Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2023 – 04:13 AM EDT

PDB ID	:	2Q40
Title	:	Ensemble refinement of the protein crystal structure of gene product from Arabidopsis thaliana At2g17340
Authors	:	Levin, E.J.; Kondrashov, D.A.; Wesenberg, G.E.; Phillips Jr., G.N.; Center for Eukaryotic Structural Genomics (CESG)
Deposited on	:	2007-05-31
Resolution	:	1.70 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:

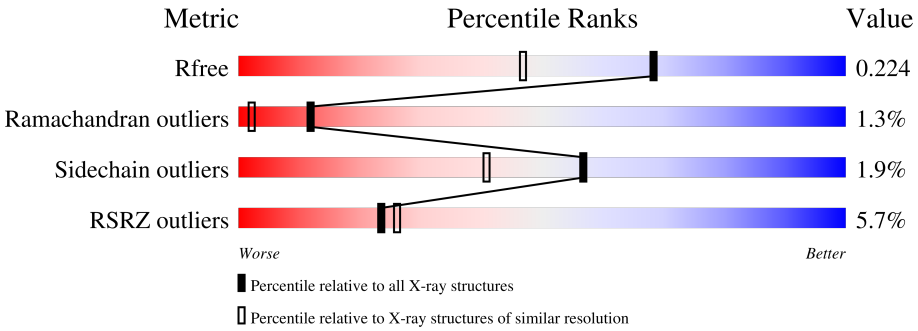
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 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 1.70 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	4298 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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	1-A	367	5% 92% · 7%
1	10-A	367	5% 92% · 7%
1	11-A	367	5% 91% · 7%
1	12-A	367	5% 91% · 7%
1	13-A	367	5% 89% · 7%
1	14-A	367	5% 88% 5% 7%

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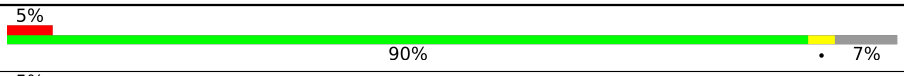
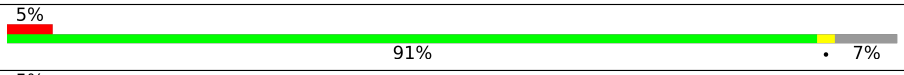
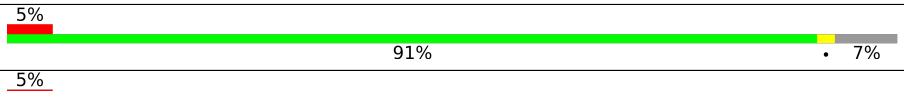
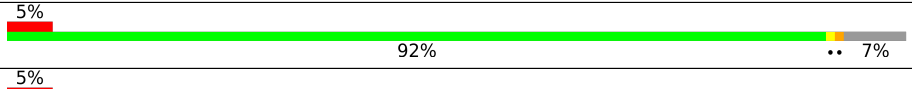
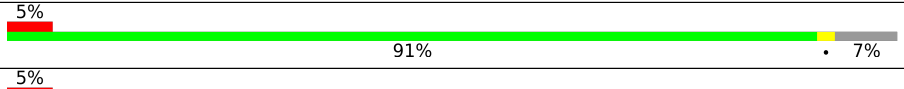
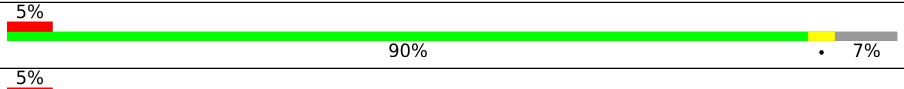
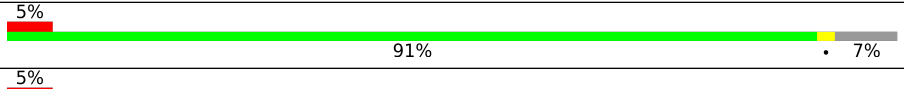
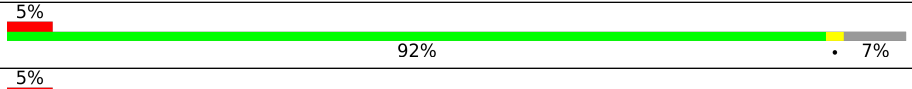
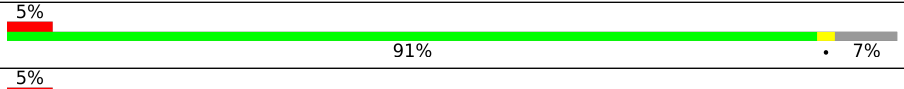
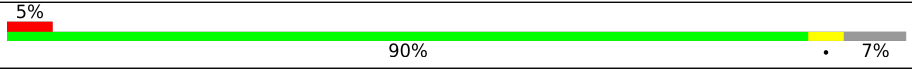
Mol	Chain	Length	Quality of chain
1	15-A	367	
1	16-A	367	
1	2-A	367	
1	3-A	367	
1	4-A	367	
1	5-A	367	
1	6-A	367	
1	7-A	367	
1	8-A	367	
1	9-A	367	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 48880 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 Protein At2g17340.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	1-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	2-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	3-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	4-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	5-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	6-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	7-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	8-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	9-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	10-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	11-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	12-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	13-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	14-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	15-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			
1	16-A	343	Total	C	N	O	S	0	0	0
			2696	1723	456	506	11			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	SER	-	expression tag	UNP Q949P3

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	1-A	2	Total Mg 2 2	0	0
2	2-A	2	Total Mg 2 2	0	0
2	3-A	2	Total Mg 2 2	0	0
2	4-A	2	Total Mg 2 2	0	0
2	5-A	2	Total Mg 2 2	0	0
2	6-A	2	Total Mg 2 2	0	0
2	7-A	2	Total Mg 2 2	0	0
2	8-A	2	Total Mg 2 2	0	0
2	9-A	2	Total Mg 2 2	0	0
2	10-A	2	Total Mg 2 2	0	0
2	11-A	2	Total Mg 2 2	0	0
2	12-A	2	Total Mg 2 2	0	0
2	13-A	2	Total Mg 2 2	0	0
2	14-A	2	Total Mg 2 2	0	0
2	15-A	2	Total Mg 2 2	0	0
2	16-A	2	Total Mg 2 2	0	0

- Molecule 3 is water.

