Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 09:57 AM EDT

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PDB ID	:	5MFC
Title	:	Designed armadillo repeat protein YIIIM5AII in complex with (KR)4-GFP
Authors	:	Hansen, S.; Kiefer, J.; Madhurantakam, C.; Mittl, P.; Plueckthun, A.
Deposited on	:	2016-11-18
Resolution	:	2.40 Å(reported)

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 2.40 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		0.269
Clashscore		5
Ramachandran outliers		0
Sidechain outliers		6.5%
RSRZ outliers		9.8%

Worse — *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
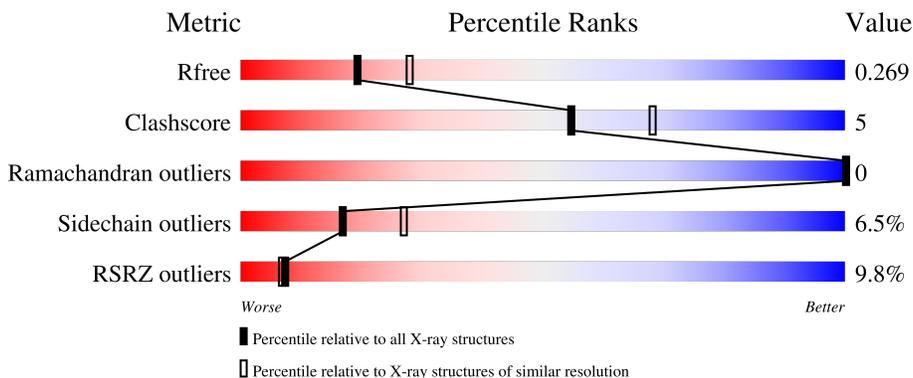
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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	286	18% / 83% 16% ·
1	C	286	12% / 82% 16% ··
2	B	255	2% / 79% 14% · 5%
2	D	255	5% / 75% 18% · 7%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 8151 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 YIIIM5AII.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	285	Total 2111	C 1314	N 360	O 436	S 1	0	1	0
1	C	282	Total 2108	C 1315	N 359	O 433	S 1	0	2	0

- Molecule 2 is a protein called (KR)4-Green fluorescent protein,Green fluorescent protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	241	Total 1938	C 1224	N 344	O 364	S 6	0	0	0
2	D	238	Total 1912	C 1208	N 338	O 360	S 6	0	0	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	1030	ARG	SER	conflict	UNP A0A059PIQ0
B	1066	CRO	THR	chromophore	UNP A0A059PIQ0
B	1066	CRO	TYR	chromophore	UNP A0A059PIQ0
B	1066	CRO	GLY	chromophore	UNP A0A059PIQ0
B	1072	SER	ALA	conflict	UNP A0A059PIQ0
B	1080	ARG	GLN	conflict	UNP A0A059PIQ0
B	1206	VAL	ALA	conflict	UNP A0A059PIQ0
D	1030	ARG	SER	conflict	UNP A0A059PIQ0
D	1066	CRO	THR	chromophore	UNP A0A059PIQ0
D	1066	CRO	TYR	chromophore	UNP A0A059PIQ0
D	1066	CRO	GLY	chromophore	UNP A0A059PIQ0
D	1072	SER	ALA	conflict	UNP A0A059PIQ0
D	1080	ARG	GLN	conflict	UNP A0A059PIQ0
D	1206	VAL	ALA	conflict	UNP A0A059PIQ0

- Molecule 3 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).

