Full wwPDB X-ray Structure Validation Report (i)

Apr 21, 2025 – 11:25 PM EDT

PDB ID	:	5WNE / pdb_00005wne
Title	:	X-RAY CO-STRUCTURE OF RHO-ASSOCIATED PROTEIN KINASE (ROCK1) WITH A HIGHLY SELECTIVE INHIBITOR
Authors	:	Li, X.
Deposited on	:	2017-07-31
Resolution	:	2.60 Å(reported)

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

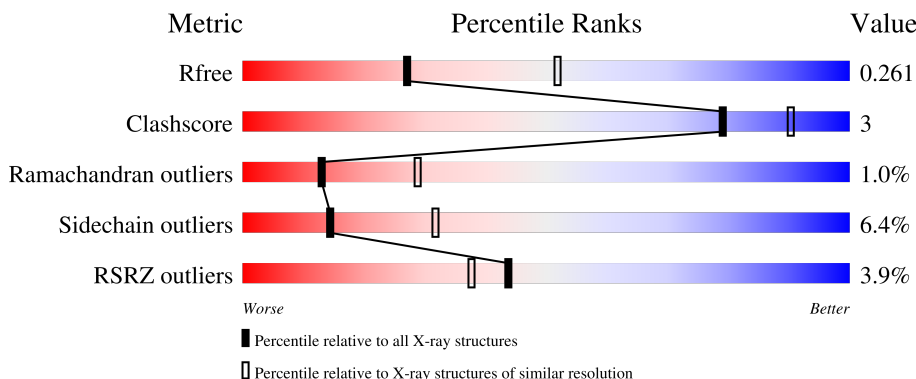|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

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 2.60 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.261
Clashscore		3
Ramachandran outliers		1.0%
Sidechain outliers		6.4%
RSRZ outliers		3.9%

Worse *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	3775 (2.60-2.60)
Clashscore	180529	4181 (2.60-2.60)
Ramachandran outliers	177936	4129 (2.60-2.60)
Sidechain outliers	177891	4129 (2.60-2.60)
RSRZ outliers	164620	3775 (2.60-2.60)

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	415	%; 81% 11% 7%
1	B	415	6%; 75% 9% · 15%
1	C	415	5%; 80% 11% · 7%
1	D	415	2%; 83% 11% · 5%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 12536 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 Rho-associated protein kinase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	384	Total	C	N	O	S	0	0	0
			3119	1995	514	589	21			
1	B	352	Total	C	N	O	S	0	0	0
			2885	1862	471	531	21			
1	C	384	Total	C	N	O	S	0	0	0
			3135	2011	518	584	22			
1	D	396	Total	C	N	O	S	0	0	0
			3222	2059	532	610	21			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	expression tag	UNP Q13464
A	2	SER	-	expression tag	UNP Q13464
A	3	LEU	-	expression tag	UNP Q13464
A	4	HIS	-	expression tag	UNP Q13464
A	5	MET	-	expression tag	UNP Q13464
B	1	GLY	-	expression tag	UNP Q13464
B	2	SER	-	expression tag	UNP Q13464
B	3	LEU	-	expression tag	UNP Q13464
B	4	HIS	-	expression tag	UNP Q13464
B	5	MET	-	expression tag	UNP Q13464
C	1	GLY	-	expression tag	UNP Q13464
C	2	SER	-	expression tag	UNP Q13464
C	3	LEU	-	expression tag	UNP Q13464
C	4	HIS	-	expression tag	UNP Q13464
C	5	MET	-	expression tag	UNP Q13464
D	1	GLY	-	expression tag	UNP Q13464
D	2	SER	-	expression tag	UNP Q13464
D	3	LEU	-	expression tag	UNP Q13464
D	4	HIS	-	expression tag	UNP Q13464
D	5	MET	-	expression tag	UNP Q13464

- Molecule 2 is 3,4-dimethoxy-N-({3-[(5-methyl-4,5,6,7-tetrahydro[1,3]thiazolo[5,4-c]pyridin-2 -yl)carbamoyl]phenyl}methyl)benzamide (CCD ID: B4J) (formula: $C_{24}H_{26}N_4O_4S$) (labeled as "Ligand of Interest" by depositor).
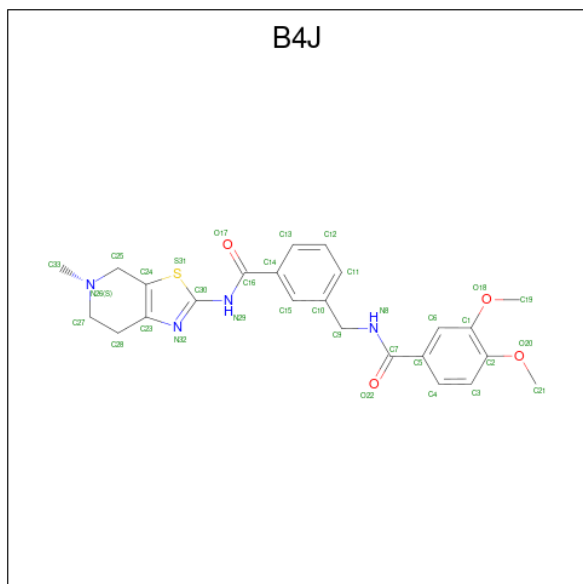
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			33	24	4	4	1		
2	B	1	Total	C	N	O	S	0	0
			33	24	4	4	1		
2	C	1	Total	C	N	O	S	0	0
			33	24	4	4	1		
2	D	1	Total	C	N	O	S	0	0
			33	24	4	4	1		

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).