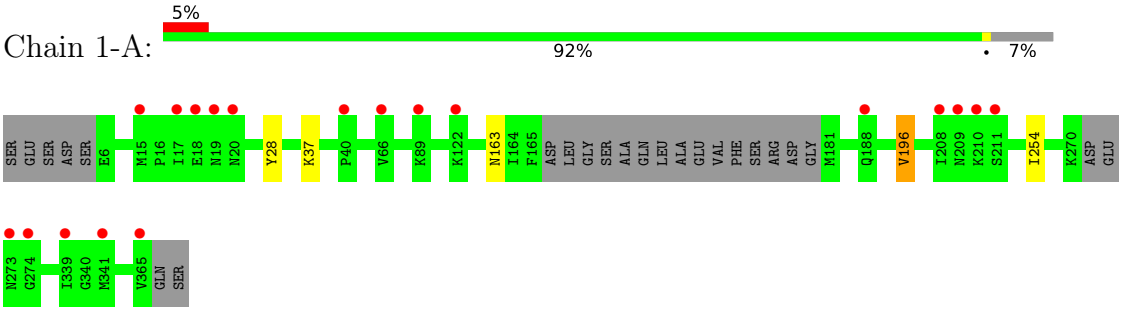
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	1-A	357	Total O 357 357	0	0
3	2-A	357	Total O 357 357	0	0
3	3-A	357	Total O 357 357	0	0
3	4-A	357	Total O 357 357	0	0
3	5-A	357	Total O 357 357	0	0
3	6-A	357	Total O 357 357	0	0
3	7-A	357	Total O 357 357	0	0
3	8-A	357	Total O 357 357	0	0
3	9-A	357	Total O 357 357	0	0
3	10-A	357	Total O 357 357	0	0
3	11-A	357	Total O 357 357	0	0
3	12-A	357	Total O 357 357	0	0
3	13-A	357	Total O 357 357	0	0
3	14-A	357	Total O 357 357	0	0
3	15-A	357	Total O 357 357	0	0
3	16-A	357	Total O 357 357	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.

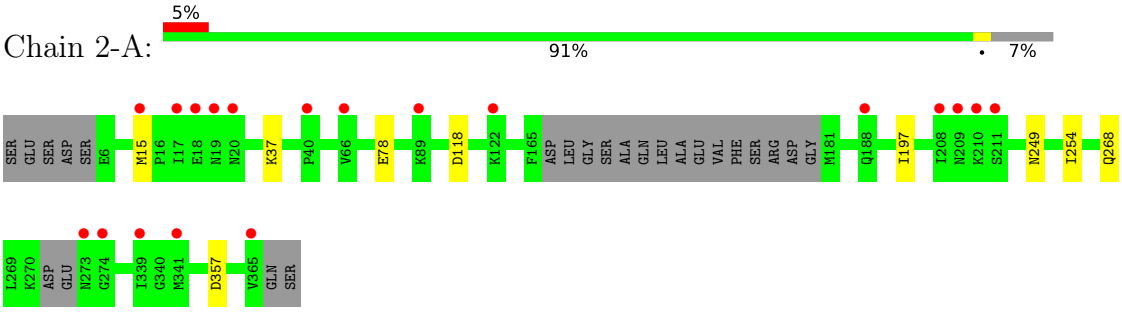
• Molecule 1: Protein At2g17340

Chain 1-A:



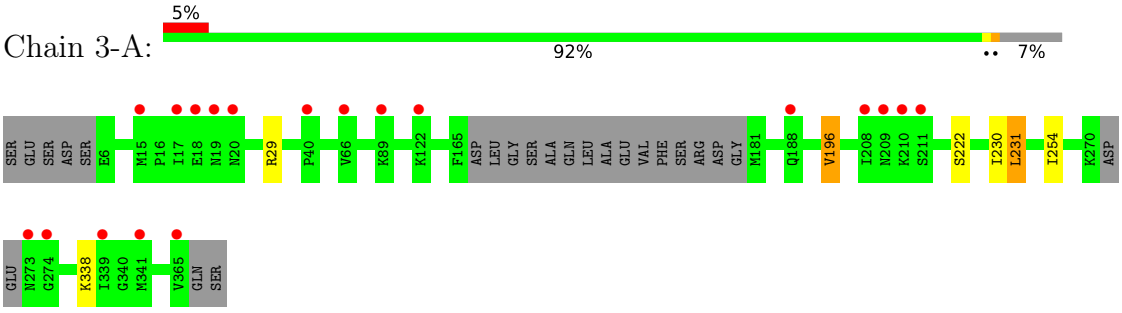
• Molecule 1: Protein At2g17340

Chain 2-A:



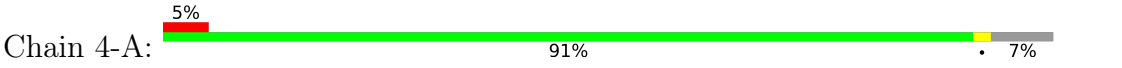
• Molecule 1: Protein At2g17340

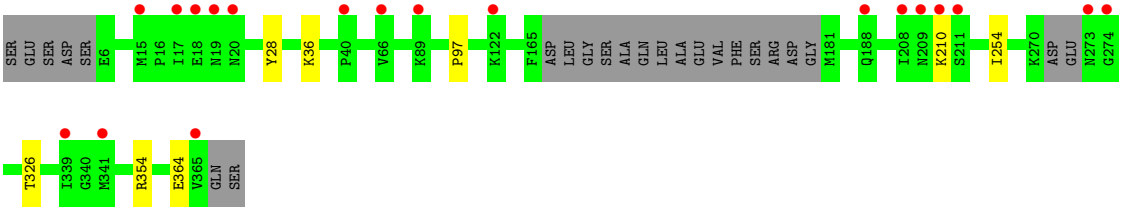
Chain 3-A:



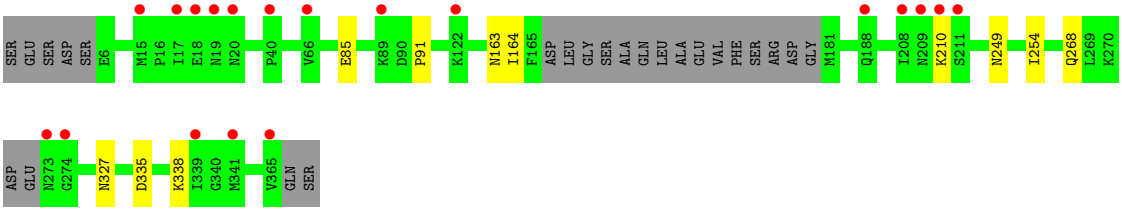
• Molecule 1: Protein At2g17340

Chain 4-A:

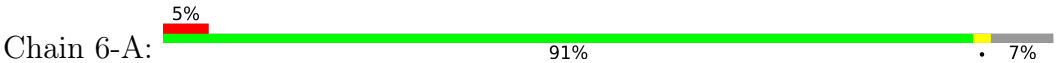


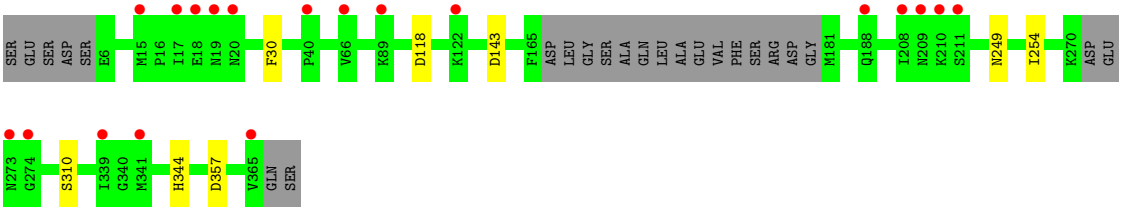


• Molecule 1: Protein At2g17340

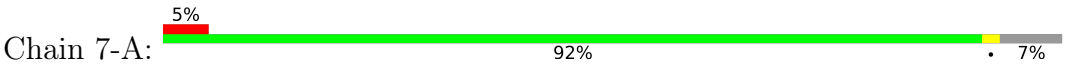


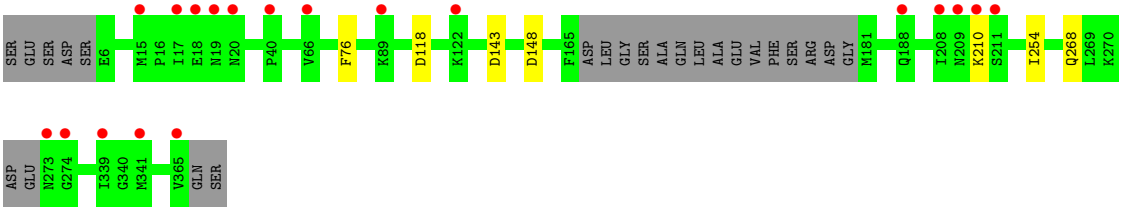
• Molecule 1: Protein At2g17340



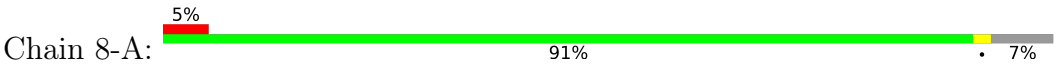


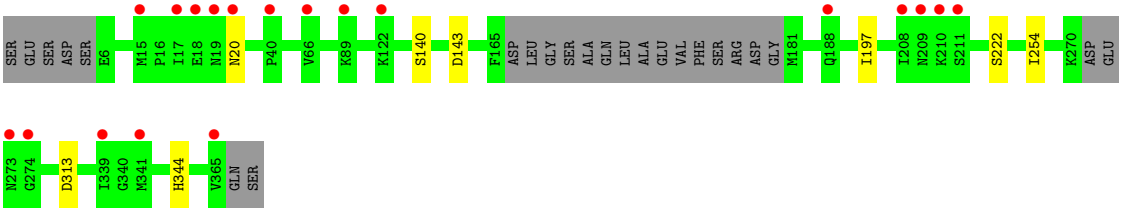
• Molecule 1: Protein At2g17340





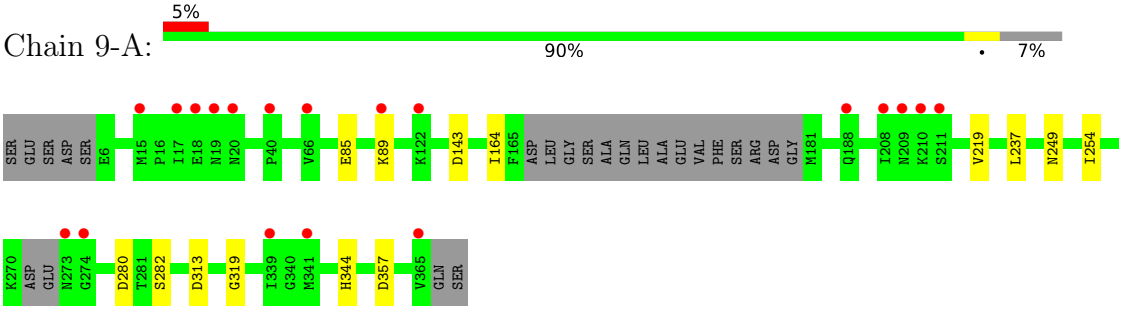
• Molecule 1: Protein At2g17340





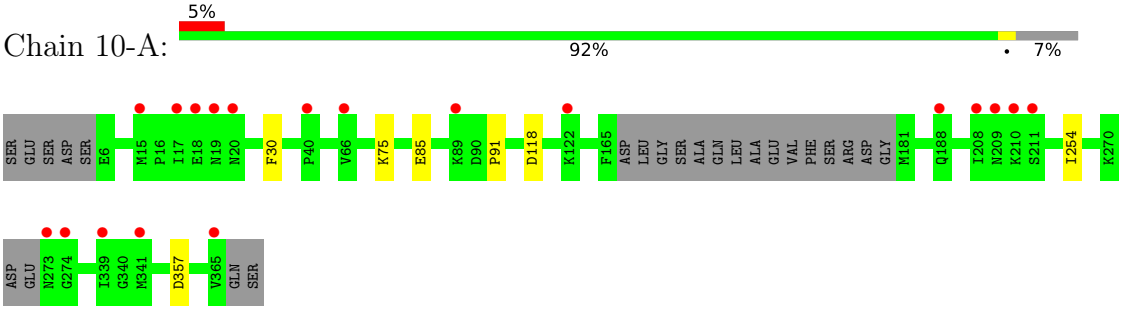
• Molecule 1: Protein At2g17340

Chain 9-A:



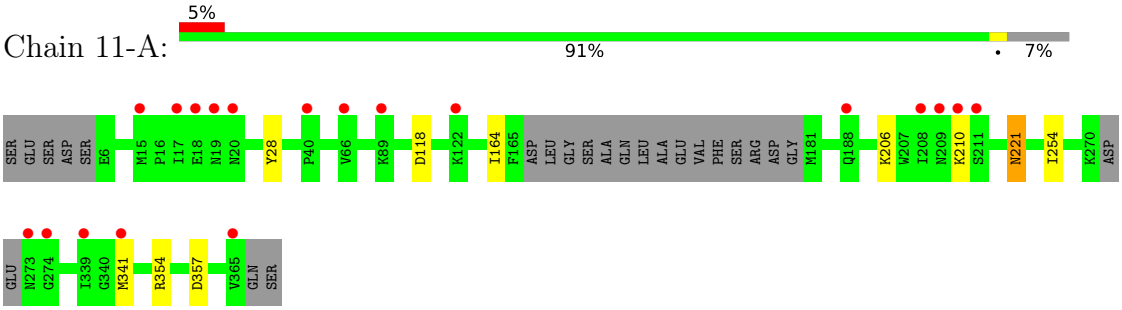
• Molecule 1: Protein At2g17340

Chain 10-A:



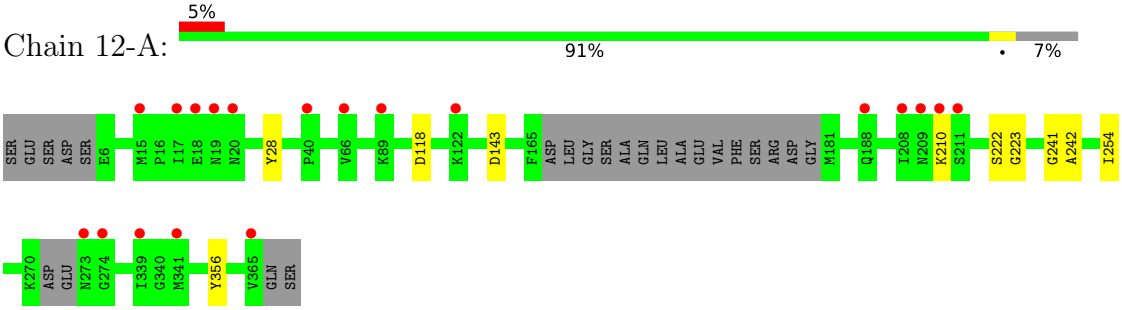
• Molecule 1: Protein At2g17340

Chain 11-A:



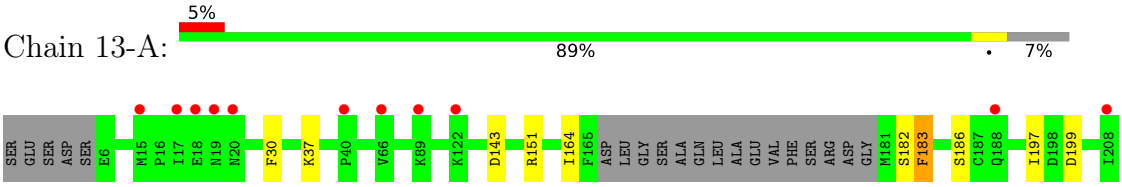
• Molecule 1: Protein At2g17340

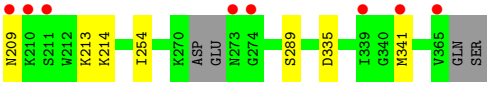
Chain 12-A:



• Molecule 1: Protein At2g17340

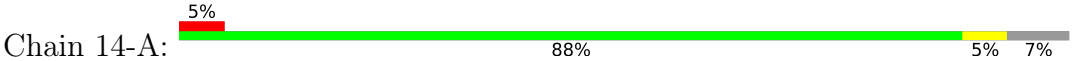
Chain 13-A:

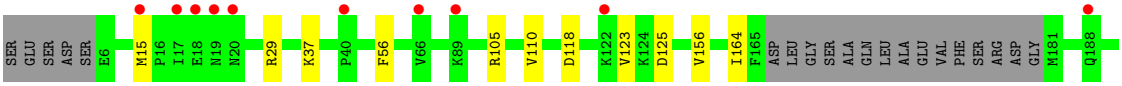


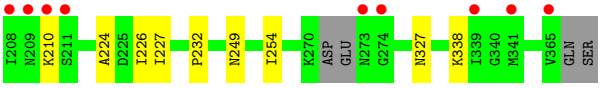


• Molecule 1: Protein At2g17340

Chain 14-A:

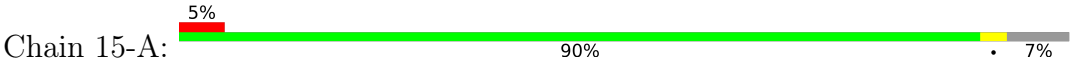


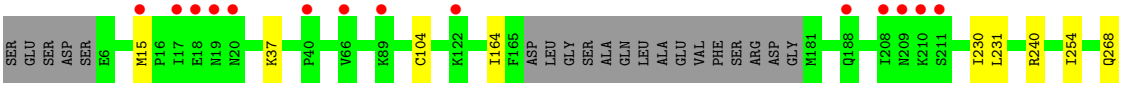


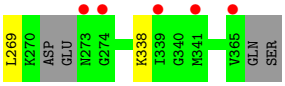


• Molecule 1: Protein At2g17340

Chain 15-A:

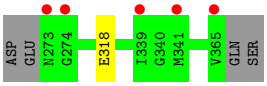






• Molecule 1: Protein At2g17340

Chain 16-A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	40.17Å 43.28Å 52.64Å 74.57° 74.60° 84.04°	Depositor
Resolution (Å)	34.91 – 1.70 34.91 – 1.70	Depositor EDS
% Data completeness (in resolution range)	97.0 (34.91-1.70) 96.7 (34.91-1.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	5.39 (at 1.70Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.165 , 0.221 0.165 , 0.224	Depositor DCC
R_{free} test set	1773 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	22.9	Xtriage
Anisotropy	0.100	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 56.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	48880	wwPDB-VP
Average B, all atoms (Å^2)	21.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.75% 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	1-A	0.41	0/2747	0.60	0/3717
1	2-A	0.40	0/2747	0.60	0/3717
1	3-A	0.41	0/2747	0.61	0/3717
1	4-A	0.40	0/2747	0.60	0/3717
1	5-A	0.40	0/2747	0.61	0/3717
1	6-A	0.40	0/2747	0.61	0/3717
1	7-A	0.39	0/2747	0.60	0/3717
1	8-A	0.40	0/2747	0.59	0/3717
1	9-A	0.40	0/2747	0.61	0/3717
1	10-A	0.40	0/2747	0.61	0/3717
1	11-A	0.40	0/2747	0.60	0/3717
1	12-A	0.41	0/2747	0.62	0/3717
1	13-A	0.46	0/2747	0.70	1/3717 (0.0%)
1	14-A	0.45	0/2747	0.69	0/3717
1	15-A	0.44	0/2747	0.69	0/3717
1	16-A	0.47	1/2747 (0.0%)	0.69	1/3717 (0.0%)
All	All	0.42	1/43952 (0.0%)	0.63	2/59472 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	16-A	187	CYS	CB-SG	-5.10	1.73	1.81

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	16-A	104	CYS	CA-CB-SG	6.33	125.40	114.00
1	13-A	197	ILE	N-CA-C	-5.13	97.14	111.00

