wwPDB X-ray Structure Validation Summary Report (i)

Oct 26, 2024 – 08:55 AM EDT

PDB ID	:	5T5O
Title	:	LECTIN FROM BAUHINIA FORFICATA IN COMPLEX WITH TN-PEPTIDE
Authors	:	Lubkowski, J.; Wlodawer, A.
Deposited on	:	2016-08-31
Resolution	:	2.75 Å(reported)

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

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

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

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

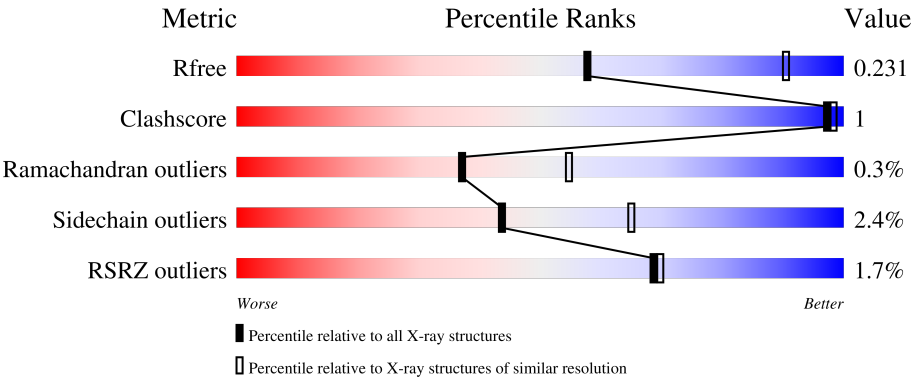
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.75 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	1606 (2.78-2.74)
Clashscore	180529	1689 (2.78-2.74)
Ramachandran outliers	177936	1665 (2.78-2.74)
Sidechain outliers	177891	1665 (2.78-2.74)
RSRZ outliers	164620	1606 (2.78-2.74)

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	242	88% 5% • 5%
1	B	242	84% 9% • 5%
1	C	242	90% 5% 5%
1	D	242	89% 5% • 5%
1	E	242	89% 6% 5%

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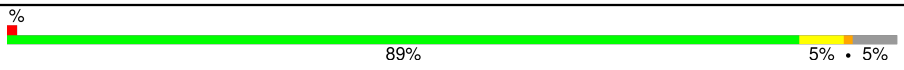
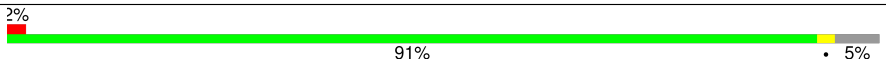
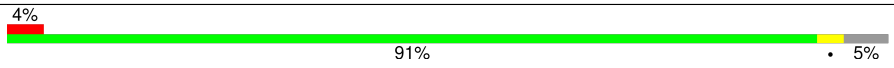
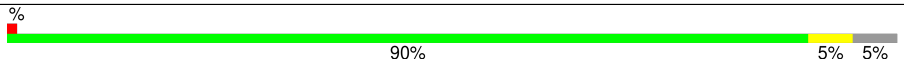
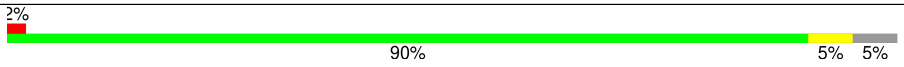
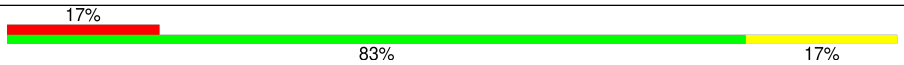
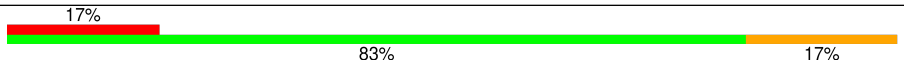
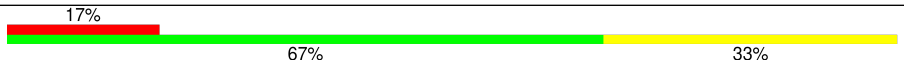
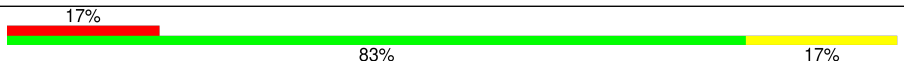
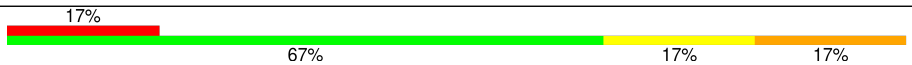
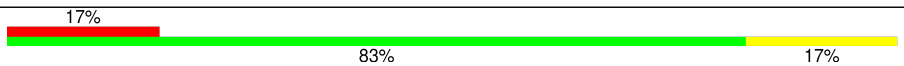
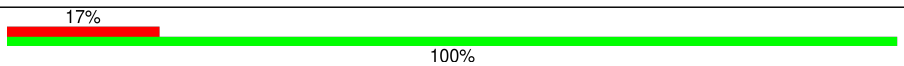
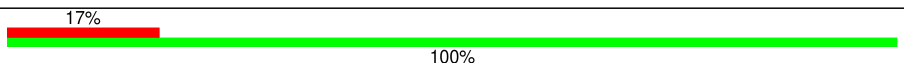
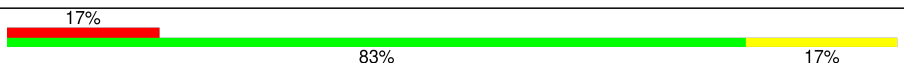
Mol	Chain	Length	Quality of chain
1	F	242	
1	G	242	
1	H	242	
1	I	242	
1	J	242	
2	a	6	
2	b	6	
2	c	6	
2	d	6	
2	e	6	
2	f	6	
2	g	6	
2	h	6	
2	i	6	
2	j	6	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 18803 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 Lectin.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	B	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	C	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	D	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	E	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	F	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	G	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	H	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	I	229	Total	C	N	O	0	0	0
			1811	1156	305	350			
1	J	229	Total	C	N	O	0	0	0
			1811	1156	305	350			