GOL

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 6	C 3	O 3	0	0

- Molecule 4 is water.

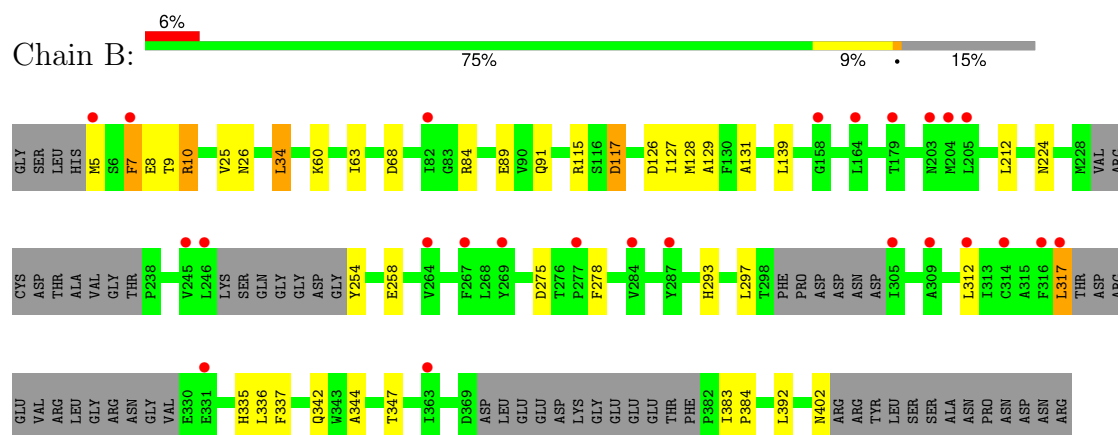| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	19	Total 19	O 19	0	0
4	B	3	Total 3	O 3	0	0
4	C	8	Total 8	O 8	0	0
4	D	7	Total 7	O 7	0	0

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.
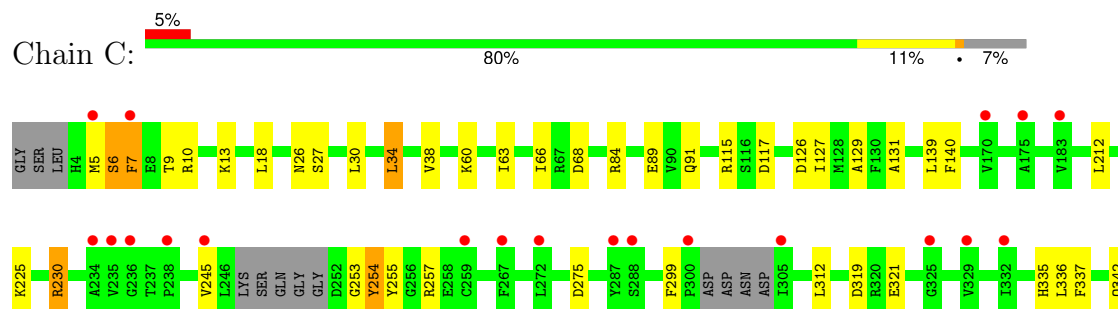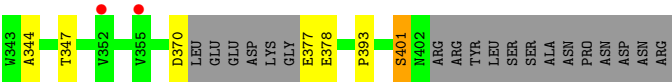
• Molecule 1: Rho-associated protein kinase 1
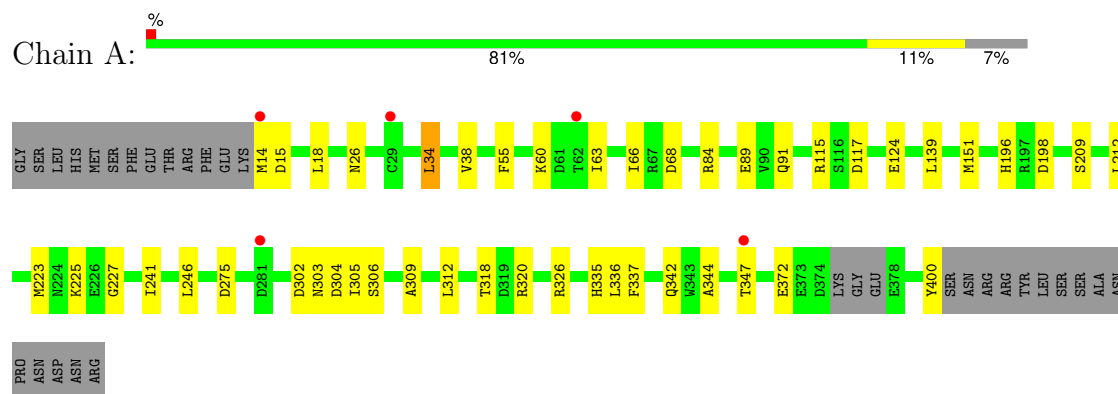
Chain A:

• Molecule 1: Rho-associated protein kinase 1

Chain B:

• Molecule 1: Rho-associated protein kinase 1

Chain C:

W343 A344 T347 V352 V355 D370 LEU GLU GLU ASP LYS GLY E377 E378 P393 S401 N402 ARG ARG TYR LEU SER SER ALA ASN PRO ASN ASP ASN ARG

• Molecule 1: Rho-associated protein kinase 1

Chain D:

GLY SER LEU HIS MET SER F7 E8 K13 M14 L18 V25 N26 S27 L30 L34 R58 Y59 K60 I63 D68 M71 I82 G83 R84 E89 V90 Q91 R115 S116 D117 I127 M128 A129 F130 A131 L139 A142 Y155 M156 P157 L212

T219 K222 K225 V235 Q249 Y254 W261 D275 L283 I305 L312 R320 N327 G328 V329 H335 L336 F337 Q342 W343 A344 T347 D374 E377 Y399 Y400 S401 N402 ARG ARG TYR LEU SER SER ALA ASN PRO ASN ASP ASN ARG
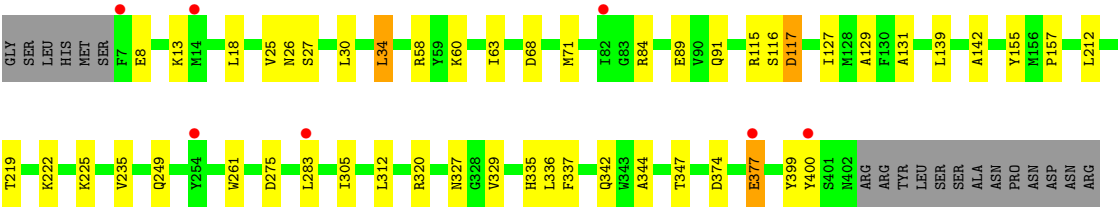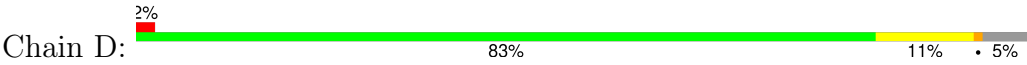
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	161.85Å 82.16Å 169.37Å 90.00° 115.05° 90.00°	Depositor
Resolution (Å)	40.00 – 2.60 40.00 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.8 (40.00-2.60) 99.8 (40.00-2.60)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.07 (at 2.61Å)	Xtriage
Refinement program	BUSTER 2.11.7	Depositor
R, R_{free}	0.228 , 0.246 0.244 , 0.261	Depositor DCC
R_{free} test set	3146 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	73.0	Xtriage
Anisotropy	0.119	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 90.2	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.51, < L^2 > = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	12536	wwPDB-VP
Average B, all atoms (Å^2)	114.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.42% 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 $< \lvert L \rvert >$, $< L^2 >$ 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: GOL, B4J

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	0.39	0/3193	0.61	0/4316
1	B	0.38	0/2954	0.58	0/3982
1	C	0.38	0/3210	0.60	0/4334
1	D	0.39	0/3299	0.61	0/4457
All	All	0.39	0/12656	0.60	0/17089

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 ⓘ

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	3119	0	3023	14	0
1	B	2885	0	2818	18	0
1	C	3135	0	3045	19	0
1	D	3222	0	3120	18	0
2	A	33	0	0	0	0
2	B	33	0	0	0	0
2	C	33	0	0	0	0
2	D	33	0	0	1	0
3	A	6	0	8	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	19	0	0	0	0
4	B	3	0	0	0	0
4	C	8	0	0	0	0
4	D	7	0	0	0	0
All	All	12536	0	12014	63	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 3.