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	1-A	2696	0	2720	0	0
1	2-A	2696	0	2720	0	0
1	3-A	2696	0	2720	0	0
1	4-A	2696	0	2720	0	0
1	5-A	2696	0	2720	0	0
1	6-A	2696	0	2720	0	0
1	7-A	2696	0	2720	0	0
1	8-A	2696	0	2720	0	0
1	9-A	2696	0	2720	0	0
1	10-A	2696	0	2720	0	0
1	11-A	2696	0	2720	0	0
1	12-A	2696	0	2720	0	0
1	13-A	2696	0	2720	0	0
1	14-A	2696	0	2720	0	0
1	15-A	2696	0	2720	0	0
1	16-A	2696	0	2720	0	0
2	1-A	2	0	0	0	0
2	2-A	2	0	0	0	0
2	3-A	2	0	0	0	0
2	4-A	2	0	0	0	0
2	5-A	2	0	0	0	0
2	6-A	2	0	0	0	0
2	7-A	2	0	0	0	0
2	8-A	2	0	0	0	0
2	9-A	2	0	0	0	0
2	10-A	2	0	0	0	0
2	11-A	2	0	0	0	0
2	12-A	2	0	0	0	0
2	13-A	2	0	0	0	0
2	14-A	2	0	0	0	0
2	15-A	2	0	0	0	0
2	16-A	2	0	0	0	0
3	1-A	357	0	0	0	0
3	2-A	357	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	3-A	357	0	0	0	0
3	4-A	357	0	0	0	0
3	5-A	357	0	0	0	0
3	6-A	357	0	0	0	0
3	7-A	357	0	0	0	0
3	8-A	357	0	0	0	0
3	9-A	357	0	0	0	0
3	10-A	357	0	0	0	0
3	11-A	357	0	0	0	0
3	12-A	357	0	0	0	0
3	13-A	357	0	0	0	0
3	14-A	357	0	0	0	0
3	15-A	357	0	0	0	0
3	16-A	357	0	0	0	0
All	All	48880	0	43520	0	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). Clashscore could not be calculated for this entry.

There are no clashes within the asymmetric unit.

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	1-A	337/367 (92%)	317 (94%)	17 (5%)	3 (1%)	17 5
1	2-A	337/367 (92%)	310 (92%)	23 (7%)	4 (1%)	13 3
1	3-A	337/367 (92%)	314 (93%)	18 (5%)	5 (2%)	10 2
1	4-A	337/367 (92%)	310 (92%)	23 (7%)	4 (1%)	13 3
1	5-A	337/367 (92%)	315 (94%)	18 (5%)	4 (1%)	13 3
1	6-A	337/367 (92%)	317 (94%)	17 (5%)	3 (1%)	17 5

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	7-A	337/367 (92%)	316 (94%)	18 (5%)	3 (1%)	17 5
1	8-A	337/367 (92%)	310 (92%)	23 (7%)	4 (1%)	13 3
1	9-A	337/367 (92%)	308 (91%)	24 (7%)	5 (2%)	10 2
1	10-A	337/367 (92%)	315 (94%)	19 (6%)	3 (1%)	17 5
1	11-A	337/367 (92%)	311 (92%)	21 (6%)	5 (2%)	10 2
1	12-A	337/367 (92%)	308 (91%)	21 (6%)	8 (2%)	6 1
1	13-A	337/367 (92%)	302 (90%)	29 (9%)	6 (2%)	8 1
1	14-A	337/367 (92%)	300 (89%)	27 (8%)	10 (3%)	4 0
1	15-A	337/367 (92%)	307 (91%)	26 (8%)	4 (1%)	13 3
1	16-A	337/367 (92%)	309 (92%)	27 (8%)	1 (0%)	41 24
All	All	5392/5872 (92%)	4969 (92%)	351 (6%)	72 (1%)	12 2

All (72) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	4-A	210	LYS
1	4-A	364	GLU
1	6-A	118	ASP
1	8-A	20	ASN
1	9-A	89	LYS
1	9-A	319	GLY
1	11-A	210	LYS
1	11-A	221	ASN
1	12-A	222	SER
1	12-A	241	GLY
1	13-A	209	ASN
1	14-A	118	ASP
1	15-A	230	ILE
1	1-A	254	ILE
1	2-A	249	ASN
1	3-A	254	ILE
1	5-A	327	ASN
1	6-A	249	ASN
1	8-A	222	SER
1	9-A	164	ILE
1	12-A	223	GLY
1	12-A	242	ALA
1	13-A	151	ARG

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Mol	Chain	Res	Type
1	13-A	183	PHE
1	13-A	335	ASP
1	14-A	226	ILE
1	16-A	254	ILE
1	1-A	163	ASN
1	2-A	254	ILE
1	3-A	222	SER
1	3-A	230	ILE
1	5-A	249	ASN
1	5-A	254	ILE
1	10-A	118	ASP
1	11-A	118	ASP
1	12-A	118	ASP
1	12-A	210	LYS
1	12-A	254	ILE
1	13-A	254	ILE
1	14-A	210	LYS
1	14-A	254	ILE
1	15-A	231	LEU
1	15-A	254	ILE
1	2-A	118	ASP
1	3-A	231	LEU
1	4-A	97	PRO
1	4-A	254	ILE
1	6-A	254	ILE
1	7-A	118	ASP
1	8-A	254	ILE
1	10-A	254	ILE
1	11-A	254	ILE
1	14-A	156	VAL
1	14-A	224	ALA
1	15-A	269	LEU
1	7-A	210	LYS
1	7-A	254	ILE
1	8-A	197	ILE
1	9-A	254	ILE
1	9-A	282	SER
1	14-A	327	ASN
1	10-A	91	PRO
1	11-A	164	ILE
1	12-A	356	TYR
1	13-A	182	SER

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Mol	Chain	Res	Type
1	14-A	227	ILE
1	1-A	196	VAL
1	3-A	196	VAL
1	14-A	232	PRO
1	2-A	197	ILE
1	14-A	110	VAL
1	5-A	91	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	1-A	297/317 (94%)	294 (99%)	3 (1%)	76	67
1	2-A	297/317 (94%)	292 (98%)	5 (2%)	60	46
1	3-A	297/317 (94%)	293 (99%)	4 (1%)	69	56
1	4-A	297/317 (94%)	293 (99%)	4 (1%)	69	56
1	5-A	297/317 (94%)	290 (98%)	7 (2%)	49	31
1	6-A	297/317 (94%)	292 (98%)	5 (2%)	60	46
1	7-A	297/317 (94%)	293 (99%)	4 (1%)	69	56
1	8-A	297/317 (94%)	293 (99%)	4 (1%)	69	56
1	9-A	297/317 (94%)	288 (97%)	9 (3%)	41	22
1	10-A	297/317 (94%)	293 (99%)	4 (1%)	69	56
1	11-A	297/317 (94%)	291 (98%)	6 (2%)	55	38
1	12-A	297/317 (94%)	295 (99%)	2 (1%)	84	77
1	13-A	297/317 (94%)	286 (96%)	11 (4%)	34	15
1	14-A	297/317 (94%)	287 (97%)	10 (3%)	37	18
1	15-A	297/317 (94%)	290 (98%)	7 (2%)	49	31
1	16-A	297/317 (94%)	291 (98%)	6 (2%)	55	38
All	All	4752/5072 (94%)	4661 (98%)	91 (2%)	57	41