ACT

OXT

O⁻

C

CH3

O

O
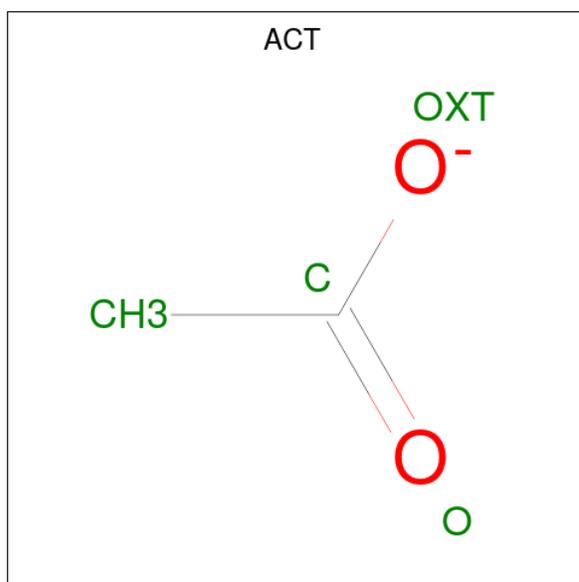
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total 4	C 2	O 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	19	Total 19	O 19	0	0
4	B	43	Total 43	O 43	0	0
4	C	8	Total 8	O 8	0	0
4	D	8	Total 8	O 8	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: YIIIM5AII
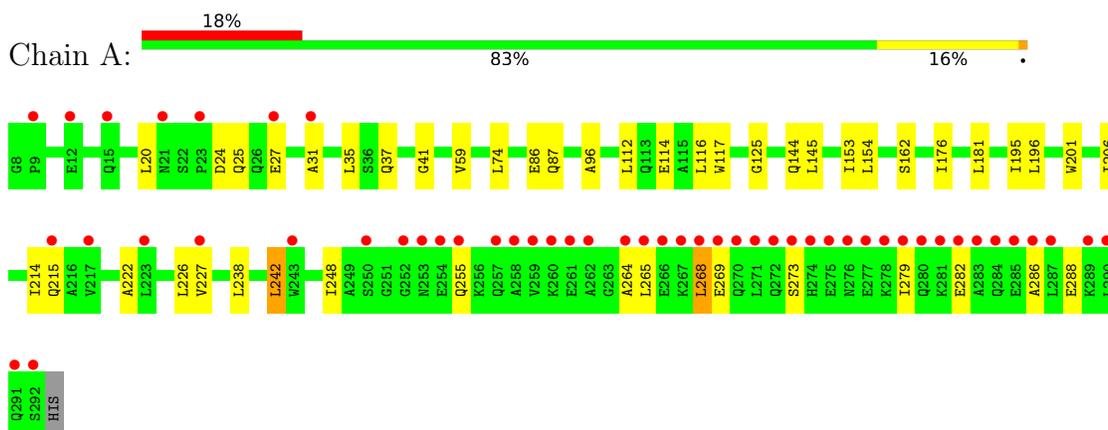
- Molecule 1: YIIIM5AII

- Molecule 2: (KR)4-Green fluorescent protein,Green fluorescent protein

Q1184 N1185 I1188 G1189 P1192 V1193 P1196 Q1204 K1209 E1213 K1214 R1215 I1229 T1230 H1231 GLY MET ASP GLU LEU TYR LYS

• Molecule 2: (KR)4-Green fluorescent protein,Green fluorescent protein

Chain D:

GLY PRO GLY SER GLY SER PRO LYS R990 K991 R992 R996 K999 L1000 M1001 L1007 F1008 T1009 G1031 E1032 K1045 G1051 K1052 P1058 V1061 TYG1066 F1071 S1072 R1073 H1077 R1080 K1085 M1088 P1089 E1090 G1091 Y1092 V1093 I1098 S1099 F1100 K1101 T1105

A1110 K1113 L1119 I1123 E1124 F1130 N1135 K1140 Y1143 S1147 H1148 K1156 Q1157 I1161 I1167 V1176 Q1177 D1180 H1181 N1185 G1189 P1192 P1196 Y1200 Q1204 K1209 E1213 K1214 R1215 D1216 I1229 THR HIS GLY MET ASP GLU LEU

TYR LYS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	81.11Å　　124.24Å　　245.33Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	40.56　–　2.40 40.55　–　2.40	Depositor EDS
% Data completeness (in resolution range)	97.9 (40.56-2.40) 97.9 (40.55-2.40)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.19 (at 2.39Å)	Xtriage
Refinement program	BUSTER 2.10.2	Depositor
R, R_{free}	0.218　,　0.240 0.240　,　0.269	Depositor DCC
R_{free} test set	2364 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	64.3	Xtriage
Anisotropy	0.046	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 65.5	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	8151	wwPDB-VP
Average B, all atoms (Å^2)	99.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.47% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

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

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	0.51	0/2134	0.67	0/2907
1	C	0.49	0/2132	0.68	0/2905
2	B	0.50	0/1955	0.73	0/2631
2	D	0.45	0/1928	0.73	0/2595
All	All	0.49	0/8149	0.70	0/11038

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	2111	0	2115	19	0
1	C	2108	0	2109	23	0
2	B	1938	0	1920	20	0
2	D	1912	0	1893	31	0
3	B	4	0	3	1	0
4	A	19	0	0	2	0
4	B	43	0	0	0	0
4	C	8	0	0	0	0
4	D	8	0	0	0	0
All	All	8151	0	8040	84	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 5.

