Full wwPDB X-ray Structure Validation Report ⓘ

Sep 5, 2024 – 10:05 AM EDT

PDB ID	:	8TV5
Title	:	Structure of the EphA2 LBDCRD bound to FabS1CE_L1 in a 2:1 (EphA2 to Fab) ratio
Authors	:	Singer, A.U.; Bruce, H.A.; Blazer, L.; Adams, J.J.; Sicheri, F.; Sidhu, S.S.
Deposited on	:	2023-08-17
Resolution	:	4.60 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 ⓘ 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 ⓘ) were used in the production of this report:

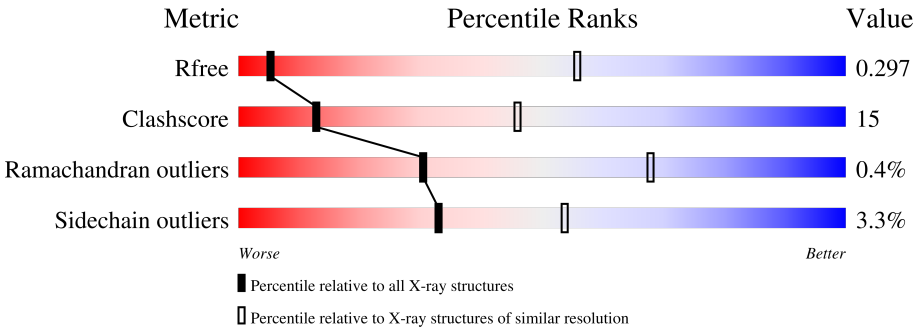
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.002 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.3

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 4.60 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1068 (5.30-3.90)
Clashscore	180529	1123 (5.30-3.90)
Ramachandran outliers	177936	1015 (5.30-3.90)
Sidechain outliers	177891	1016 (5.32-3.88)

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%

Mol	Chain	Length	Quality of chain
1	A	236	79% 17%
2	B	211	72% 27%
3	C	308	61% 33% 5%
3	F	308	61% 33%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 7736 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 S1CE variant of Fab_L1 heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	231	Total	C	N	O	S	0	0	0
			1723	1097	283	337	6			

- Molecule 2 is a protein called S1CE variant of Fab_L1 light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	210	Total	C	N	O	S	0	0	0
			1557	970	256	325	6			

- Molecule 3 is a protein called Ephrin type-A receptor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	F	299	Total	C	N	O	S	0	0	0
			2246	1423	363	438	22			
3	C	294	Total	C	N	O	S	0	0	0
			2208	1401	360	426	21			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	327	LEU	-	expression tag	UNP P29317
F	328	VAL	-	expression tag	UNP P29317
F	329	PRO	-	expression tag	UNP P29317
F	330	ARG	-	expression tag	UNP P29317
C	327	LEU	-	expression tag	UNP P29317
C	328	VAL	-	expression tag	UNP P29317
C	329	PRO	-	expression tag	UNP P29317
C	330	ARG	-	expression tag	UNP P29317

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

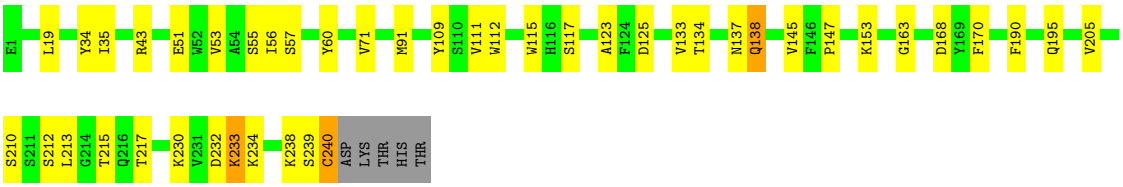
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	2	Total Mg 2 2	0	0

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. 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. 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.

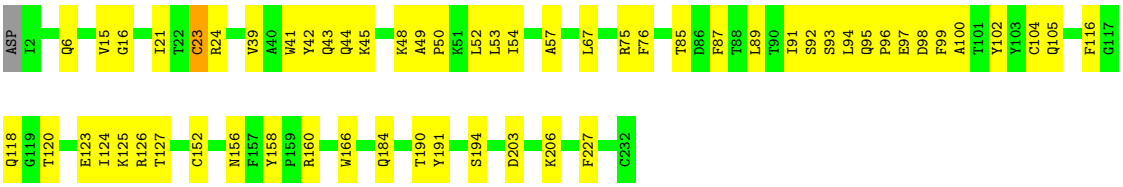
• Molecule 1: S1CE variant of Fab_L1 heavy chain

Chain A:



• Molecule 2: S1CE variant of Fab_L1 light chain

Chain B:

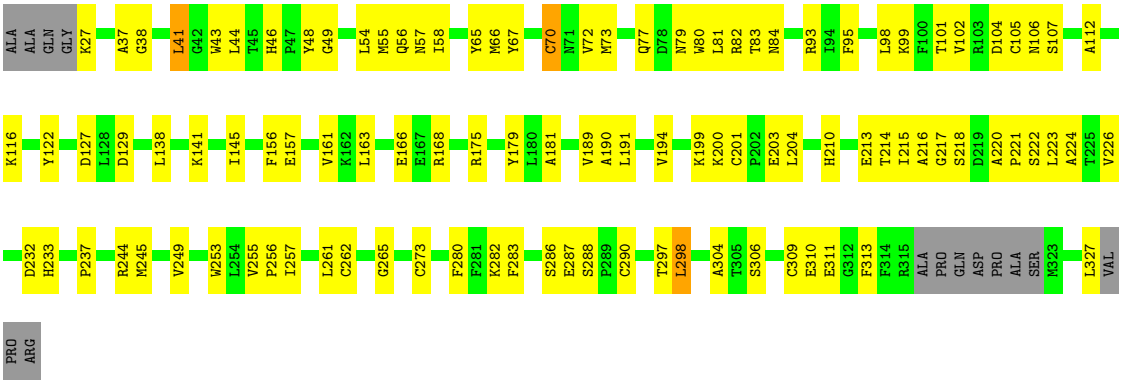


• Molecule 3: Ephrin type-A receptor 2

Chain F:

• Molecule 3: Ephrin type-A receptor 2

Chain C:


ALA ALA GLN GLY K27 A37 G38 L41 G42 W43 L44 T45 H46 P47 Y48 G49 L54 M55 Q56 N57 I58 Y65 M66 Y67 C70 N71 V72 M73 Q77 D78 N79 W80 L81 R82 T83 N84 R93 I94 F95 L98 K99 F100 T101 V102 R103 D104 C105 N106 S107 A112
K116 Y122 D127 L128 D129 L138 K141 I145 F156 E157 V161 K162 L163 E166 E167 R168 R175 Y179 L180 A181 V189 A190 L191 V194 K199 K200 C201 P202 E203 L204 H210 E213 T214 I215 A216 G217 S218 D219 A220 P221 S222 L223 A224 T225 V226
D232 H233 P237 R244 M245 V249 W253 L254 V255 P256 I257 L261 C262 G265 C273 P280 P281 K282 F283 S286 E287 S288 P289 C290 T297 L298 A304 T305 S306 C309 E310 E311 G312 F313 F314 R315 ALA PRO GLN ASP PRO ALA SER M323 L327 VAL
PRO ARG

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	92.88Å 72.89Å 241.96Å 90.00° 89.04° 90.00°	Depositor
Resolution (Å)	120.96 – 4.60 120.96 – 4.60	Depositor EDS
% Data completeness (in resolution range)	98.8 (120.96-4.60) 98.8 (120.96-4.60)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.76 (at 4.66Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.265 , 0.298 0.265 , 0.297	Depositor DCC
R_{free} test set	8308 reflections (10.00%)	wwPDB-VP
Wilson B-factor (Å^2)	160.0	Xtriage
Anisotropy	0.493	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.24 , 216.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.42$, $< L^2 > = 0.25$	Xtriage
Estimated twinning fraction	0.038 for -h,-k,l	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	7736	wwPDB-VP
Average B, all atoms (Å^2)	267.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.45% 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: MG

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	0.28	0/1773	0.49	0/2427
2	B	0.26	0/1590	0.51	0/2169
3	C	0.28	0/2266	0.62	3/3090 (0.1%)
3	F	0.28	0/2306	0.64	3/3150 (0.1%)
All	All	0.27	0/7935	0.58	6/10836 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	C	0	1
3	F	0	1
All	All	0	2

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	41	LEU	CB-CG-CD1	9.03	126.35	111.00
3	C	41	LEU	CA-CB-CG	7.24	131.95	115.30
3	F	135	GLN	C-N-CA	5.64	135.79	121.70
3	F	159	ARG	C-N-CA	5.56	135.59	121.70
3	C	298	LEU	CA-CB-CG	5.35	127.61	115.30
3	F	223	LEU	CA-CB-CG	5.25	127.39	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	222	SER	Peptide
3	F	220	ALA	Peptide

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	1723	0	1634	41	0
2	B	1557	0	1454	45	0
3	C	2208	0	2019	78	0
3	F	2246	0	2038	73	0
4	C	2	0	0	0	0
All	All	7736	0	7145	221	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 15.