All (91) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1-A	28	TYR
1	1-A	37	LYS
1	1-A	196	VAL
1	2-A	15	MET
1	2-A	37	LYS
1	2-A	78	GLU
1	2-A	268	GLN
1	2-A	357	ASP
1	3-A	29	ARG
1	3-A	196	VAL
1	3-A	231	LEU
1	3-A	338	LYS
1	4-A	28	TYR
1	4-A	36	LYS
1	4-A	326	THR
1	4-A	354	ARG
1	5-A	85	GLU
1	5-A	163	ASN
1	5-A	164	ILE
1	5-A	210	LYS
1	5-A	268	GLN
1	5-A	335	ASP
1	5-A	338	LYS
1	6-A	30	PHE
1	6-A	143	ASP
1	6-A	310	SER
1	6-A	344	HIS
1	6-A	357	ASP
1	7-A	76	PHE
1	7-A	143	ASP
1	7-A	148	ASP
1	7-A	268	GLN
1	8-A	140	SER
1	8-A	143	ASP
1	8-A	313	ASP
1	8-A	344	HIS
1	9-A	85	GLU
1	9-A	143	ASP
1	9-A	219	VAL
1	9-A	237	LEU
1	9-A	249	ASN
1	9-A	280	ASP
1	9-A	313	ASP

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Mol	Chain	Res	Type
1	9-A	344	HIS
1	9-A	357	ASP
1	10-A	30	PHE
1	10-A	75	LYS
1	10-A	85	GLU
1	10-A	357	ASP
1	11-A	28	TYR
1	11-A	206	LYS
1	11-A	221	ASN
1	11-A	341	MET
1	11-A	354	ARG
1	11-A	357	ASP
1	12-A	28	TYR
1	12-A	143	ASP
1	13-A	30	PHE
1	13-A	37	LYS
1	13-A	143	ASP
1	13-A	164	ILE
1	13-A	183	PHE
1	13-A	186	SER
1	13-A	199	ASP
1	13-A	213	LYS
1	13-A	214	LYS
1	13-A	289	SER
1	13-A	341	MET
1	14-A	15	MET
1	14-A	29	ARG
1	14-A	37	LYS
1	14-A	56	PHE
1	14-A	105	ARG
1	14-A	123	VAL
1	14-A	125	ASP
1	14-A	164	ILE
1	14-A	249	ASN
1	14-A	338	LYS
1	15-A	15	MET
1	15-A	37	LYS
1	15-A	104	CYS
1	15-A	164	ILE
1	15-A	240	ARG
1	15-A	268	GLN
1	15-A	338	LYS

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Mol	Chain	Res	Type
1	16-A	72	ARG
1	16-A	85	GLU
1	16-A	164	ILE
1	16-A	204	GLN
1	16-A	254	ILE
1	16-A	318	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (81) such sidechains are listed below:

Mol	Chain	Res	Type
1	1-A	19	ASN
1	1-A	188	GLN
1	1-A	268	GLN
1	1-A	363	ASN
1	2-A	51	ASN
1	2-A	268	GLN
1	2-A	344	HIS
1	2-A	363	ASN
1	3-A	41	ASN
1	3-A	268	GLN
1	4-A	19	ASN
1	4-A	204	GLN
1	4-A	221	ASN
1	4-A	268	GLN
1	4-A	344	HIS
1	4-A	363	ASN
1	5-A	19	ASN
1	5-A	188	GLN
1	5-A	204	GLN
1	5-A	268	GLN
1	5-A	363	ASN
1	6-A	188	GLN
1	6-A	268	GLN
1	6-A	363	ASN
1	7-A	12	GLN
1	7-A	19	ASN
1	7-A	189	ASN
1	7-A	204	GLN
1	7-A	268	GLN
1	7-A	344	HIS
1	7-A	363	ASN
1	8-A	20	ASN

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Mol	Chain	Res	Type
1	8-A	268	GLN
1	8-A	275	GLN
1	8-A	363	ASN
1	9-A	19	ASN
1	9-A	188	GLN
1	9-A	268	GLN
1	9-A	363	ASN
1	10-A	19	ASN
1	10-A	41	ASN
1	10-A	154	ASN
1	10-A	268	GLN
1	10-A	363	ASN
1	11-A	19	ASN
1	11-A	51	ASN
1	11-A	188	GLN
1	11-A	221	ASN
1	11-A	255	ASN
1	11-A	268	GLN
1	11-A	363	ASN
1	12-A	12	GLN
1	12-A	41	ASN
1	12-A	188	GLN
1	12-A	268	GLN
1	12-A	344	HIS
1	12-A	363	ASN
1	13-A	19	ASN
1	13-A	20	ASN
1	13-A	163	ASN
1	13-A	204	GLN
1	13-A	344	HIS
1	14-A	12	GLN
1	14-A	19	ASN
1	14-A	41	ASN
1	14-A	209	ASN
1	14-A	268	GLN
1	14-A	344	HIS
1	14-A	363	ASN
1	15-A	19	ASN
1	15-A	188	GLN
1	15-A	189	ASN
1	15-A	204	GLN
1	15-A	344	HIS

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Mol	Chain	Res	Type
1	15-A	363	ASN
1	16-A	19	ASN
1	16-A	20	ASN
1	16-A	154	ASN
1	16-A	189	ASN
1	16-A	268	GLN
1	16-A	363	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 32 ligands modelled in this entry, 32 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

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	1-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	2-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	3-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	4-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	5-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	6-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	7-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	8-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	9-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	10-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	11-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	12-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	13-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	14-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	15-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
1	16-A	343/367 (93%)	0.35	19 (5%)	25	27	6, 17, 32, 45	343 (100%)
All	All	5488/5872 (93%)	0.35	304 (5%)	23	27	6, 17, 32, 45	5488 (100%)

All (304) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	1-A	20	ASN	5.8
1	2-A	20	ASN	5.8
1	3-A	20	ASN	5.8
1	4-A	20	ASN	5.8
1	5-A	20	ASN	5.8