All (84) 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:242:LEU:HD11	1:A:282:GLU:HB3	1.62	0.81
1:C:126:GLY:H	1:C:129:GLN:HE21	1.34	0.73
2:D:1090:GLU:HG3	2:D:1189:GLY:HA3	1.71	0.73
2:B:1090:GLU:HG3	2:B:1189:GLY:HA3	1.71	0.72
2:B:1161:ILE:HD11	2:B:1196:PRO:CD	2.22	0.68
2:B:1161:ILE:HG22	2:B:1185:ASN:HB2	1.75	0.67
2:D:1071:PHE:HE2	2:D:1119:LEU:HD22	1.63	0.63
1:A:214:ILE:HD11	2:B:990:ARG:HH22	1.63	0.62
2:D:1001:MET:HE2	2:D:1080:ARG:HG2	1.82	0.61
1:A:112:LEU:HD22	1:A:153:ILE:HD12	1.81	0.61
1:C:62:LEU:HD22	1:C:74:LEU:HD12	1.84	0.60
2:D:1071:PHE:CE2	2:D:1119:LEU:HD22	2.37	0.59
1:C:238:LEU:HD23	1:C:279:ILE:HG12	1.83	0.59
2:D:1001:MET:HE3	2:D:1001:MET:HA	1.85	0.58
2:B:1110:ALA:HB2	2:B:1123:ILE:HG23	1.87	0.57
1:A:238:LEU:HD23	1:A:279:ILE:HG12	1.86	0.57
1:C:110:GLN:O	1:C:114:GLU:HG2	2.06	0.56
1:C:276:ASN:HB2	1:C:279:ILE:HB	1.89	0.54
2:D:1088:MET:HE1	2:D:1113:LYS:HA	1.90	0.53
2:D:1135:ASN:HA	2:D:1140:LYS:HB2	1.89	0.53
2:B:1135:ASN:HA	2:B:1140:LYS:HB2	1.91	0.53
1:A:195:ILE:HB	4:A:302:HOH:O	2.09	0.52
1:A:74:LEU:HG	1:A:114:GLU:HB3	1.92	0.52
2:D:1143:TYR:CZ	2:D:1209:LYS:HE2	2.45	0.52
1:C:75:TRP:CD2	2:D:1192:PRO:HD3	2.46	0.51
2:B:1192:PRO:O	3:B:1301:ACT:H2	2.11	0.51
1:C:29:GLN:HE22	1:C:68:GLN:HB3	1.75	0.51
1:C:159:TRP:HZ3	2:D:1009:THR:HG21	1.76	0.51
1:C:204:SER:HB3	1:C:243[A]:TRP:CE2	2.47	0.50
1:A:162:SER:HB3	1:A:201:TRP:CE2	2.47	0.50
2:D:1008:PHE:CD2	2:D:1085:LYS:HG2	2.46	0.50
2:D:1161:ILE:HD11	2:D:1196:PRO:HD2	1.94	0.49
2:B:1143:TYR:CZ	2:B:1209:LYS:HE2	2.47	0.49
4:A:311:HOH:O	2:D:1077:HIS:HB3	2.12	0.49
1:C:74:LEU:HD23	1:C:114:GLU:HB2	1.94	0.48
1:A:215:GLN:HB2	1:A:255:GLN:HE21	1.78	0.48
2:B:1161:ILE:HD11	2:B:1196:PRO:HD3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1088:MET:HE2	2:B:1114:PHE:CD2	2.49	0.48
1:C:62:LEU:HD22	1:C:74:LEU:CD1	2.44	0.48
2:D:1110:ALA:HB2	2:D:1123:ILE:HG23	1.95	0.47
1:A:86[B]:GLU:HG2	1:A:87:GLN:HG3	1.97	0.47
1:C:289:LYS:HE3	2:D:991:LYS:H	1.79	0.46
1:C:85:ASN:HA	1:C:129:GLN:HE22	1.81	0.46
1:C:59:VAL:HG22	1:C:96:ALA:HB2	1.97	0.46
2:B:1147:SER:HB3	2:B:1204:GLN:HG2	1.99	0.45
1:C:75:TRP:CE2	2:D:1192:PRO:HD3	2.52	0.45
1:A:59:VAL:HG22	1:A:96:ALA:HB2	1.98	0.45
2:D:1147:SER:HB3	2:D:1204:GLN:HG2	1.98	0.45