All (63) 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:71:MET:H	1:D:400:TYR:HE1	1.42	0.65
1:C:6:SER:HB2	1:C:10:ARG:HG3	1.77	0.65
1:C:7:PHE:O	1:C:10:ARG:HB2	1.99	0.62
1:D:377:GLU:HA	1:D:377:GLU:OE2	2.01	0.60
1:B:297:LEU:HD22	1:B:317:LEU:HD22	1.83	0.60
1:C:30:LEU:HB3	1:D:30:LEU:HB3	1.85	0.58
1:B:278:PHE:HZ	1:B:317:LEU:HD21	1.68	0.58
1:B:335:HIS:HD2	1:B:337:PHE:H	1.54	0.56
1:B:7:PHE:HA	1:B:9:THR:N	2.21	0.56
1:A:335:HIS:HD2	1:A:337:PHE:H	1.54	0.55
1:B:129:ALA:HB2	1:B:139:LEU:HD23	1.89	0.55
1:D:335:HIS:HD2	1:D:337:PHE:H	1.53	0.54
1:C:140:PHE:O	1:C:401:SER:HB2	2.06	0.54
1:C:335:HIS:HD2	1:C:337:PHE:H	1.54	0.54
1:C:230:ARG:HG2	1:C:254:TYR:HB3	1.89	0.53
1:B:128:MET:HB3	1:B:139:LEU:HB2	1.91	0.52
1:A:344:ALA:HB3	1:A:347:THR:HG22	1.92	0.52
1:C:344:ALA:HB3	1:C:347:THR:HG22	1.92	0.51
1:B:344:ALA:HB3	1:B:347:THR:HG22	1.92	0.51
1:A:15:ASP:HB2	1:A:18:LEU:HD12	1.92	0.51
1:D:344:ALA:HB3	1:D:347:THR:HG22	1.92	0.50
1:C:27:SER:HB2	1:D:18:LEU:HD13	1.93	0.49
1:B:293:HIS:HB2	1:B:317:LEU:HD21	1.95	0.47
1:A:34:LEU:HD23	1:A:63:ILE:HD11	1.97	0.47
1:C:66:ILE:HD11	1:D:25:VAL:HG21	1.97	0.46
1:A:124:GLU:HG2	1:A:151:MET:HE1	1.98	0.46
1:C:34:LEU:HD23	1:C:63:ILE:HD11	1.97	0.45
1:D:127:ILE:O	1:D:131:ALA:HB2	2.16	0.45
1:B:7:PHE:HB3	1:B:10:ARG:HD2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:142:ALA:HB3	1:D:399:TYR:HB3	1.99	0.44
1:B:34:LEU:HD23	1:B:63:ILE:HD11	1.99	0.44
1:A:196:HIS:HD2	1:A:198:ASP:H	1.65	0.44
1:C:245:VAL:HG22	1:C:255:TYR:CZ	2.53	0.44
1:D:261:TRP:CZ2	1:D:329:VAL:HG12	2.52	0.44
1:C:6:SER:HB3	1:C:9:THR:HB	2.00	0.43
1:B:293:HIS:HB2	1:B:317:LEU:CD2	2.48	0.43
1:C:129:ALA:HB2	1:C:139:LEU:HD23	2.01	0.43
2:D:900:B4J:O17	2:D:900:B4J:S31	2.77	0.43
1:D:84:ARG:HD3	1:D:89:GLU:HB3	1.99	0.43
1:A:305:ILE:O	1:A:309:ALA:HB3	2.19	0.43
1:B:84:ARG:HD3	1:B:89:GLU:HB3	2.00	0.42
1:C:18:LEU:HD13	1:D:27:SER:HB2	2.01	0.42
1:C:335:HIS:CD2	1:C:337:PHE:H	2.36	0.42
1:A:223:MET:HB3	1:A:227:GLY:HA2	2.02	0.42
1:A:84:ARG:HD3	1:A:89:GLU:HB3	2.00	0.42
1:A:55:PHE:HB2	1:B:392:LEU:HB3	2.02	0.42
1:A:38:VAL:HG21	1:A:63:ILE:HG13	2.02	0.42
1:A:335:HIS:CD2	1:A:337:PHE:H	2.36	0.42
1:C:84:ARG:HD3	1:C:89:GLU:HB3	2.01	0.41
1:A:66:ILE:HD11	1:B:25:VAL:HG21	2.01	0.41
1:C:38:VAL:HG21	1:C:63:ILE:HG13	2.02	0.41
1:B:335:HIS:CD2	1:B:337:PHE:H	2.36	0.41
1:C:393:PRO:HA	1:D:58:ARG:NH2	2.36	0.41
1:D:155:TYR:O	1:D:157:PRO:HD3	2.21	0.41
1:D:34:LEU:HD23	1:D:63:ILE:HD11	2.01	0.41
1:C:127:ILE:O	1:C:131:ALA:HB2	2.21	0.41
1:B:383:ILE:HA	1:B:384:PRO:HD3	1.93	0.41
1:D:129:ALA:HB2	1:D:139:LEU:HD23	2.03	0.41
1:D:335:HIS:CD2	1:D:337:PHE:H	2.36	0.40
1:A:241:ILE:HG21	1:A:246:LEU:HD13	2.02	0.40
1:B:127:ILE:O	1:B:131:ALA:HB2	2.21	0.40
1:B:7:PHE:HA	1:B:9:THR:H	1.85	0.40
1:D:219:THR:HB	1:D:235:VAL:CG1	2.51	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	380/415 (92%)	359 (94%)	17 (4%)	4 (1%)	12	26
1	B	340/415 (82%)	325 (96%)	12 (4%)	3 (1%)	14	31
1	C	376/415 (91%)	357 (95%)	16 (4%)	3 (1%)	16	34
1	D	394/415 (95%)	373 (95%)	16 (4%)	5 (1%)	10	21
All	All	1490/1660 (90%)	1414 (95%)	61 (4%)	15 (1%)	13	29

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	224	ASN
1	C	60	LYS
1	D	249	GLN
1	A	60	LYS
1	A	303	ASN
1	A	304	ASP
1	B	60	LYS
1	D	60	LYS
1	D	117	ASP
1	D	374	ASP
1	A	306	SER
1	D	116	SER
1	B	117	ASP
1	C	7	PHE
1	C	253	GLY