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Mol	Chain	Res	Type	RSRZ
1	6-A	20	ASN	5.8
1	7-A	20	ASN	5.8
1	8-A	20	ASN	5.8
1	9-A	20	ASN	5.8
1	10-A	20	ASN	5.8
1	11-A	20	ASN	5.8
1	12-A	20	ASN	5.8
1	13-A	20	ASN	5.8
1	14-A	20	ASN	5.8
1	15-A	20	ASN	5.8
1	16-A	20	ASN	5.8
1	1-A	365	VAL	4.8
1	2-A	365	VAL	4.8
1	3-A	365	VAL	4.8
1	4-A	365	VAL	4.8
1	5-A	365	VAL	4.8
1	6-A	365	VAL	4.8
1	7-A	365	VAL	4.8
1	8-A	365	VAL	4.8
1	9-A	365	VAL	4.8
1	10-A	365	VAL	4.8
1	11-A	365	VAL	4.8
1	12-A	365	VAL	4.8
1	13-A	365	VAL	4.8
1	14-A	365	VAL	4.8
1	15-A	365	VAL	4.8
1	16-A	365	VAL	4.8
1	1-A	15	MET	4.3
1	2-A	15	MET	4.3
1	3-A	15	MET	4.3
1	4-A	15	MET	4.3
1	5-A	15	MET	4.3
1	6-A	15	MET	4.3
1	7-A	15	MET	4.3
1	8-A	15	MET	4.3
1	9-A	15	MET	4.3
1	10-A	15	MET	4.3
1	11-A	15	MET	4.3
1	12-A	15	MET	4.3
1	13-A	15	MET	4.3
1	14-A	15	MET	4.3
1	15-A	15	MET	4.3

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Mol	Chain	Res	Type	RSRZ
1	16-A	15	MET	4.3
1	1-A	209	ASN	4.1
1	2-A	209	ASN	4.1
1	3-A	209	ASN	4.1
1	4-A	209	ASN	4.1
1	5-A	209	ASN	4.1
1	6-A	209	ASN	4.1
1	7-A	209	ASN	4.1
1	8-A	209	ASN	4.1
1	9-A	209	ASN	4.1
1	10-A	209	ASN	4.1
1	11-A	209	ASN	4.1
1	12-A	209	ASN	4.1
1	13-A	209	ASN	4.1
1	14-A	209	ASN	4.1
1	15-A	209	ASN	4.1
1	16-A	209	ASN	4.1
1	1-A	17	ILE	3.6
1	2-A	17	ILE	3.6
1	3-A	17	ILE	3.6
1	4-A	17	ILE	3.6
1	5-A	17	ILE	3.6
1	6-A	17	ILE	3.6
1	7-A	17	ILE	3.6
1	8-A	17	ILE	3.6
1	9-A	17	ILE	3.6
1	10-A	17	ILE	3.6
1	11-A	17	ILE	3.6
1	12-A	17	ILE	3.6
1	13-A	17	ILE	3.6
1	14-A	17	ILE	3.6
1	15-A	17	ILE	3.6
1	16-A	17	ILE	3.6
1	1-A	208	ILE	3.5
1	2-A	208	ILE	3.5
1	3-A	208	ILE	3.5
1	4-A	208	ILE	3.5
1	5-A	208	ILE	3.5
1	6-A	208	ILE	3.5
1	7-A	208	ILE	3.5
1	8-A	208	ILE	3.5
1	9-A	208	ILE	3.5

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Mol	Chain	Res	Type	RSRZ
1	10-A	208	ILE	3.5
1	11-A	208	ILE	3.5
1	12-A	208	ILE	3.5
1	13-A	208	ILE	3.5
1	14-A	208	ILE	3.5
1	15-A	208	ILE	3.5
1	16-A	208	ILE	3.5
1	1-A	274	GLY	3.2
1	2-A	274	GLY	3.2
1	3-A	274	GLY	3.2
1	4-A	274	GLY	3.2
1	5-A	274	GLY	3.2
1	6-A	274	GLY	3.2
1	7-A	274	GLY	3.2
1	8-A	274	GLY	3.2
1	9-A	274	GLY	3.2
1	10-A	274	GLY	3.2
1	11-A	274	GLY	3.2
1	12-A	274	GLY	3.2
1	13-A	274	GLY	3.2
1	14-A	274	GLY	3.2
1	15-A	274	GLY	3.2
1	16-A	274	GLY	3.2
1	1-A	210	LYS	3.1
1	2-A	210	LYS	3.1
1	3-A	210	LYS	3.1
1	4-A	210	LYS	3.1
1	5-A	210	LYS	3.1
1	6-A	210	LYS	3.1
1	7-A	210	LYS	3.1
1	8-A	210	LYS	3.1
1	9-A	210	LYS	3.1
1	10-A	210	LYS	3.1
1	11-A	210	LYS	3.1
1	12-A	210	LYS	3.1
1	13-A	210	LYS	3.1
1	14-A	210	LYS	3.1
1	15-A	210	LYS	3.1
1	16-A	210	LYS	3.1
1	1-A	40	PRO	3.0
1	2-A	40	PRO	3.0
1	3-A	40	PRO	3.0

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Mol	Chain	Res	Type	RSRZ
1	4-A	40	PRO	3.0
1	5-A	40	PRO	3.0
1	6-A	40	PRO	3.0
1	7-A	40	PRO	3.0
1	8-A	40	PRO	3.0
1	9-A	40	PRO	3.0
1	10-A	40	PRO	3.0
1	11-A	40	PRO	3.0
1	12-A	40	PRO	3.0
1	13-A	40	PRO	3.0
1	14-A	40	PRO	3.0
1	15-A	40	PRO	3.0
1	16-A	40	PRO	3.0
1	1-A	66	VAL	2.9
1	2-A	66	VAL	2.9
1	3-A	66	VAL	2.9
1	4-A	66	VAL	2.9
1	5-A	66	VAL	2.9
1	6-A	66	VAL	2.9
1	7-A	66	VAL	2.9
1	8-A	66	VAL	2.9
1	9-A	66	VAL	2.9
1	10-A	66	VAL	2.9
1	11-A	66	VAL	2.9
1	12-A	66	VAL	2.9
1	13-A	66	VAL	2.9
1	14-A	66	VAL	2.9
1	15-A	66	VAL	2.9
1	16-A	66	VAL	2.9
1	1-A	19	ASN	2.9
1	2-A	19	ASN	2.9
1	3-A	19	ASN	2.9
1	4-A	19	ASN	2.9
1	5-A	19	ASN	2.9
1	6-A	19	ASN	2.9
1	7-A	19	ASN	2.9
1	8-A	19	ASN	2.9
1	9-A	19	ASN	2.9
1	10-A	19	ASN	2.9
1	11-A	19	ASN	2.9
1	12-A	19	ASN	2.9
1	13-A	19	ASN	2.9