2:B:1031:GLY:HA2	2:B:1045:LYS:O	2.17	0.45
1:C:34:LYS:O	1:C:38:ILE:HG12	2.16	0.45
1:A:41:GLY:O	2:B:999:LYS:HE2	2.17	0.44
2:D:1161:ILE:HD11	2:D:1196:PRO:CG	2.47	0.44
1:A:268:LEU:HD21	1:A:286:ALA:HB3	1.99	0.44
1:A:117:TRP:CZ3	2:B:1009:THR:HG21	2.53	0.43
2:D:1058:PRO:HA	2:D:1061:VAL:HG23	2.00	0.43
2:B:1213:GLU:OE2	2:B:1215:ARG:HD3	2.18	0.43
2:D:1088:MET:SD	2:D:1091:GLY:HA2	2.59	0.43
1:C:25:GLN:HA	1:C:28:LEU:HD23	2.01	0.43
1:C:176:ILE:HD11	1:C:206:ILE:HG23	2.01	0.43
2:D:1001:MET:HE1	2:D:1080:ARG:CZ	2.48	0.43
2:D:1052:LYS:HD2	2:D:1216:ASP:HB2	2.01	0.43
1:C:104:LEU:HD11	1:C:119:LEU:HD13	2.01	0.42
1:C:227:VAL:HG22	1:C:264:ALA:HB2	2.00	0.42
2:D:1167:ILE:HG13	2:D:1181:HIS:CE1	2.54	0.42
2:D:1031:GLY:HA2	2:D:1045:LYS:O	2.19	0.42
2:D:1213:GLU:OE2	2:D:1215:ARG:HD3	2.18	0.42
1:A:176:ILE:HD11	1:A:206:ILE:HG23	2.02	0.42
2:B:1161:ILE:HD11	2:B:1196:PRO:HD2	1.99	0.42
1:A:31:ALA:O	1:A:35:LEU:HB2	2.20	0.42
2:B:1058:PRO:HA	2:B:1061:VAL:HG23	2.01	0.42
2:D:1001:MET:HE1	2:D:1080:ARG:NH2	2.35	0.42
1:C:234:ASN:HB3	1:C:237:ILE:HD12	2.01	0.41
2:D:1093:VAL:O	2:D:1185:ASN:HA	2.20	0.41
2:D:1099:SER:HA	2:D:1105:THR:HG22	2.01	0.41
1:A:227:VAL:HG22	1:A:264:ALA:HB2	2.01	0.41
2:B:1099:SER:HA	2:B:1105:THR:HG22	2.02	0.41
1:A:125:GLY:O	2:B:994:ARG:NH2	2.53	0.41
1:A:116:LEU:HD11	1:A:145:LEU:HD13	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:1161:ILE:HD11	2:D:1196:PRO:CD	2.50	0.41
1:A:222:ALA:O	1:A:226:LEU:HD23	2.21	0.41
2:B:1111:GLU:HG3	2:B:1188:ILE:HD11	2.03	0.40
1:C:62:LEU:HD21	1:C:77:LEU:HD12	2.03	0.40
1:C:159:TRP:CZ3	2:D:1009:THR:HG21	2.55	0.40
2:D:1088:MET:CE	2:D:1113:LYS:HA	2.52	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	284/286 (99%)	278 (98%)	6 (2%)	0	100	100
1	C	282/286 (99%)	277 (98%)	5 (2%)	0	100	100
2	B	236/255 (92%)	234 (99%)	2 (1%)	0	100	100
2	D	233/255 (91%)	230 (99%)	3 (1%)	0	100	100
All	All	1035/1082 (96%)	1019 (98%)	16 (2%)	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	224/224 (100%)	208 (93%)	16 (7%)	14	23
1	C	223/224 (100%)	203 (91%)	20 (9%)	9	14
2	B	211/221 (96%)	200 (95%)	11 (5%)	23	38
2	D	208/221 (94%)	198 (95%)	10 (5%)	25	41
All	All	866/890 (97%)	809 (93%)	57 (7%)	17	26

