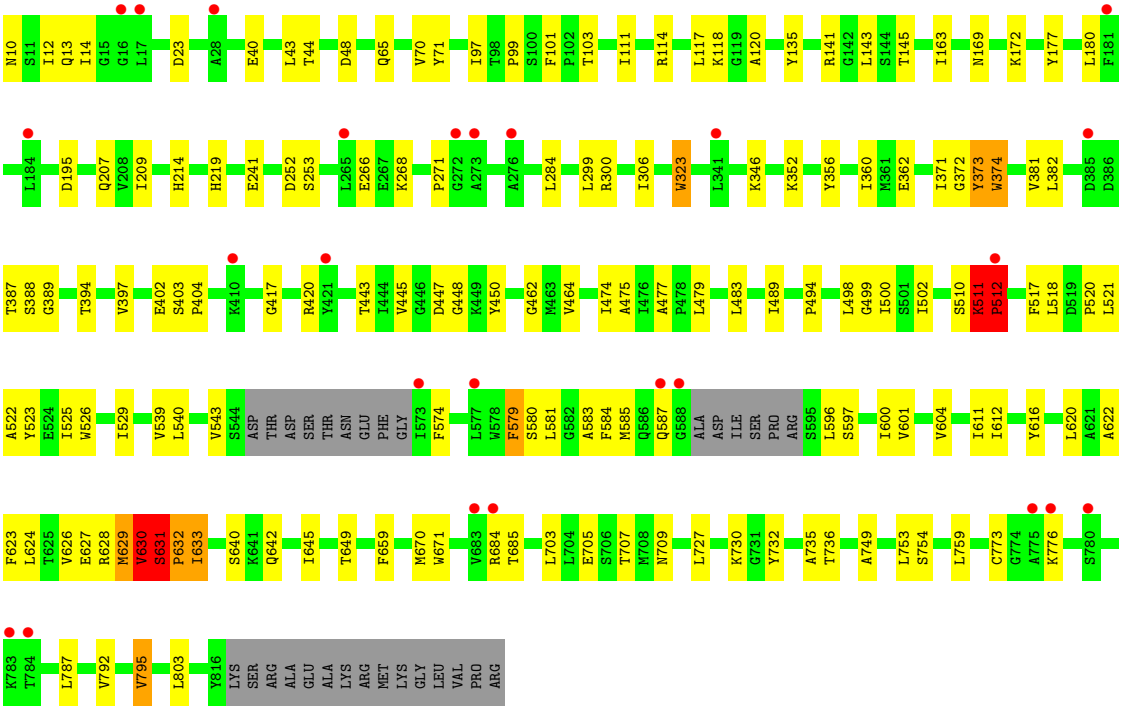
Chain B:





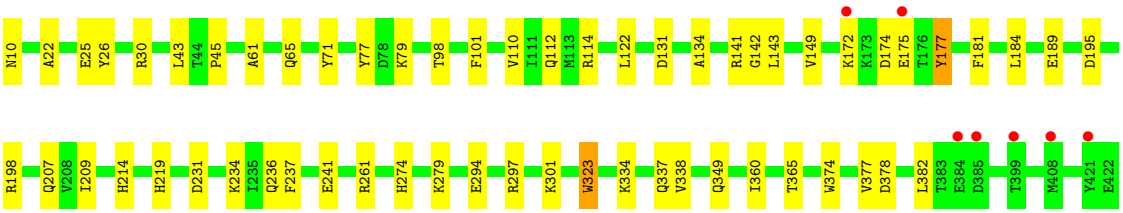
• Molecule 1: Glutamate receptor 2

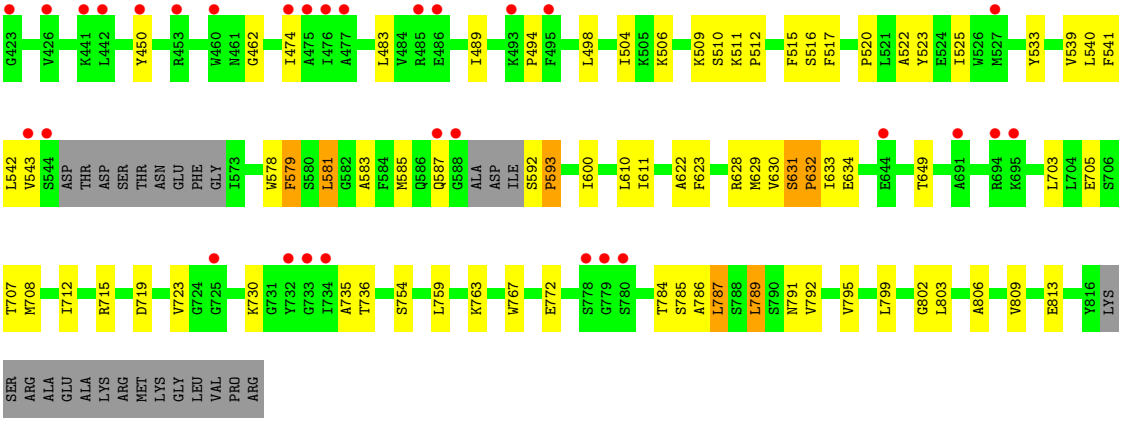
Chain C:



• Molecule 1: Glutamate receptor 2

Chain D:




G423 V426 K441 L442 Y450 R453 W460 N461 G462 I474 A475 I476 A477 L483 V484 R485 E486 I489 K493 P494 F495 L498 I504 K505 K506 K509 S510 K511 P512 F515 S516 F517 P520 L521 A522 Y523 E524 I525 W526 M527 Y533 V539 L540 F541
L542 V543 S544 ASP THR ASP SER THR ASN GLU PHE GLY I573 W578 F579 S580 L581 G582 A583 F584 M585 Q586 Q587 G588 ALA ASP ILE S592 P593 I600 L610 I611 A622 F623 R628 M629 V630 S631 P632 I633 E634 E644 T649 A691 R694 K695 L703 L704 E705 S706
T707 M708 I712 R715 D719 V723 G724 G725 K730 G731 Y732 G733 I734 A735 T736 S764 L759 K763 W767 E772 S778 G779 S780 T784 S785 A786 L787 S788 L789 S790 N791 V792 V795 L799 G802 L803 A806 V809 E813 Y816 LYS
SER ARG ALA GLU ALA LYS ARG MET LYS GLY LEU VAL PRO ARG

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	92.59Å 110.64Å 599.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.49 – 3.80 47.49 – 3.80	Depositor EDS
% Data completeness (in resolution range)	98.5 (47.49-3.80) 98.9 (47.49-3.80)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.49 (at 3.77Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.276 , 0.292 0.283 , 0.302	Depositor DCC
R_{free} test set	3071 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	141.6	Xtriage
Anisotropy	0.130	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.25 , 101.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.34$, $< L^2 > = 0.17$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.86	EDS
Total number of atoms	24066	wwPDB-VP
Average B, all atoms (Å^2)	160.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.16% 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: GYK, NAG

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	0.27	2/6092 (0.0%)	0.44	1/8244 (0.0%)
1	B	0.27	1/6123 (0.0%)	0.55	8/8284 (0.1%)
1	C	0.27	2/6082 (0.0%)	0.50	6/8235 (0.1%)
1	D	0.29	2/6098 (0.0%)	0.45	4/8257 (0.0%)
All	All	0.28	7/24395 (0.0%)	0.49	19/33020 (0.1%)

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	632	PRO	N-CD	9.86	1.61	1.47
1	B	388	SER	N-CA	6.05	1.58	1.46
1	D	512	PRO	N-CD	5.47	1.55	1.47
1	C	632	PRO	N-CD	5.45	1.55	1.47
1	A	632	PRO	N-CD	5.38	1.55	1.47

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	452	ALA	CB-CA-C	-14.64	88.14	110.10
1	C	629	MET	CB-CA-C	-12.59	85.22	110.40
1	B	452	ALA	N-CA-C	12.33	144.30	111.00
1	B	785	SER	CB-CA-C	10.37	129.81	110.10
1	B	453	ARG	N-CA-CB	-10.05	92.51	110.60

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	5970	0	5874	124	0
1	B	6001	0	5924	139	1
1	C	5960	0	5850	154	0
1	D	5975	0	5855	109	1
2	A	14	0	13	1	0
2	B	14	0	13	1	0
2	C	14	0	13	1	0
2	D	14	0	13	1	0
3	A	26	0	0	1	0
3	B	26	0	0	3	0
3	C	26	0	0	3	0
3	D	26	0	0	2	0
All	All	24066	0	23555	482	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

The worst 5 of 482 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:D:628:ARG:CB	1:D:630:VAL:HG22	1.12	1.55
1:C:512:PRO:HG3	3:C:902:GYK:C16	1.51	1.40
1:D:628:ARG:CB	1:D:630:VAL:CG2	2.02	1.35
1:A:77:TYR:CD1	1:A:82:VAL:HB	1.65	1.28
1:C:622:ALA:O	1:C:626:VAL:HG23	1.39	1.20

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:378:ASP:O	1:D:10:ASN:N[1_455]	2.18	0.02

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	767/803 (96%)	720 (94%)	45 (6%)	2 (0%)	41	74
1	B	767/803 (96%)	713 (93%)	51 (7%)	3 (0%)	34	70
1	C	767/803 (96%)	716 (93%)	45 (6%)	6 (1%)	19	57
1	D	770/803 (96%)	718 (93%)	50 (6%)	2 (0%)	41	74
All	All	3071/3212 (96%)	2867 (93%)	191 (6%)	13 (0%)	34	70

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	786	ALA
1	C	511	LYS
1	C	512	PRO
1	C	628	ARG
1	D	593	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	627/683 (92%)	621 (99%)	6 (1%)	76	86
1	B	638/683 (93%)	618 (97%)	20 (3%)	40	65
1	C	624/683 (91%)	617 (99%)	7 (1%)	73	85
1	D	625/683 (92%)	613 (98%)	12 (2%)	57	76
All	All	2514/2732 (92%)	2469 (98%)	45 (2%)	59	77

5 of 45 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	579	PHE
1	D	515	PHE
1	C	585	MET
1	C	795	VAL
1	D	533	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	219	HIS
1	C	587	GLN
1	D	791	ASN
1	B	112	GLN
1	A	344	ASN

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)

8 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	GYK	C	902	-	27,29,29	3.75	9 (33%)	30,42,42	2.18	9 (30%)
2	NAG	D	901	1	14,14,15	0.37	0	17,19,21	0.51	0
2	NAG	A	901	1	14,14,15	0.48	0	17,19,21	0.51	0
3	GYK	A	902	-	27,29,29	3.81	9 (33%)	30,42,42	2.16	10 (33%)
3	GYK	B	902	-	27,29,29	3.76	9 (33%)	30,42,42	2.03	7 (23%)
3	GYK	D	902	-	27,29,29	3.77	8 (29%)	30,42,42	2.48	8 (26%)
2	NAG	C	901	1	14,14,15	0.29	0	17,19,21	0.58	0
2	NAG	B	901	1	14,14,15	0.33	0	17,19,21	0.53	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
3	GYK	C	902	-	-	2/6/32/32	0/3/4/4
2	NAG	D	901	1	-	0/6/23/26	0/1/1/1
2	NAG	A	901	1	-	0/6/23/26	0/1/1/1
3	GYK	A	902	-	-	2/6/32/32	0/3/4/4
3	GYK	B	902	-	-	4/6/32/32	0/3/4/4
3	GYK	D	902	-	-	2/6/32/32	0/3/4/4
2	NAG	C	901	1	-	0/6/23/26	0/1/1/1
2	NAG	B	901	1	-	0/6/23/26	0/1/1/1