All (221) 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:138:GLN:OE1	1:A:170:PHE:HB3	1.23	1.37
1:A:138:GLN:NE2	1:A:170:PHE:CG	2.05	1.25
1:A:138:GLN:NE2	1:A:170:PHE:CD1	2.25	1.05
1:A:138:GLN:OE1	1:A:170:PHE:CB	2.14	0.94
3:C:37:ALA:HB1	3:C:41:LEU:HD23	1.50	0.92
1:A:138:GLN:CD	1:A:170:PHE:HB3	2.02	0.79
1:A:138:GLN:HE22	1:A:170:PHE:CB	1.97	0.77
3:F:113:SER:O	3:C:106:ASN:ND2	2.17	0.76
2:B:16:GLY:HA2	2:B:93:SER:HB3	1.69	0.73
3:C:203:GLU:OE2	3:C:210:HIS:NE2	2.22	0.72
3:F:214:THR:HG21	3:F:226:VAL:HG11	1.69	0.72
3:F:295:GLU:HB3	3:F:324:PRO:HB3	1.70	0.72
2:B:75:ARG:NH2	2:B:97:GLU:OE2	2.23	0.71
3:F:148:ASP:O	3:C:141:LYS:NZ	2.23	0.71
3:C:166:GLU:HB3	3:C:168:ARG:HH12	1.55	0.70
3:F:93:ARG:NE	3:F:218:SER:O	2.25	0.70
3:C:127:ASP:OD2	3:C:175:ARG:HD2	1.93	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:122:TYR:HB2	3:C:181:ALA:HB3	1.73	0.68
3:F:122:TYR:HB2	3:F:181:ALA:HB3	1.74	0.68
3:F:265:GLY:H	3:F:282:LYS:HB3	1.59	0.68
1:A:19:LEU:HD12	1:A:133:VAL:HG13	1.74	0.67
3:C:282:LYS:HG2	3:C:290:CYS:HA	1.77	0.67
2:B:21:ILE:HG12	2:B:120:THR:HG21	1.76	0.67
3:C:191:LEU:HD21	3:C:194:VAL:HG23	1.77	0.67
2:B:75:ARG:HB2	2:B:92:SER:H	1.60	0.66
3:C:99:LYS:HB3	3:C:163:LEU:HD11	1.77	0.66
2:B:75:ARG:HD2	2:B:91:ILE:HG23	1.78	0.66
2:B:54:ILE:HG13	2:B:67:LEU:HA	1.78	0.65
3:F:315:ARG:NH1	3:F:321:ALA:HA	2.12	0.65
1:A:138:GLN:NE2	1:A:170:PHE:CB	2.56	0.65
3:C:297:THR:HA	3:C:310:GLU:HB2	1.79	0.64
2:B:203:ASP:HA	2:B:206:LYS:HD2	1.79	0.64
3:C:38:GLY:HA2	3:C:65:TYR:CD2	2.34	0.63
3:C:27:LYS:N	3:C:200:LYS:O	2.32	0.62
3:F:261:LEU:HD13	3:F:286:SER:HA	1.80	0.62
3:F:255:VAL:HG21	3:C:255:VAL:HG21	1.82	0.61
3:C:46:HIS:HB3	3:C:80:TRP:HB2	1.83	0.61
3:F:282:LYS:NZ	3:F:288:SER:O	2.34	0.61
3:F:166:GLU:HB3	3:F:168:ARG:HH12	1.66	0.61
3:C:101:THR:HG21	3:C:161:VAL:HG22	1.83	0.61
2:B:45:LYS:HD2	2:B:100:ALA:HB2	1.82	0.61
3:C:44:LEU:HB2	3:C:82:ARG:HH21	1.64	0.61
1:A:138:GLN:CD	1:A:170:PHE:CB	2.67	0.60
3:C:214:THR:HG22	3:C:215:ILE:H	1.67	0.60
2:B:94:LEU:HD11	2:B:124:ILE:HG12	1.82	0.60
1:A:57:SER:O	1:A:60:TYR:N	2.35	0.59
2:B:98:ASP:HB2	2:B:102:TYR:OH	2.02	0.59
3:F:44:LEU:HD22	3:F:132:THR:HA	1.85	0.59
3:F:293:CYS:SG	3:F:300:SER:OG	2.60	0.59
1:A:53:VAL:HG13	1:A:71:VAL:HG21	1.84	0.59
2:B:43:GLN:HB3	2:B:53:LEU:HD11	1.85	0.58
3:C:280:PHE:HB3	3:C:290:CYS:HB3	1.85	0.58
3:C:282:LYS:NZ	3:C:288:SER:OG	2.37	0.58
2:B:15:VAL:HA	2:B:94:LEU:HD13	1.85	0.58
3:F:27:LYS:N	3:F:200:LYS:O	2.36	0.58
3:F:297:THR:OG1	3:F:308:GLU:O	2.20	0.57