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	341/369 (92%)	320 (94%)	21 (6%)	15	33
1	B	316/369 (86%)	296 (94%)	20 (6%)	15	32
1	C	343/369 (93%)	317 (92%)	26 (8%)	11	23
1	D	352/369 (95%)	332 (94%)	20 (6%)	17	37
All	All	1352/1476 (92%)	1265 (94%)	87 (6%)	14	32

All (87) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	MET
1	A	26	ASN
1	A	34	LEU
1	A	68	ASP
1	A	91	GLN
1	A	115	ARG
1	A	117	ASP
1	A	139	LEU
1	A	209	SER
1	A	212	LEU
1	A	225	LYS
1	A	275	ASP
1	A	302	ASP
1	A	312	LEU
1	A	318	THR
1	A	320	ARG
1	A	326	ARG
1	A	336	LEU
1	A	342	GLN
1	A	372	GLU
1	A	400	TYR
1	B	5	MET
1	B	7	PHE
1	B	8	GLU
1	B	10	ARG
1	B	26	ASN
1	B	34	LEU
1	B	68	ASP
1	B	91	GLN
1	B	115	ARG
1	B	117	ASP

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Mol	Chain	Res	Type
1	B	126	ASP
1	B	212	LEU
1	B	254	TYR
1	B	258	GLU
1	B	275	ASP
1	B	312	LEU
1	B	317	LEU
1	B	336	LEU
1	B	342	GLN
1	B	402	ASN
1	C	5	MET
1	C	6	SER
1	C	13	LYS
1	C	26	ASN
1	C	34	LEU
1	C	68	ASP
1	C	91	GLN
1	C	115	ARG
1	C	117	ASP
1	C	126	ASP
1	C	212	LEU
1	C	225	LYS
1	C	230	ARG
1	C	254	TYR
1	C	257	ARG
1	C	275	ASP
1	C	299	PHE
1	C	312	LEU
1	C	319	ASP
1	C	321	GLU
1	C	336	LEU
1	C	342	GLN
1	C	370	ASP
1	C	377	GLU
1	C	378	GLU
1	C	401	SER
1	D	8	GLU
1	D	13	LYS
1	D	26	ASN
1	D	34	LEU
1	D	68	ASP
1	D	91	GLN

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Mol	Chain	Res	Type
1	D	115	ARG
1	D	117	ASP
1	D	212	LEU
1	D	222	LYS
1	D	225	LYS
1	D	275	ASP
1	D	283	LEU
1	D	305	ILE
1	D	312	LEU
1	D	320	ARG
1	D	327	ASN
1	D	336	LEU
1	D	342	GLN
1	D	377	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	26	ASN
1	A	196	HIS
1	A	311	ASN
1	A	335	HIS
1	B	196	HIS
1	B	311	ASN
1	B	335	HIS
1	C	311	ASN
1	C	335	HIS
1	D	26	ASN
1	D	190	HIS
1	D	196	HIS
1	D	303	ASN
1	D	311	ASN
1	D	335	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

5 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	B4J	A	501	-	33,36,36	0.97	2 (6%)	39,50,50	2.87	6 (15%)
3	GOL	A	502	-	5,5,5	0.06	0	5,5,5	0.11	0
2	B4J	D	900	-	33,36,36	0.88	1 (3%)	39,50,50	2.88	6 (15%)
2	B4J	C	900	-	33,36,36	0.89	1 (3%)	39,50,50	2.98	7 (17%)
2	B4J	B	900	-	33,36,36	0.95	2 (6%)	39,50,50	3.03	6 (15%)

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	B4J	A	501	-	-	0/19/30/30	0/4/4/4
3	GOL	A	502	-	-	0/4/4/4	-
2	B4J	D	900	-	-	0/19/30/30	0/4/4/4
2	B4J	C	900	-	-	0/19/30/30	0/4/4/4
2	B4J	B	900	-	-	4/19/30/30	0/4/4/4

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	B4J	C23-C24	-2.86	1.36	1.42
2	B	900	B4J	C23-C24	-2.64	1.36	1.42
2	D	900	B4J	C23-C24	-2.43	1.37	1.42
2	C	900	B4J	C23-C24	-2.41	1.37	1.42
2	B	900	B4J	C30-N29	2.24	1.40	1.36
2	A	501	B4J	C28-C23	2.09	1.54	1.50