The worst 5 of 35 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	902	GYK	C10-N11	14.17	1.46	1.30
3	D	902	GYK	C10-N11	14.04	1.46	1.30
3	C	902	GYK	C10-N11	13.93	1.45	1.30
3	B	902	GYK	C10-N11	13.59	1.45	1.30
3	B	902	GYK	C13-N15	8.42	1.45	1.34

The worst 5 of 34 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	902	GYK	C09-C10-C17	-7.67	109.19	118.11
3	C	902	GYK	C09-C10-C17	-5.62	111.58	118.11
3	D	902	GYK	O24-C07-C08	5.12	134.70	127.85
3	B	902	GYK	O24-C07-C08	5.09	134.66	127.85

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	902	GYK	O24-C07-C08	5.03	134.58	127.85

There are no chirality outliers.

5 of 10 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	902	GYK	C09-C10-C17-C18
3	A	902	GYK	C09-C10-C17-C22
3	B	902	GYK	N11-C10-C17-C18
3	C	902	GYK	C09-C10-C17-C18
3	C	902	GYK	C09-C10-C17-C22

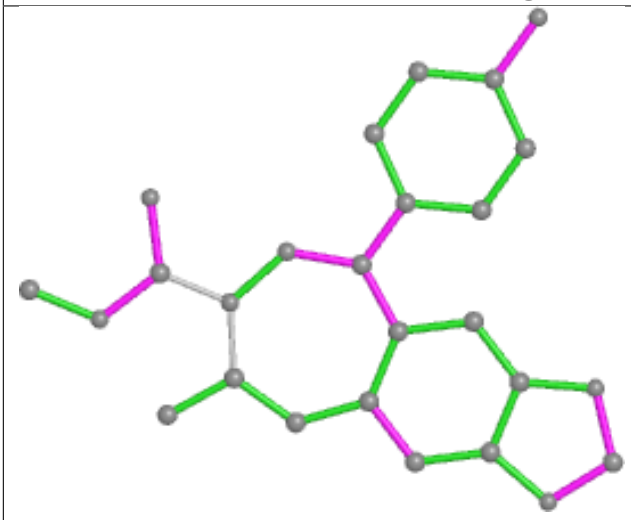
There are no ring outliers.

8 monomers are involved in 13 short contacts:

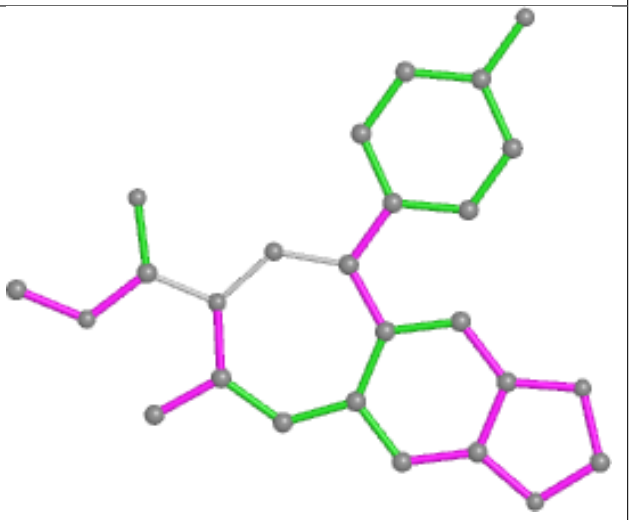
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	902	GYK	3	0
2	D	901	NAG	1	0
2	A	901	NAG	1	0
3	A	902	GYK	1	0
3	B	902	GYK	3	0
3	D	902	GYK	2	0
2	C	901	NAG	1	0
2	B	901	NAG	1	0

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.