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Mol	Chain	Res	Type	RSRZ
1	14-A	19	ASN	2.9
1	15-A	19	ASN	2.9
1	16-A	19	ASN	2.9
1	1-A	273	ASN	2.5
1	2-A	273	ASN	2.5
1	3-A	273	ASN	2.5
1	4-A	273	ASN	2.5
1	5-A	273	ASN	2.5
1	6-A	273	ASN	2.5
1	7-A	273	ASN	2.5
1	8-A	273	ASN	2.5
1	9-A	273	ASN	2.5
1	10-A	273	ASN	2.5
1	11-A	273	ASN	2.5
1	12-A	273	ASN	2.5
1	13-A	273	ASN	2.5
1	14-A	273	ASN	2.5
1	15-A	273	ASN	2.5
1	16-A	273	ASN	2.5
1	1-A	211	SER	2.3
1	2-A	211	SER	2.3
1	3-A	211	SER	2.3
1	4-A	211	SER	2.3
1	5-A	211	SER	2.3
1	6-A	211	SER	2.3
1	7-A	211	SER	2.3
1	8-A	211	SER	2.3
1	9-A	211	SER	2.3
1	10-A	211	SER	2.3
1	11-A	211	SER	2.3
1	12-A	211	SER	2.3
1	13-A	211	SER	2.3
1	14-A	211	SER	2.3
1	15-A	211	SER	2.3
1	16-A	211	SER	2.3
1	1-A	341	MET	2.3
1	2-A	341	MET	2.3
1	3-A	341	MET	2.3
1	4-A	341	MET	2.3
1	5-A	341	MET	2.3
1	6-A	341	MET	2.3
1	7-A	341	MET	2.3

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Mol	Chain	Res	Type	RSRZ
1	8-A	341	MET	2.3
1	9-A	341	MET	2.3
1	10-A	341	MET	2.3
1	11-A	341	MET	2.3
1	12-A	341	MET	2.3
1	13-A	341	MET	2.3
1	14-A	341	MET	2.3
1	15-A	341	MET	2.3
1	16-A	341	MET	2.3
1	1-A	18	GLU	2.2
1	2-A	18	GLU	2.2
1	3-A	18	GLU	2.2
1	4-A	18	GLU	2.2
1	5-A	18	GLU	2.2
1	6-A	18	GLU	2.2
1	7-A	18	GLU	2.2
1	8-A	18	GLU	2.2
1	9-A	18	GLU	2.2
1	10-A	18	GLU	2.2
1	11-A	18	GLU	2.2
1	12-A	18	GLU	2.2
1	13-A	18	GLU	2.2
1	14-A	18	GLU	2.2
1	15-A	18	GLU	2.2
1	16-A	18	GLU	2.2
1	1-A	122	LYS	2.1
1	2-A	122	LYS	2.1
1	3-A	122	LYS	2.1
1	4-A	122	LYS	2.1
1	5-A	122	LYS	2.1
1	6-A	122	LYS	2.1
1	7-A	122	LYS	2.1
1	8-A	122	LYS	2.1
1	9-A	122	LYS	2.1
1	10-A	122	LYS	2.1
1	11-A	122	LYS	2.1
1	12-A	122	LYS	2.1
1	13-A	122	LYS	2.1
1	14-A	122	LYS	2.1
1	15-A	122	LYS	2.1
1	16-A	122	LYS	2.1
1	1-A	339	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
1	2-A	339	ILE	2.1
1	3-A	339	ILE	2.1
1	4-A	339	ILE	2.1
1	5-A	339	ILE	2.1
1	6-A	339	ILE	2.1
1	7-A	339	ILE	2.1
1	8-A	339	ILE	2.1
1	9-A	339	ILE	2.1
1	10-A	339	ILE	2.1
1	11-A	339	ILE	2.1
1	12-A	339	ILE	2.1
1	13-A	339	ILE	2.1
1	14-A	339	ILE	2.1
1	15-A	339	ILE	2.1
1	16-A	339	ILE	2.1
1	1-A	188	GLN	2.1
1	2-A	188	GLN	2.1
1	3-A	188	GLN	2.1
1	4-A	188	GLN	2.1
1	5-A	188	GLN	2.1
1	6-A	188	GLN	2.1
1	7-A	188	GLN	2.1
1	8-A	188	GLN	2.1
1	9-A	188	GLN	2.1
1	10-A	188	GLN	2.1
1	11-A	188	GLN	2.1
1	12-A	188	GLN	2.1
1	13-A	188	GLN	2.1
1	14-A	188	GLN	2.1
1	15-A	188	GLN	2.1
1	16-A	188	GLN	2.1
1	1-A	89	LYS	2.0
1	2-A	89	LYS	2.0
1	3-A	89	LYS	2.0
1	4-A	89	LYS	2.0
1	5-A	89	LYS	2.0
1	6-A	89	LYS	2.0
1	7-A	89	LYS	2.0
1	8-A	89	LYS	2.0
1	9-A	89	LYS	2.0
1	10-A	89	LYS	2.0
1	11-A	89	LYS	2.0

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Mol	Chain	Res	Type	RSRZ
1	12-A	89	LYS	2.0
1	13-A	89	LYS	2.0
1	14-A	89	LYS	2.0
1	15-A	89	LYS	2.0
1	16-A	89	LYS	2.0

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

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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	MG	1-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	2-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	3-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	4-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	5-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	6-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	7-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	8-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	9-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	10-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	11-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	12-A	401	1/1	0.92	0.14	43,43,43,43	1
2	MG	13-A	401	1/1	0.92	0.14	42,42,42,42	1
2	MG	14-A	401	1/1	0.92	0.14	42,42,42,42	1
2	MG	15-A	401	1/1	0.92	0.14	42,42,42,42	1
2	MG	16-A	401	1/1	0.92	0.14	42,42,42,42	1
2	MG	1-A	400	1/1	0.99	0.04	10,10,10,10	1
2	MG	2-A	400	1/1	0.99	0.04	16,16,16,16	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MG	3-A	400	1/1	0.99	0.04	10,10,10,10	1
2	MG	4-A	400	1/1	0.99	0.04	19,19,19,19	1
2	MG	5-A	400	1/1	0.99	0.04	16,16,16,16	1
2	MG	6-A	400	1/1	0.99	0.04	16,16,16,16	1
2	MG	7-A	400	1/1	0.99	0.04	18,18,18,18	1
2	MG	8-A	400	1/1	0.99	0.04	11,11,11,11	1
2	MG	9-A	400	1/1	0.99	0.04	12,12,12,12	1
2	MG	10-A	400	1/1	0.99	0.04	18,18,18,18	1
2	MG	11-A	400	1/1	0.99	0.04	11,11,11,11	1
2	MG	12-A	400	1/1	0.99	0.04	10,10,10,10	1
2	MG	13-A	400	1/1	0.99	0.04	10,10,10,10	1
2	MG	14-A	400	1/1	0.99	0.04	6,6,6,6	1
2	MG	15-A	400	1/1	0.99	0.04	7,7,7,7	1
2	MG	16-A	400	1/1	0.99	0.04	7,7,7,7	1

6.5 Other polymers (i)

There are no such residues in this entry.