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	900	B4J	C25-N26-C27	13.89	121.35	109.75
2	C	900	B4J	C25-N26-C27	13.81	121.27	109.75
2	D	900	B4J	C25-N26-C27	13.17	120.75	109.75
2	A	501	B4J	C25-N26-C27	12.11	119.86	109.75
2	A	501	B4J	C28-C27-N26	11.08	120.81	110.61
2	C	900	B4J	C28-C27-N26	10.48	120.26	110.61
2	B	900	B4J	C28-C27-N26	10.44	120.22	110.61
2	D	900	B4J	C28-C27-N26	10.17	119.97	110.61
2	B	900	B4J	O18-C1-C2	3.65	120.36	115.40
2	D	900	B4J	C19-O18-C1	3.10	122.06	117.51
2	C	900	B4J	C19-O18-C1	3.09	122.04	117.51
2	A	501	B4J	C19-O18-C1	2.95	121.83	117.51
2	A	501	B4J	O20-C2-C1	2.86	119.29	115.40
2	B	900	B4J	C21-O20-C2	2.77	121.57	117.51
2	C	900	B4J	C21-O20-C2	2.69	121.46	117.51
2	B	900	B4J	O20-C2-C1	2.67	119.03	115.40
2	D	900	B4J	O20-C2-C1	2.60	118.94	115.40
2	B	900	B4J	O18-C1-C6	-2.44	119.87	124.08
2	A	501	B4J	O18-C1-C2	2.37	118.61	115.40
2	D	900	B4J	O18-C1-C2	2.18	118.37	115.40
2	C	900	B4J	C27-C28-C23	-2.18	108.99	113.00
2	A	501	B4J	O20-C2-C3	-2.18	120.62	124.30
2	C	900	B4J	O20-C2-C1	2.17	118.35	115.40
2	D	900	B4J	C21-O20-C2	2.13	120.63	117.51
2	C	900	B4J	O18-C1-C2	2.07	118.21	115.40

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	900	B4J	C2-C1-O18-C19
2	B	900	B4J	C1-C2-O20-C21

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Mol	Chain	Res	Type	Atoms
2	B	900	B4J	C6-C1-O18-C19
2	B	900	B4J	C3-C2-O20-C21

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	900	B4J	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 B4J A 501

Bond lengths | Bond angles

Torsions | Rings

Ligand B4J D 900	
Bond lengths	Bond angles
Torsions	Rings

Ligand B4J C 900	
Bond lengths	Bond angles
Torsions	Rings

Ligand B4J B 900	
Bond lengths	Bond angles
Torsions	Rings
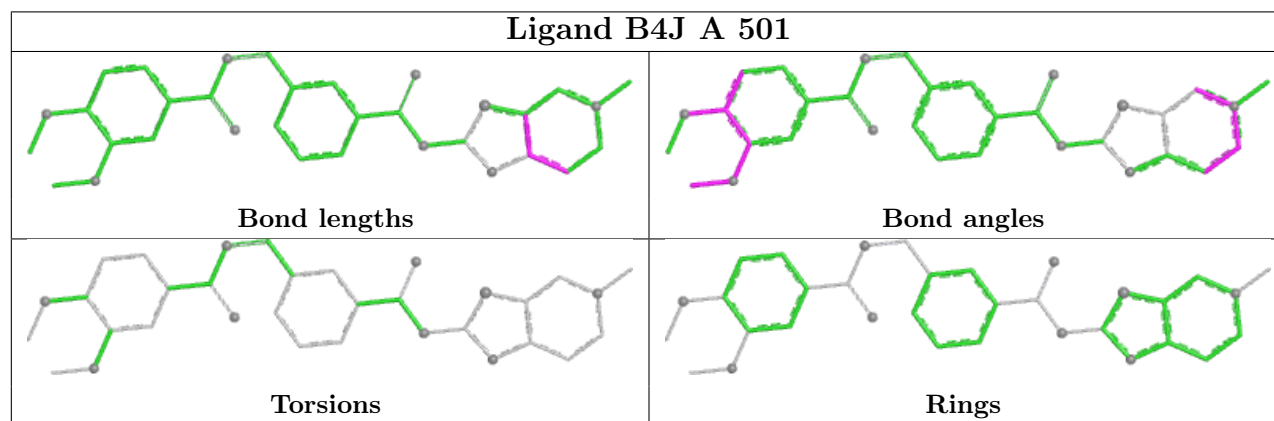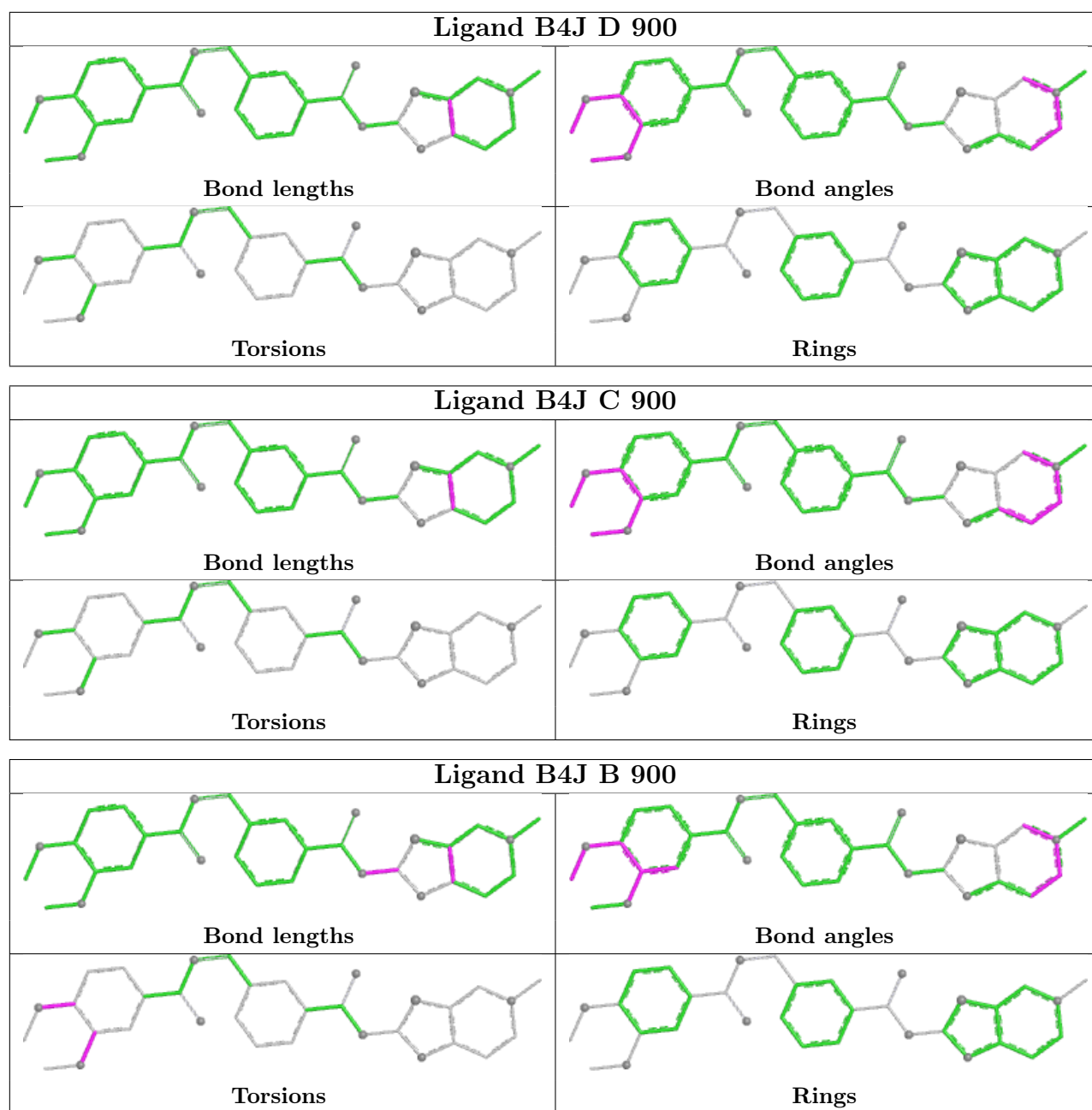
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	384/415 (92%)	-0.00	5 (1%)	74	70	54, 81, 124, 169	0
1	B	352/415 (84%)	0.63	25 (7%)	23	18	89, 154, 216, 234	0
1	C	384/415 (92%)	0.42	22 (5%)	30	25	58, 119, 218, 244	0
1	D	396/415 (95%)	0.04	7 (1%)	67	62	51, 82, 125, 151	0
All	All	1516/1660 (91%)	0.26	59 (3%)	44	38	51, 100, 208, 244	0