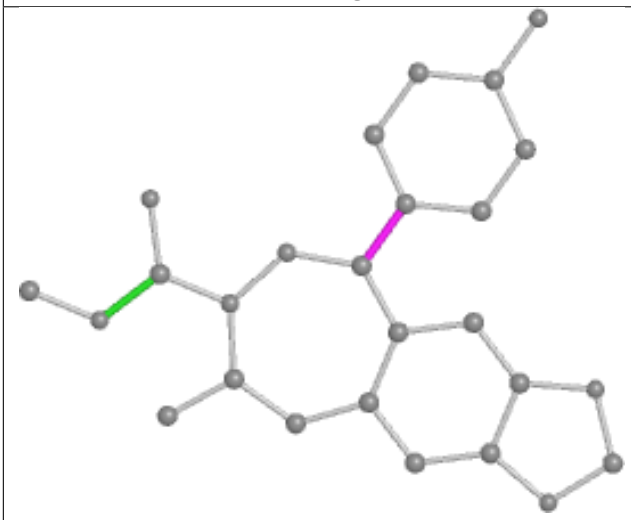
Ligand GYK C 902



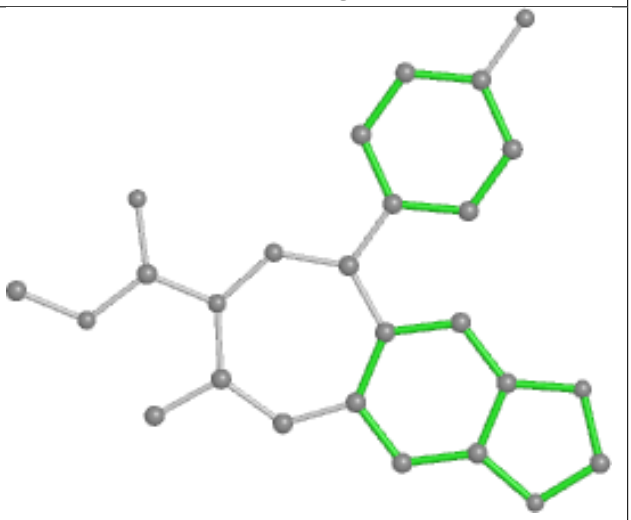
Bond lengths



Bond angles

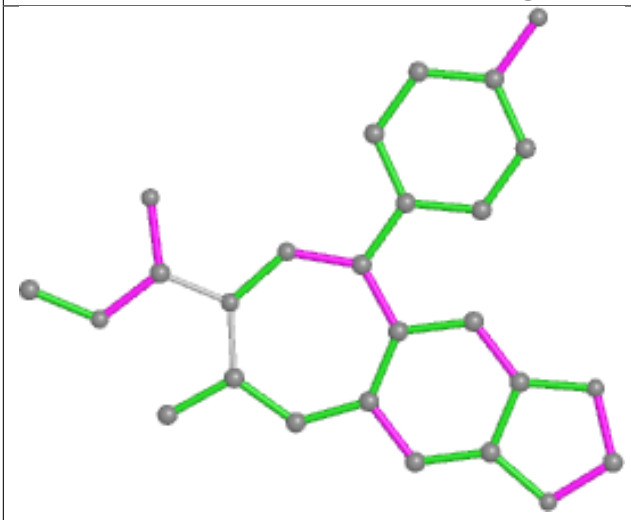


Torsions

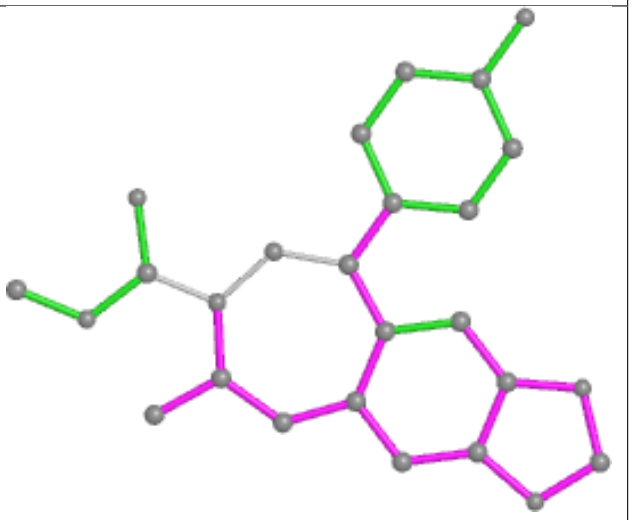


Rings

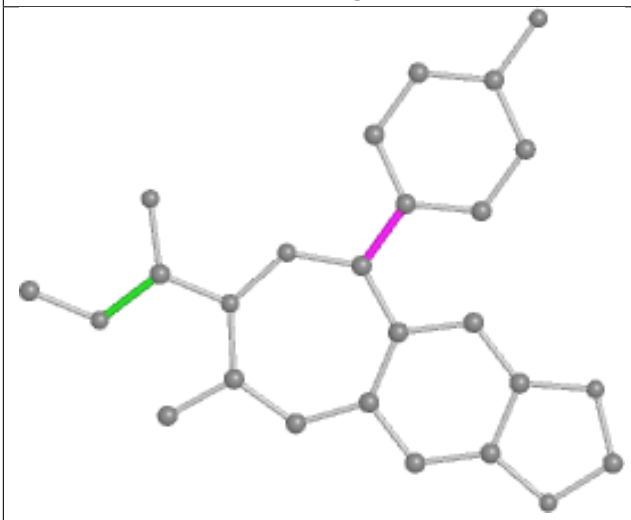
Ligand GYK A 902



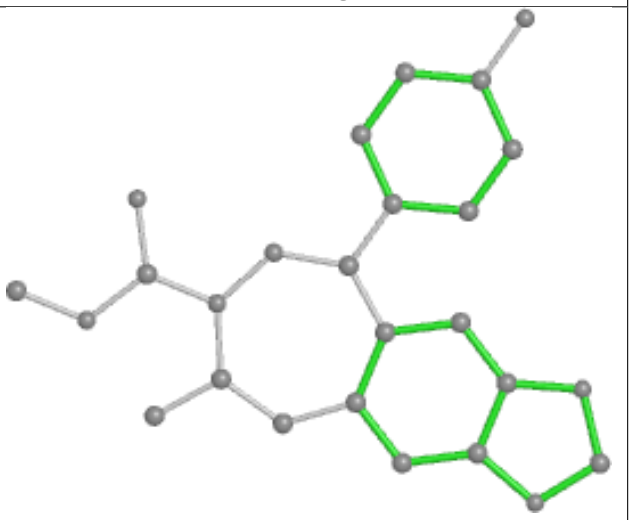
Bond lengths



Bond angles

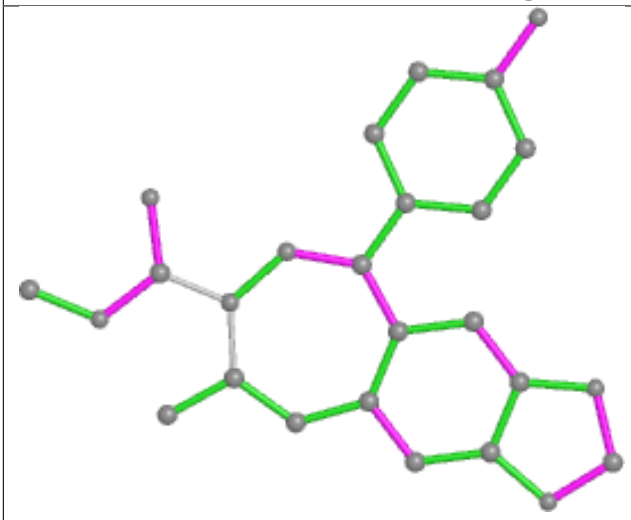


Torsions