3:C:93:ARG:NE	3:C:218:SER:O	2.36	0.57
3:C:104:ASP:OD2	3:C:106:ASN:HB3	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:43:GLN:HG2	2:B:100:ALA:HB3	1.85	0.56
3:C:43:TRP:H	3:C:84:ASN:HD21	1.52	0.56
3:F:296:HIS:HB3	3:F:313:PHE:CD2	2.40	0.56
3:C:77:GLN:HB3	3:C:79:ASN:ND2	2.21	0.56
3:C:282:LYS:NZ	3:C:286:SER:OG	2.37	0.56
3:C:200:LYS:HG2	3:C:215:ILE:HA	1.88	0.55
3:C:313:PHE:HE1	3:C:327:LEU:HG	1.69	0.55
1:A:168:ASP:OD1	1:A:195:GLN:NE2	2.39	0.55
3:F:219:ASP:OD1	3:F:219:ASP:N	2.37	0.55
3:C:82:ARG:NH1	3:C:83:THR:O	2.39	0.55
3:F:218:SER:N	3:F:221:PRO:HG3	2.21	0.55
3:C:102:VAL:HG22	3:C:189:VAL:HG13	1.89	0.55
1:A:138:GLN:CD	1:A:170:PHE:CG	2.78	0.55
2:B:24:ARG:NH2	2:B:85:THR:OG1	2.36	0.54
2:B:75:ARG:CZ	2:B:95:GLN:HB2	2.38	0.54
3:F:254:LEU:HB3	3:F:255:VAL:HG22	1.87	0.54
3:F:300:SER:OG	3:F:307:CYS:SG	2.65	0.54
3:F:200:LYS:HE2	3:F:213:GLU:HG2	1.89	0.54
3:C:98:LEU:HD22	3:C:194:VAL:HG22	1.90	0.54
3:C:72:VAL:HG23	3:C:73:MET:HG2	1.88	0.53
3:C:77:GLN:HB3	3:C:79:ASN:HD21	1.72	0.53
2:B:48:LYS:HD3	2:B:49:ALA:H	1.73	0.53
3:C:66:MET:HE3	3:C:190:ALA:HB1	1.91	0.53
1:A:34:TYR:CE2	1:A:109:TYR:HA	2.44	0.53
3:C:55:MET:HB3	3:C:66:MET:HG3	1.91	0.53
3:C:245:MET:HG2	3:C:256:PRO:HA	1.90	0.53
3:F:280:PHE:HB3	3:F:290:CYS:HB3	1.91	0.53
1:A:210:SER:HA	1:A:213:LEU:HG	1.91	0.52
3:C:55:MET:N	3:C:66:MET:O	2.30	0.52
3:F:210:HIS:HB3	3:F:229:THR:HB	1.92	0.52
2:B:41:TRP:HB2	2:B:54:ILE:HG22	1.92	0.52
1:A:112:TRP:CZ2	3:C:190:ALA:HB2	2.45	0.51
3:C:223:LEU:HD13	3:C:224:ALA:HB3	1.92	0.51
1:A:115:TRP:HB3	3:C:55:MET:HG3	1.92	0.51
1:A:43:ARG:NE	1:A:51:GLU:OE1	2.44	0.51
1:A:138:GLN:CD	1:A:170:PHE:CD1	2.83	0.51
1:A:147:PRO:HD3	1:A:233:LYS:HD3	1.93	0.51
1:A:230:LYS:NZ	1:A:232:ASP:OD1	2.43	0.50
1:A:238:LYS:O	1:A:240:CYS:N	2.44	0.50
3:C:310:GLU:HG2	3:C:311:GLU:N	2.26	0.50
3:F:72:VAL:HG23	3:F:73:MET:HG2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:281:PHE:HZ	3:F:322:SER:HA	1.76	0.50
3:C:48:TYR:CG	3:C:49:GLY:N	2.79	0.50
1:A:91:MET:SD	1:A:91:MET:N	2.84	0.50
3:C:237:PRO:HG3	3:C:261:LEU:HD12	1.92	0.50
3:F:201:CYS:HB3	3:F:253:TRP:CE2	2.47	0.50
3:C:298:LEU:HG	3:C:310:GLU:HG3	1.94	0.50
3:C:204:LEU:HG	3:C:253:TRP:CD1	2.47	0.50
3:F:133:ASN:OD1	3:F:133:ASN:O	2.30	0.50
3:C:199:LYS:HB2	3:C:216:ALA:HB2	1.93	0.49
3:F:219:ASP:C	3:F:221:PRO:HD3	2.32	0.49
3:F:315:ARG:HA	3:F:325:CYS:HA	1.94	0.49
2:B:44:GLN:HG3	2:B:50:PRO:HG3	1.95	0.49
1:A:57:SER:OG	1:A:60:TYR:HB2	2.13	0.49
2:B:53:LEU:HD13	2:B:76:PHE:CE2	2.48	0.49