All (59) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	400	TYR	4.7
1	C	235	VAL	4.3
1	C	329	VAL	4.0
1	B	309	ALA	3.7
1	C	287	TYR	3.6
1	D	377	GLU	3.5
1	B	305	ILE	3.4
1	C	305	ILE	3.4
1	B	314	CYS	3.4
1	C	5	MET	3.4
1	B	287	TYR	3.3
1	A	347	THR	3.3
1	B	312	LEU	3.1
1	B	205	LEU	3.1
1	B	204	MET	2.9
1	D	283	LEU	2.9
1	B	277	PRO	2.8
1	B	179	THR	2.8
1	C	300	PRO	2.8
1	C	355	VAL	2.7
1	A	14	MET	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	267	PHE	2.7
1	C	272	LEU	2.7
1	B	158	GLY	2.7
1	B	316	PHE	2.6
1	A	62	THR	2.6
1	B	245	VAL	2.6
1	C	325	GLY	2.6
1	A	281	ASP	2.6
1	B	203	ASN	2.6
1	B	331	GLU	2.5
1	C	245	VAL	2.5
1	C	288	SER	2.5
1	B	264	VAL	2.5
1	B	82	ILE	2.5
1	C	175	ALA	2.4
1	D	254	TYR	2.4
1	D	7	PHE	2.3
1	C	332	ILE	2.3
1	B	317	LEU	2.3
1	C	238	PRO	2.3
1	D	14	MET	2.3
1	B	267	PHE	2.3
1	B	269	TYR	2.3
1	C	352	VAL	2.3
1	B	7	PHE	2.2
1	B	246	LEU	2.2
1	D	82	ILE	2.2
1	C	236	GLY	2.2
1	C	7	PHE	2.1
1	A	29	CYS	2.1
1	B	284	VAL	2.1
1	B	164	LEU	2.1
1	C	259	CYS	2.1
1	C	170	VAL	2.1
1	C	234	ALA	2.1
1	B	5	MET	2.0
1	B	363	ILE	2.0
1	C	183	VAL	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
3	GOL	A	502	6/6	0.65	0.10	133,134,134,134	0
2	B4J	B	900	33/33	0.92	0.10	133,141,149,157	0
2	B4J	A	501	33/33	0.93	0.10	67,70,78,81	0
2	B4J	C	900	33/33	0.94	0.10	87,91,95,96	0
2	B4J	D	900	33/33	0.96	0.07	57,59,61,63	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.
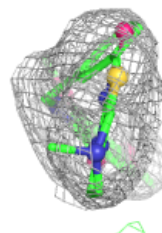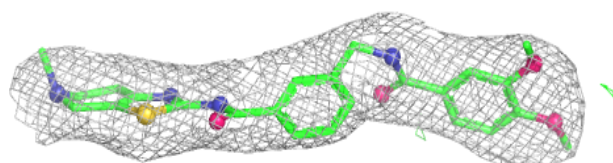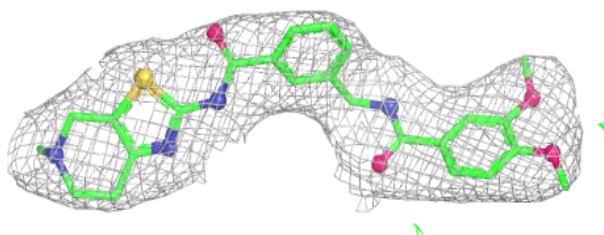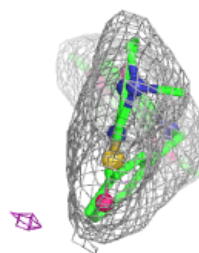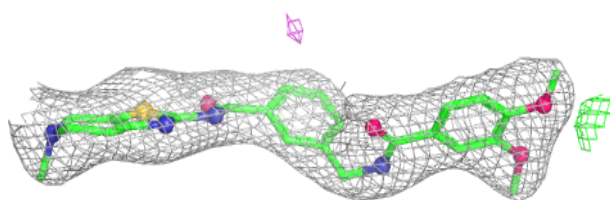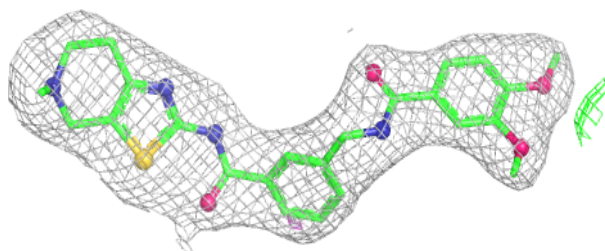