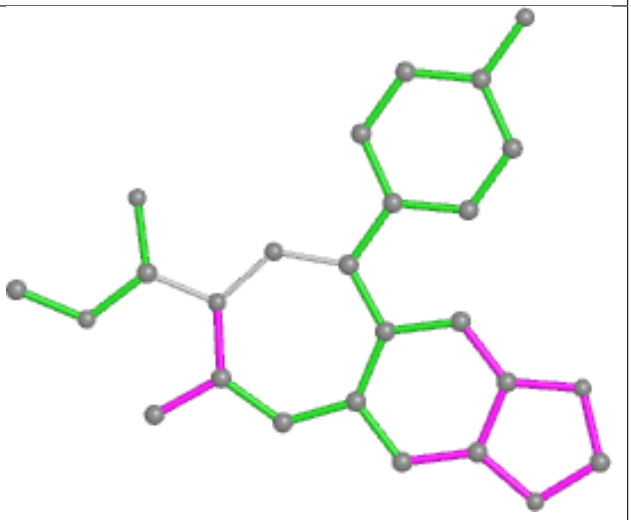


Rings

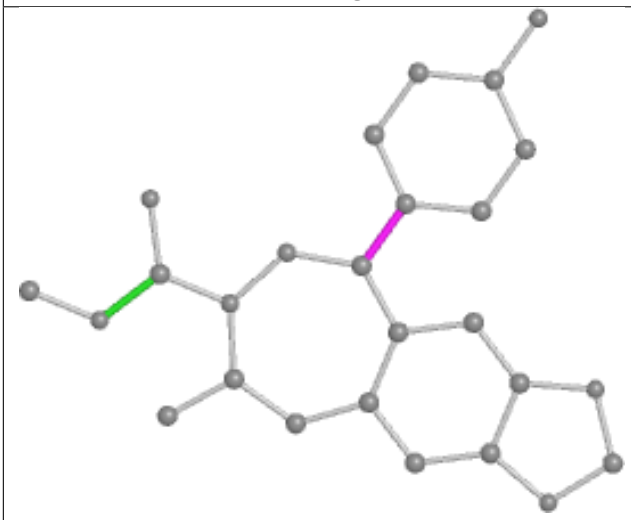
Ligand GYK B 902



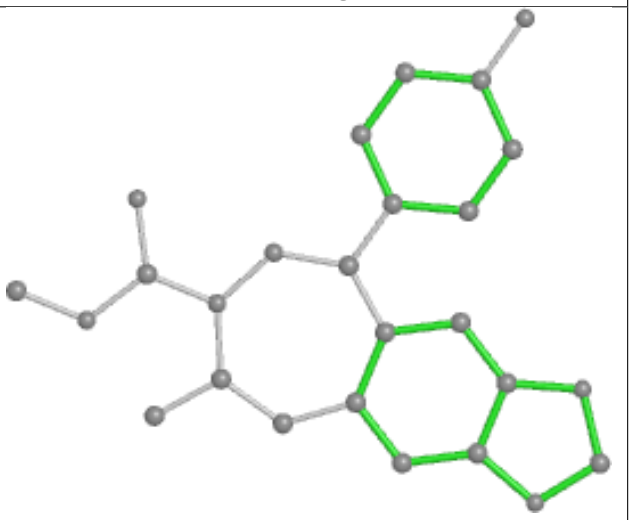
Bond lengths



Bond angles

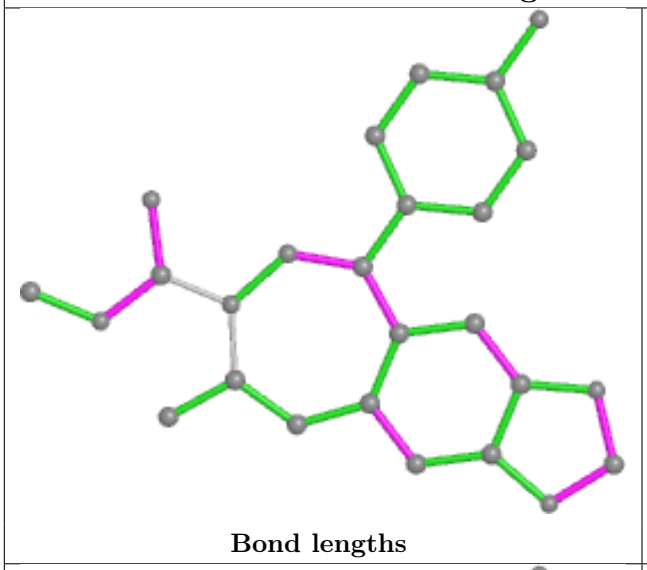


Torsions

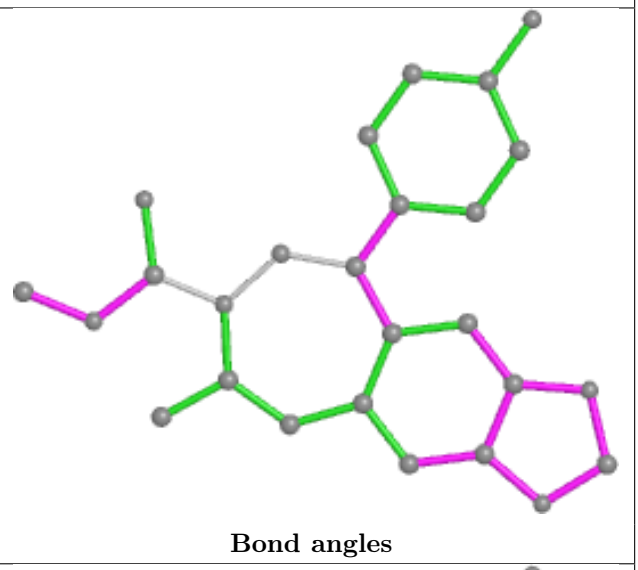


Rings

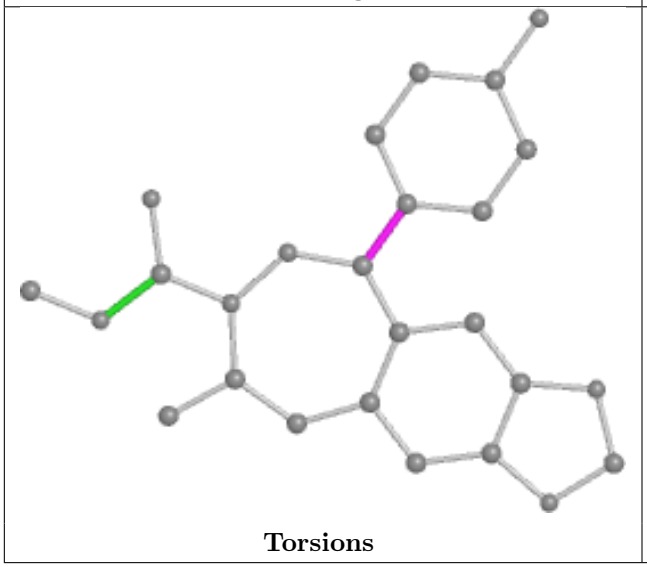
Ligand GYK D 902



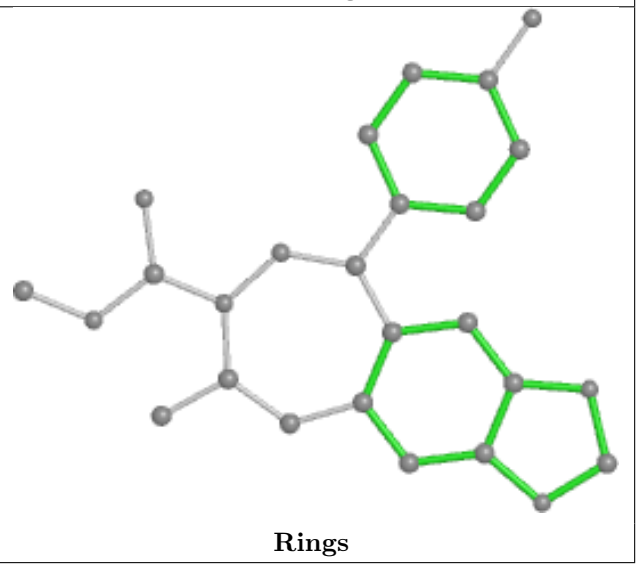
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	773/803 (96%)	-0.13	16 (2%)	63	55	72, 144, 238, 285	0
1	B	773/803 (96%)	-0.14	17 (2%)	62	54	69, 131, 228, 272	0
1	C	773/803 (96%)	0.07	25 (3%)	47	38	101, 167, 232, 261	0
1	D	776/803 (96%)	0.09	38 (4%)	29	25	109, 180, 249, 281	0
All	All	3095/3212 (96%)	-0.03	96 (3%)	49	40	69, 155, 240, 285	0

The worst 5 of 96 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	476	ILE	9.3
1	D	475	ALA	7.8
1	D	477	ALA	5.5
1	D	544	SER	5.3
1	A	782	GLU	5.2