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	LEU
1	A	24	ASP
1	A	25	GLN
1	A	27	GLU
1	A	37	GLN
1	A	144	GLN
1	A	154	LEU
1	A	181	LEU
1	A	196	LEU
1	A	242	LEU
1	A	248	ILE
1	A	265	LEU
1	A	268	LEU
1	A	269	GLU
1	A	273	SER
1	A	288	GLU
2	B	989	LYS
2	B	996	ARG
2	B	999	LYS
2	B	1032	GLU
2	B	1073	ARG
2	B	1101	LYS
2	B	1123	ILE
2	B	1161	ILE
2	B	1180	ASP
2	B	1184	GLN
2	B	1193	VAL
1	C	20	LEU
1	C	24	ASP
1	C	25	GLN
1	C	28	LEU
1	C	61	LEU
1	C	87	GLN

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Mol	Chain	Res	Type
1	C	119	LEU
1	C	128[A]	GLU
1	C	128[B]	GLU
1	C	144	GLN
1	C	145	LEU
1	C	154	LEU
1	C	181	LEU
1	C	196	LEU
1	C	246	SER
1	C	265	LEU
1	C	269	GLU
1	C	273	SER
1	C	288	GLU
1	C	291	GLN
2	D	992	ARG
2	D	996	ARG
2	D	999	LYS
2	D	1032	GLU
2	D	1073	ARG
2	D	1101	LYS
2	D	1123	ILE
2	D	1124	GLU
2	D	1161	ILE
2	D	1180	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	GLN
1	A	152	GLN
1	A	215	GLN
2	B	1159	ASN
1	C	25	GLN
1	C	29	GLN
1	C	37	GLN
1	C	45	GLN
1	C	47	GLN
1	C	71	GLN
1	C	129	GLN
1	C	215	GLN
1	C	255	GLN
2	D	1159	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

2 non-standard protein/DNA/RNA residues 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	CRO	D	1066	2	23,23,24	1.49	2 (8%)	30,32,34	2.54	7 (23%)
2	CRO	B	1066	2	23,23,24	1.36	2 (8%)	30,32,34	2.86	6 (20%)

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	CRO	D	1066	2	-	0/12/31/32	0/2/2/2
2	CRO	B	1066	2	-	0/12/31/32	0/2/2/2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1066	CRO	C1-N2	4.23	1.38	1.32
2	B	1066	CRO	C1-N2	3.85	1.37	1.32
2	D	1066	CRO	C1-N3	3.10	1.42	1.37
2	B	1066	CRO	C1-N3	2.85	1.41	1.37

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1066	CRO	O2-C2-CA2	-10.86	124.86	130.96
2	D	1066	CRO	O2-C2-CA2	-8.52	126.18	130.96
2	D	1066	CRO	CA2-C2-N3	6.29	106.35	103.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1066	CRO	CA2-C2-N3	6.10	106.25	103.37
2	B	1066	CRO	CA2-N2-C1	5.63	109.92	105.77
2	D	1066	CRO	CA2-N2-C1	5.35	109.72	105.77
2	B	1066	CRO	C2-CA2-N2	-3.55	106.45	108.93
2	B	1066	CRO	O3-C3-CA3	-3.43	116.05	126.39
2	D	1066	CRO	C2-CA2-N2	-3.36	106.58	108.93
2	D	1066	CRO	O3-C3-CA3	-3.16	116.85	126.39
2	B	1066	CRO	O2-C2-N3	2.28	128.88	124.35
2	D	1066	CRO	C2-N3-C1	-2.11	106.90	107.97
2	D	1066	CRO	CG2-CB2-CA2	-2.11	127.36	129.94

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

1 ligand is 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	ACT	B	1301	-	3,3,3	1.49	1 (33%)	3,3,3	1.09	0

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1301	ACT	CH3-C	2.41	1.59	1.49

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1301	ACT	1	0

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	285/286 (99%)	0.90	51 (17%)	1	1	58, 85, 202, 219	0
1	C	282/286 (98%)	0.78	34 (12%)	4	3	65, 105, 194, 206	0
2	B	240/255 (94%)	0.10	4 (1%)	70	68	49, 70, 103, 186	0
2	D	237/255 (92%)	0.38	13 (5%)	25	24	64, 102, 142, 164	0
All	All	1044/1082 (96%)	0.57	102 (9%)	7	7	49, 92, 184, 219	0