Electron density around B4J B 900:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
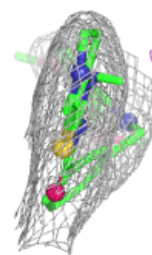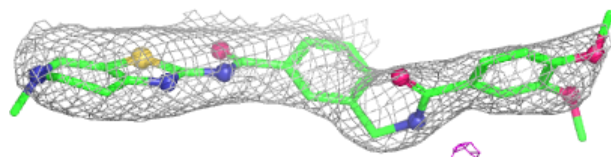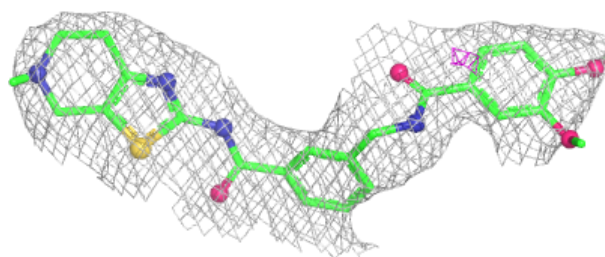
Electron density around B4J A 501:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
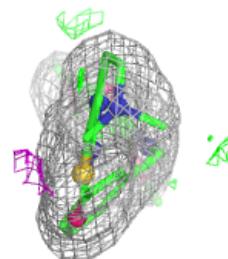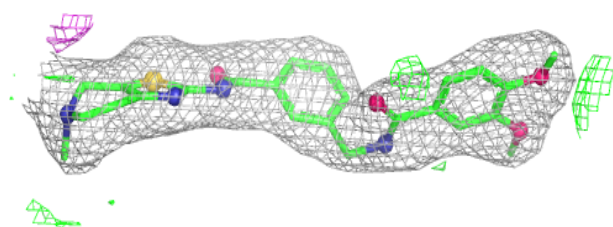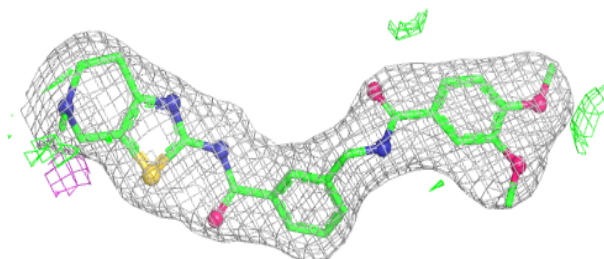
Electron density around B4J C 900:

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

Electron density around B4J D 900:

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

6.5　Other polymers ⓘ

There are no such residues in this entry.