3:C:201:CYS:HB3	3:C:253:TRP:CE2	2.47	0.49
2:B:99:PHE:CG	2:B:99:PHE:O	2.66	0.49
2:B:41:TRP:HB3	2:B:89:LEU:HD22	1.95	0.49
3:F:112:ALA:HA	3:C:112:ALA:HA	1.95	0.49
1:A:153:LYS:HD3	2:B:227:PHE:HB3	1.93	0.48
2:B:39:VAL:HG22	2:B:57:ALA:HB2	1.95	0.48
3:F:122:TYR:HA	3:F:141:LYS:HA	1.96	0.48
3:F:37:ALA:HB1	3:F:41:LEU:HD23	1.95	0.48
3:F:319:ASP:HA	3:F:323:MET:HE3	1.95	0.48
3:C:129:ASP:OD1	3:C:179:TYR:OH	2.31	0.48
3:C:283:PHE:CD2	3:C:306:SER:HB3	2.47	0.48
1:A:145:VAL:HG12	1:A:233:LYS:HD2	1.96	0.48
2:B:160:ARG:HD3	2:B:191:TYR:CE2	2.49	0.48
3:F:296:HIS:HB3	3:F:313:PHE:HD2	1.79	0.48
3:F:246:HIS:ND1	3:F:255:VAL:HG23	2.28	0.48
3:F:166:GLU:CB	3:F:168:ARG:HH12	2.27	0.48
3:C:203:GLU:HB2	3:C:213:GLU:HB3	1.96	0.48
3:F:217:GLY:HA3	3:F:221:PRO:CG	2.43	0.47
1:A:117:SER:HA	3:C:55:MET:SD	2.54	0.47
2:B:156:ASN:HA	2:B:190:THR:HB	1.96	0.47
3:F:204:LEU:HG	3:F:253:TRP:CD1	2.48	0.47
1:A:60:TYR:OH	3:C:70:CYS:HB3	2.14	0.47
3:F:127:ASP:OD2	3:F:175:ARG:HD2	2.14	0.47
1:A:35:ILE:HB	1:A:56:ILE:HG22	1.97	0.47
3:F:255:VAL:HG21	3:C:255:VAL:HG11	1.97	0.47
3:F:85:TRP:HB2	3:F:179:TYR:CZ	2.50	0.47
3:F:295:GLU:HG3	3:F:296:HIS:CD2	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:315:ARG:NH2	3:F:325:CYS:SG	2.88	0.47
2:B:100:ALA:H	2:B:102:TYR:HE1	1.62	0.47
1:A:111:VAL:HG21	3:C:70:CYS:SG	2.56	0.46
1:A:112:TRP:CE2	3:C:190:ALA:HB2	2.49	0.46
2:B:99:PHE:CE1	2:B:123:GLU:HA	2.50	0.46
2:B:94:LEU:HD23	2:B:95:GLN:N	2.30	0.46
3:C:54:LEU:HB3	3:C:67:TYR:CZ	2.50	0.46
3:C:138:LEU:HD12	3:C:138:LEU:O	2.15	0.46
3:C:298:LEU:HG	3:C:310:GLU:HA	1.97	0.46
3:F:104:ASP:O	3:C:116:LYS:NZ	2.49	0.45
2:B:97:GLU:CD	2:B:97:GLU:H	2.19	0.45
3:F:208:LEU:HB2	3:F:260:CYS:HB2	1.98	0.45
3:F:104:ASP:OD2	3:F:106:ASN:HB3	2.16	0.45
3:F:234:ALA:HB1	3:F:260:CYS:HB3	1.98	0.45
3:F:318:GLN:CD	3:F:318:GLN:H	2.20	0.45
3:F:298:LEU:HD11	3:F:308:GLU:OE1	2.17	0.45
3:F:315:ARG:HD3	3:F:319:ASP:HB3	1.98	0.45
1:A:34:TYR:O	1:A:35:ILE:HD13	2.17	0.45
3:C:232:ASP:O	3:C:273:CYS:HB2	2.16	0.45
3:F:278:PRO:HD3	3:F:302:GLU:OE1	2.17	0.45
3:F:279:GLY:HA2	3:F:299:PRO:HB3	1.99	0.45
3:F:64:ILE:HG13	3:F:65:TYR:CD2	2.52	0.44
3:F:265:GLY:N	3:F:282:LYS:HB3	2.29	0.44
1:A:212:SER:HA	1:A:215:THR:HG22	1.98	0.44
2:B:23:CYS:HB2	2:B:41:TRP:CZ2	2.53	0.44
3:F:309:CYS:SG	3:F:315:ARG:N	2.90	0.44
3:C:217:GLY:H	3:C:249:VAL:HA	1.82	0.44
3:F:42:GLY:O	3:F:43:TRP:HB2	2.18	0.44
3:F:135:GLN:HE21	3:F:138:LEU:CD2	2.31	0.44
3:C:145:ILE:HG23	3:C:168:ARG:NH2	2.33	0.44