All (102) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	10	GLY	13.9
1	C	28	LEU	12.2
1	C	23	PRO	10.8
1	C	24	ASP	8.0
1	A	290	LEU	7.9
1	A	267	LYS	7.5
1	C	11	SER	7.4
1	A	266	GLU	7.2
1	C	31	ALA	7.2
1	A	257	GLN	7.1
1	A	268	LEU	6.7
1	C	22	SER	6.7
1	A	283	ALA	6.4
1	A	289	LYS	6.3
1	A	259	VAL	6.1
1	A	261	GLU	6.0
1	A	277	GLU	5.9
1	A	275	GLU	5.9
1	A	273	SER	5.9
1	C	14	PRO	5.8
1	A	284	GLN	5.6

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Mol	Chain	Res	Type	RSRZ
2	D	1157	GLN	5.3
1	A	262	ALA	5.3
1	A	282	GLU	5.1
1	C	39	ALA	5.1
1	A	255	GLN	5.1
1	C	48	ALA	5.1
1	C	38	ILE	5.0
1	C	15	GLN	4.8
1	A	253	ASN	4.8
1	C	27	GLU	4.6
1	A	258	ALA	4.5
1	C	26	GLN	4.5
1	C	21	ASN	4.4
1	C	30	SER	4.4
1	C	16	MET	4.4
1	A	271	LEU	4.3
1	A	276	ASN	4.2
2	D	1229	ILE	4.2
1	A	264	ALA	4.1
1	A	265	LEU	4.0
1	A	287	LEU	4.0
1	C	17	VAL	3.9
1	A	260	LYS	3.8
1	C	13	LEU	3.8
1	C	45	GLN	3.7
1	A	272	GLN	3.7
1	A	252	GLY	3.6
1	C	34	LYS	3.5
1	C	18	GLN	3.5
1	A	281	LYS	3.5
1	A	278	LYS	3.4
1	A	269	GLU	3.4
1	A	285	GLU	3.4
1	C	49	VAL	3.4
1	C	12	GLU	3.3
1	C	35	LEU	3.3
1	A	243	TRP	3.3
1	C	47	GLN	3.2
1	A	274	HIS	3.1
1	A	270	GLN	3.1
1	A	291	GLN	3.1
1	A	27	GLU	3.0

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Mol	Chain	Res	Type	RSRZ
2	D	1176	VAL	3.0
2	D	991	LYS	3.0
1	A	9	PRO	2.9
1	A	254	GLU	2.8
1	A	280	GLN	2.8
1	A	250	SER	2.8
1	C	287	LEU	2.8
1	A	286	ALA	2.8
1	A	15	GLN	2.8
2	D	1177	GLN	2.8
1	C	142	LEU	2.8
1	C	111	ILE	2.7
1	C	37	GLN	2.7
2	D	1098	ILE	2.6
2	D	1130	PHE	2.6
2	B	1231	HIS	2.6
1	A	227	VAL	2.5
2	D	1156	LYS	2.5
1	C	44	GLU	2.5
1	A	31	ALA	2.4
1	C	103	LEU	2.4
1	C	52	ALA	2.4
1	A	23	PRO	2.4
2	D	1100	PHE	2.4
2	B	1230	THR	2.3
1	A	279	ILE	2.3
2	D	1148	HIS	2.3
1	A	21	ASN	2.2
1	C	284	GLN	2.2
2	D	1051	GLY	2.2
1	A	292	SER	2.2
1	A	215	GLN	2.2
2	D	1200	TYR	2.2
2	B	989	LYS	2.1
2	D	1007	LEU	2.1
1	A	217	VAL	2.1
2	B	1229	ILE	2.1
1	A	12	GLU	2.1
1	A	223	LEU	2.0

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

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	CRO	B	1066	22/23	0.93	0.17	54,56,58,61	0
2	CRO	D	1066	22/23	0.93	0.18	71,79,84,87	0

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	ACT	B	1301	4/4	0.83	0.18	52,61,61,64	0

6.5 Other polymers ⓘ

There are no such residues in this entry.