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

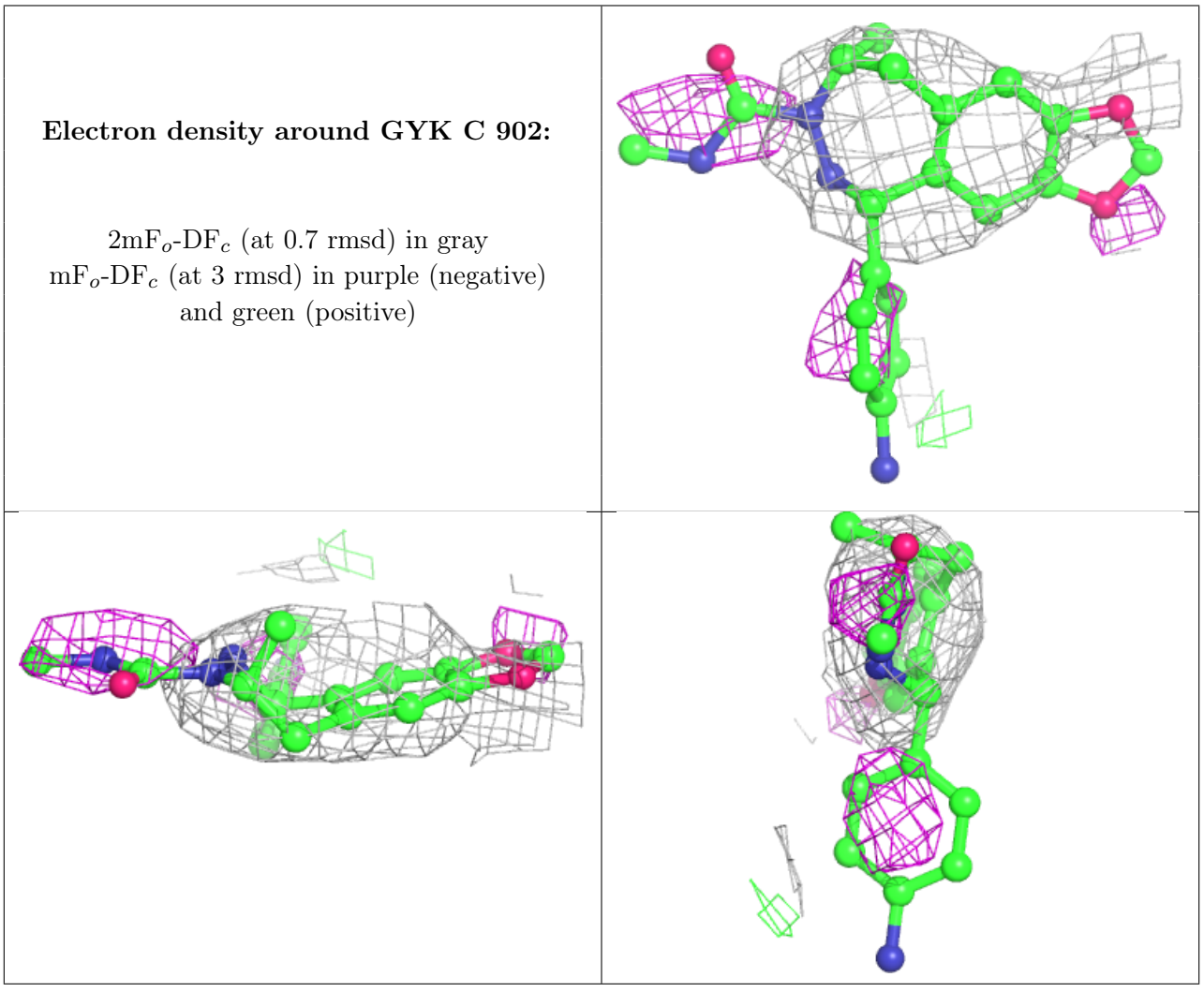
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	NAG	C	901	14/15	0.27	0.67	416,416,418,424	0
2	NAG	A	901	14/15	0.62	1.02	255,255,257,262	0
2	NAG	D	901	14/15	0.66	0.36	269,269,270,272	0
2	NAG	B	901	14/15	0.71	0.28	196,196,199,200	0
3	GYK	C	902	26/26	0.74	0.68	128,169,210,219	0
3	GYK	A	902	26/26	0.82	0.41	128,169,210,219	0
3	GYK	D	902	26/26	0.90	0.18	128,169,210,219	0
3	GYK	B	902	26/26	0.91	0.21	128,169,210,219	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.

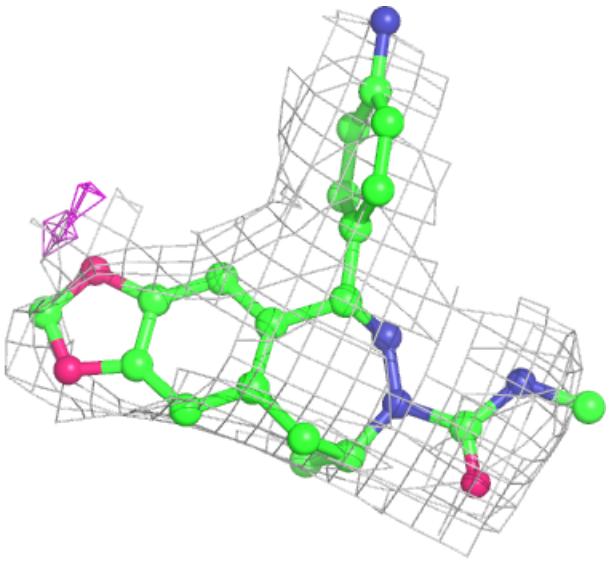
Electron density around GYK C 902:

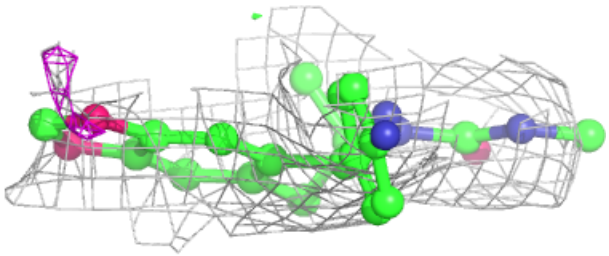
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

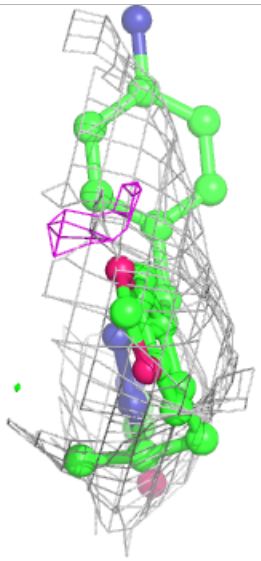


Electron density around GYK A 902:

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

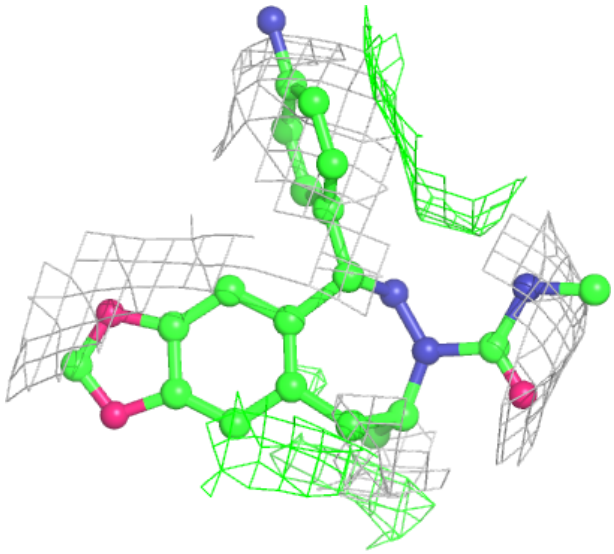


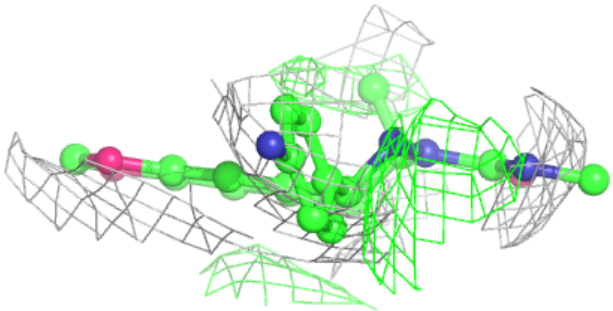


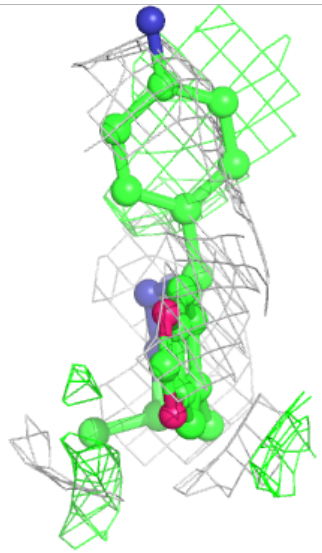


Electron density around GYK D 902:

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

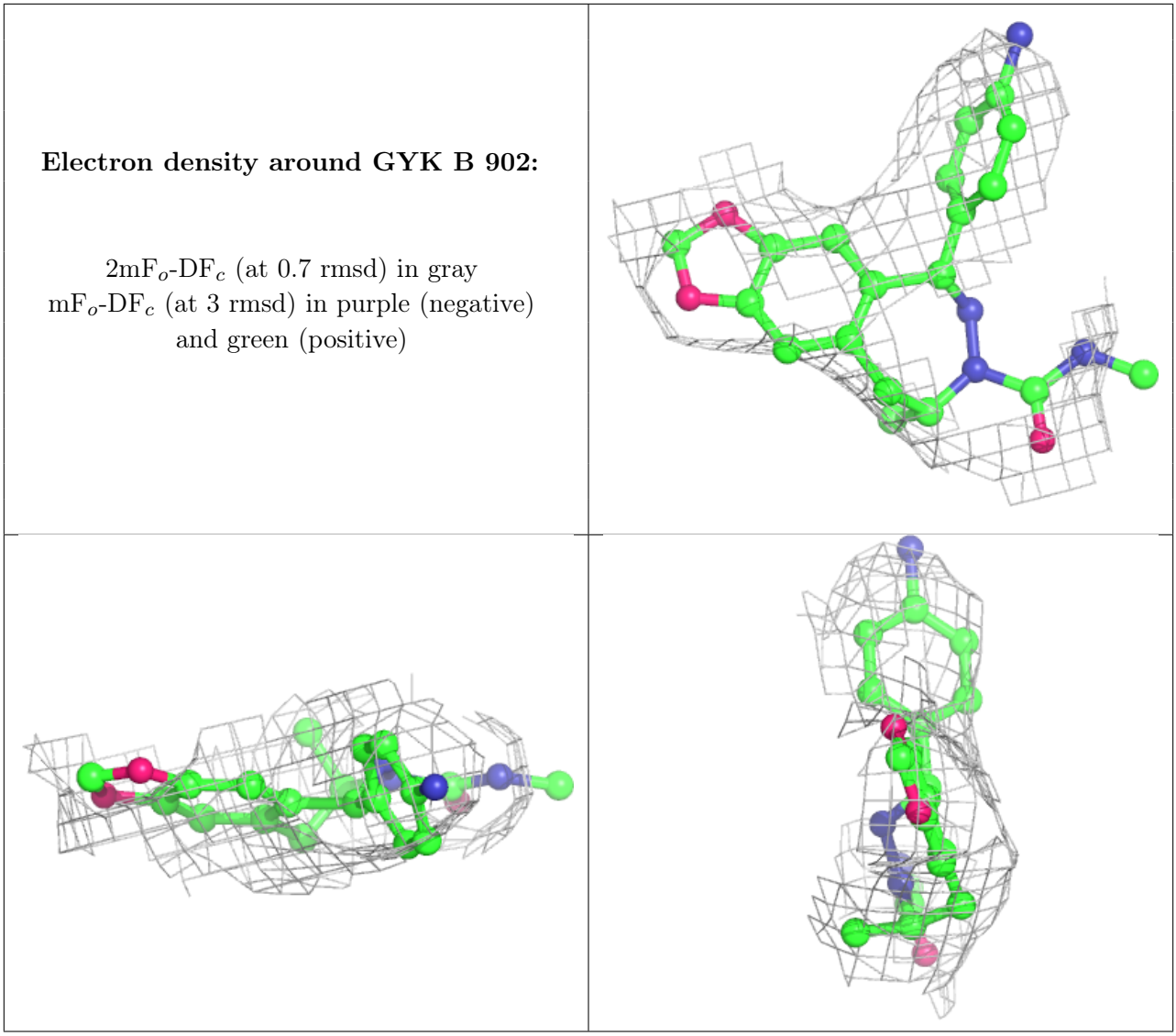






Electron density around GYK B 902:

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



6.5 Other polymers (i)

There are no such residues in this entry.