3:F:37:ALA:HB3	3:F:40:GLU:HA	2.00	0.44
3:F:69:VAL:O	3:F:188:CYS:HA	2.18	0.43
2:B:126:ARG:NH1	2:B:127:THR:HB	2.33	0.43
3:C:220:ALA:N	3:C:221:PRO:HD3	2.34	0.43
3:F:98:LEU:HD22	3:F:194:VAL:HG22	1.99	0.43
2:B:39:VAL:HG21	2:B:87:PHE:HB3	2.00	0.43
1:A:111:VAL:HG23	1:A:112:TRP:CD1	2.53	0.43
1:A:190:PHE:CE2	2:B:194:SER:HB3	2.53	0.43
3:F:309:CYS:HB3	3:F:313:PHE:O	2.19	0.43
1:A:125:ASP:N	1:A:125:ASP:OD1	2.51	0.43
2:B:105:GLN:HG3	2:B:116:PHE:CE1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:298:LEU:H	3:C:310:GLU:HB2	1.83	0.43
3:F:121:LEU:HG	3:F:142:ILE:HD12	2.00	0.43
3:F:323:MET:CG	3:F:324:PRO:HD2	2.49	0.43
3:C:156:PHE:CE2	3:C:157:GLU:OE2	2.72	0.42
3:F:92:GLU:O	3:F:173:LEU:HD12	2.20	0.42
1:A:123:ALA:O	2:B:42:TYR:OH	2.27	0.42
3:F:95:PHE:O	3:F:196:VAL:HA	2.18	0.42
3:C:43:TRP:HB3	3:C:81:LEU:HD11	2.01	0.42
2:B:152:CYS:HB2	2:B:166:TRP:CZ2	2.54	0.42
3:F:315:ARG:HD2	3:F:320:PRO:O	2.19	0.42
2:B:125:LYS:HA	2:B:158:TYR:OH	2.18	0.42
3:C:262:CYS:HB2	3:C:287:GLU:HA	2.01	0.42
3:C:38:GLY:HA2	3:C:65:TYR:CG	2.55	0.42
3:C:214:THR:HG22	3:C:215:ILE:N	2.32	0.42
1:A:115:TRP:NE1	3:C:66:MET:HG2	2.34	0.41
3:F:88:ARG:HB2	3:F:177:GLY:HA2	2.02	0.41
3:C:265:GLY:HA2	3:C:304:ALA:O	2.20	0.41
2:B:15:VAL:HG13	2:B:94:LEU:HD22	2.03	0.41
3:F:199:LYS:HZ3	3:F:250:ASP:HA	1.85	0.41
3:F:94:ILE:HG23	3:F:173:LEU:HD11	2.02	0.41
3:C:104:ASP:C	3:C:106:ASN:H	2.23	0.41
3:C:101:THR:HG21	3:C:161:VAL:CG2	2.50	0.41
2:B:95:GLN:HB3	2:B:96:PRO:HD2	2.02	0.41
3:C:104:ASP:HB3	3:C:107:SER:H	1.85	0.41
2:B:6:GLN:HB2	2:B:118:GLN:HG3	2.01	0.41
2:B:45:LYS:HD2	2:B:45:LYS:HA	1.84	0.41
3:F:123:TYR:N	3:F:140:THR:O	2.48	0.41
1:A:56:ILE:HG12	1:A:57:SER:H	1.86	0.41
3:C:244:ARG:N	3:C:257:ILE:O	2.47	0.41
1:A:163:GLY:HA3	1:A:205:VAL:HG12	2.02	0.40
1:A:217:THR:HB	1:A:234:LYS:HE3	2.04	0.40
2:B:123:GLU:OE2	2:B:184:GLN:HG3	2.22	0.40
2:B:93:SER:O	2:B:94:LEU:HB2	2.21	0.40
3:F:267:GLU:HB3	3:F:290:CYS:SG	2.61	0.40
3:C:93:ARG:HG2	3:C:95:PHE:CE1	2.57	0.40
3:C:224:ALA:O	3:C:226:VAL:N	2.54	0.40
3:C:233:HIS:HB2	3:C:273:CYS:HB2	2.04	0.40
2:B:43:GLN:CG	2:B:100:ALA:HB3	2.50	0.40
2:B:52:LEU:HD12	2:B:53:LEU:N	2.36	0.40
3:F:56:GLN:HG3	3:F:64:ILE:HB	2.03	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	229/236 (97%)	215 (94%)	13 (6%)	1 (0%)	30 68
2	B	208/211 (99%)	190 (91%)	18 (9%)	0	100 100
3	C	290/308 (94%)	248 (86%)	42 (14%)	0	100 100
3	F	295/308 (96%)	250 (85%)	42 (14%)	3 (1%)	13 48
All	All	1022/1063 (96%)	903 (88%)	115 (11%)	4 (0%)	30 68

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	239	SER
3	F	160	HIS
3	F	136	LYS
3	F	221	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	188/198 (95%)	182 (97%)	6 (3%)	34 54
2	B	173/184 (94%)	171 (99%)	2 (1%)	67 79
3	C	229/256 (90%)	223 (97%)	6 (3%)	41 60
3	F	234/256 (91%)	221 (94%)	13 (6%)	17 39
All	All	824/894 (92%)	797 (97%)	27 (3%)	33 54

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	SER
1	A	134	THR
1	A	137	ASN
1	A	138	GLN
1	A	233	LYS
1	A	240	CYS
2	B	23	CYS
2	B	104	CYS
3	F	40	GLU
3	F	70	CYS
3	F	105	CYS
3	F	123	TYR
3	F	126	SER
3	F	156	PHE
3	F	160	HIS
3	F	230	CYS
3	F	291	LEU
3	F	293	CYS
3	F	307	CYS
3	F	311	GLU
3	F	322	SER
3	C	56	GLN
3	C	57	ASN
3	C	58	ILE
3	C	70	CYS
3	C	105	CYS
3	C	309	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
3	F	79	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

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.

No monomer is involved in short contacts.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

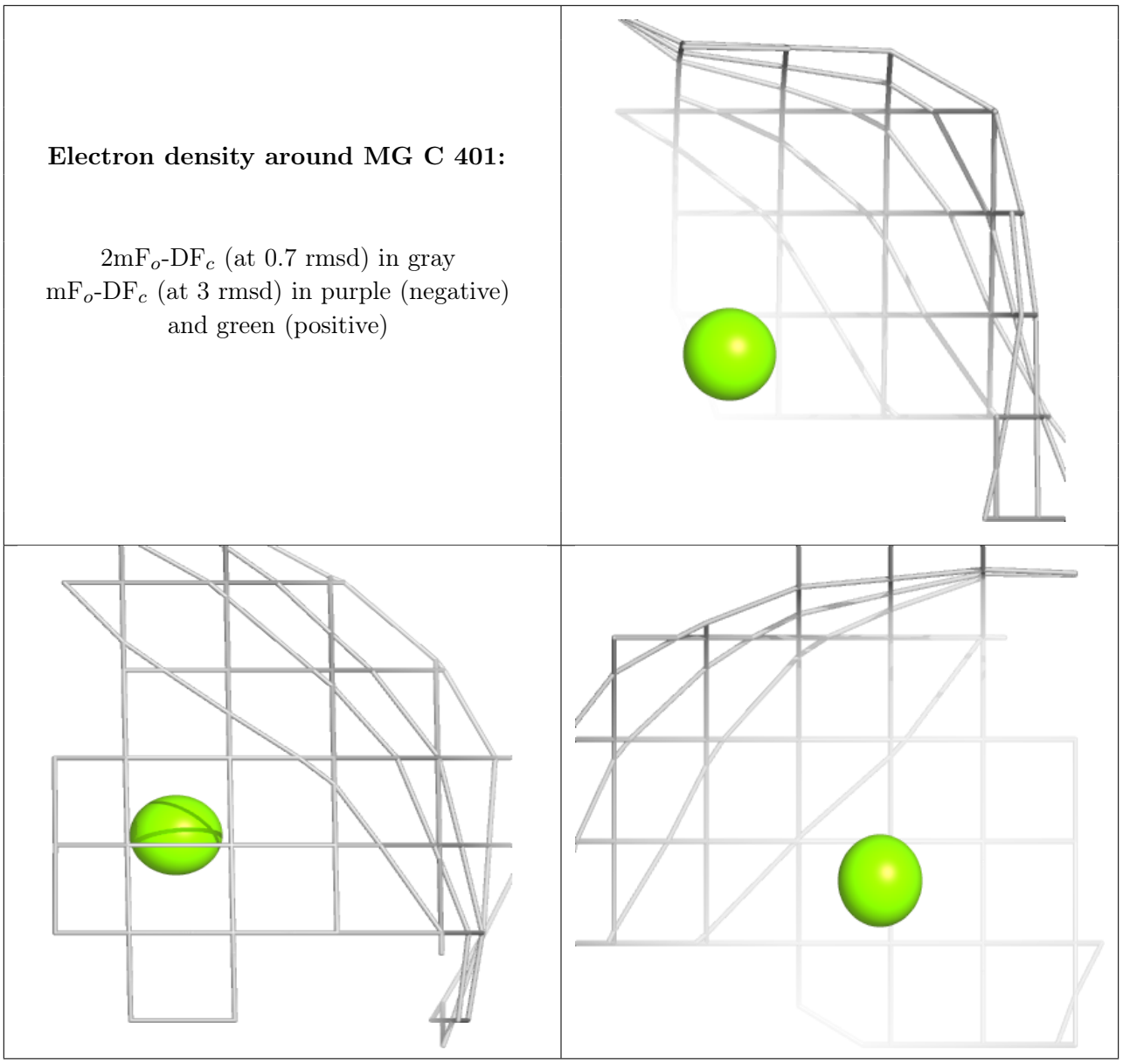
6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

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.

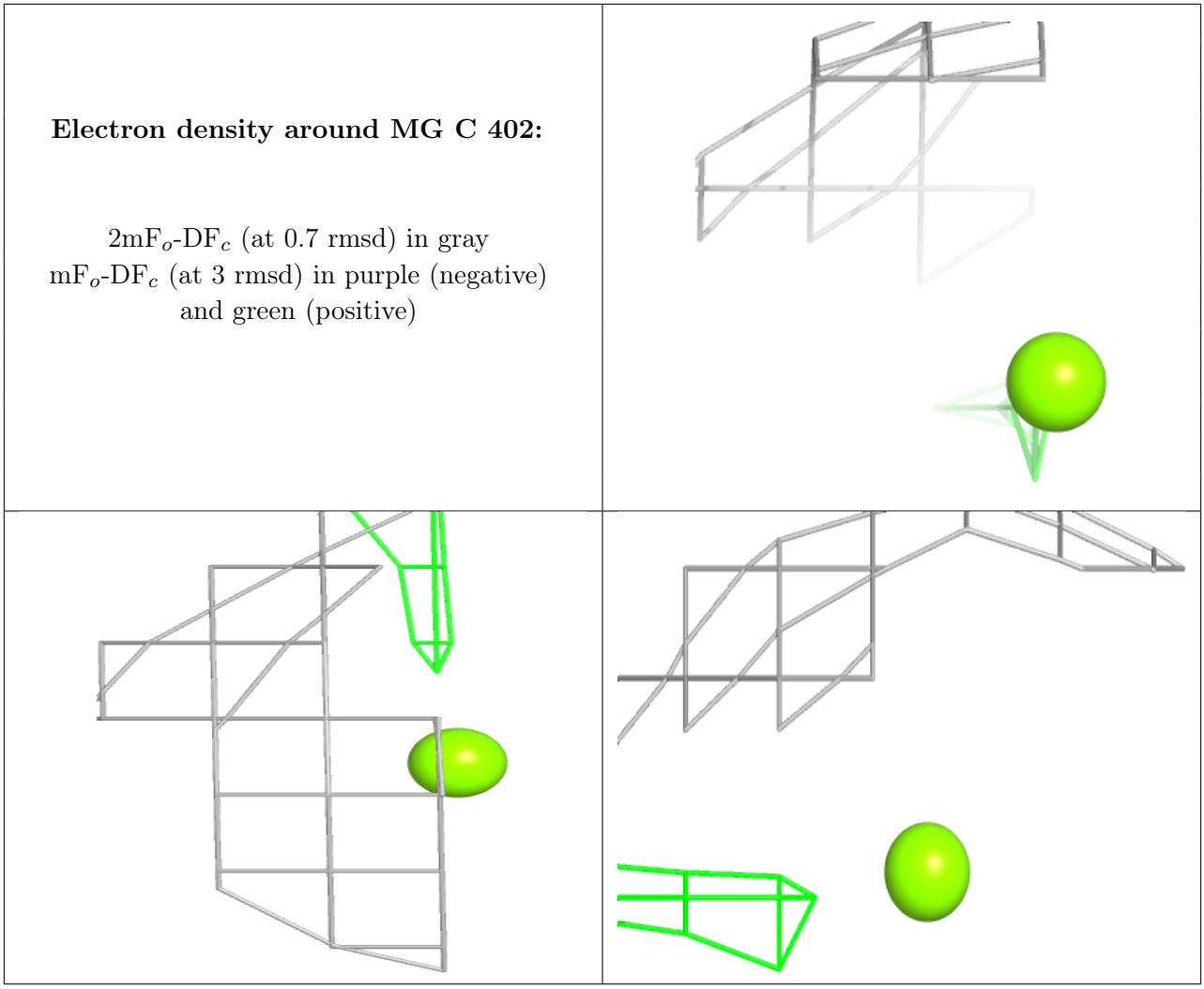
Electron density around MG C 401:

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



Electron density around MG 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 (i)

Unable to reproduce the depositors R factor - this section is therefore empty.