There are 90 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	234	GLY	-	expression tag	UNP P86993
A	235	ALA	-	expression tag	UNP P86993
A	236	ARG	-	expression tag	UNP P86993
A	237	HIS	-	expression tag	UNP P86993
A	238	HIS	-	expression tag	UNP P86993
A	239	HIS	-	expression tag	UNP P86993
A	240	HIS	-	expression tag	UNP P86993
A	241	HIS	-	expression tag	UNP P86993
A	242	HIS	-	expression tag	UNP P86993

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Chain	Residue	Modelled	Actual	Comment	Reference
B	234	GLY	-	expression tag	UNP P86993
B	235	ALA	-	expression tag	UNP P86993
B	236	ARG	-	expression tag	UNP P86993
B	237	HIS	-	expression tag	UNP P86993
B	238	HIS	-	expression tag	UNP P86993
B	239	HIS	-	expression tag	UNP P86993
B	240	HIS	-	expression tag	UNP P86993
B	241	HIS	-	expression tag	UNP P86993
B	242	HIS	-	expression tag	UNP P86993
C	234	GLY	-	expression tag	UNP P86993
C	235	ALA	-	expression tag	UNP P86993
C	236	ARG	-	expression tag	UNP P86993
C	237	HIS	-	expression tag	UNP P86993
C	238	HIS	-	expression tag	UNP P86993
C	239	HIS	-	expression tag	UNP P86993
C	240	HIS	-	expression tag	UNP P86993
C	241	HIS	-	expression tag	UNP P86993
C	242	HIS	-	expression tag	UNP P86993
D	234	GLY	-	expression tag	UNP P86993
D	235	ALA	-	expression tag	UNP P86993
D	236	ARG	-	expression tag	UNP P86993
D	237	HIS	-	expression tag	UNP P86993
D	238	HIS	-	expression tag	UNP P86993
D	239	HIS	-	expression tag	UNP P86993
D	240	HIS	-	expression tag	UNP P86993
D	241	HIS	-	expression tag	UNP P86993
D	242	HIS	-	expression tag	UNP P86993
E	234	GLY	-	expression tag	UNP P86993
E	235	ALA	-	expression tag	UNP P86993
E	236	ARG	-	expression tag	UNP P86993
E	237	HIS	-	expression tag	UNP P86993
E	238	HIS	-	expression tag	UNP P86993
E	239	HIS	-	expression tag	UNP P86993
E	240	HIS	-	expression tag	UNP P86993
E	241	HIS	-	expression tag	UNP P86993
E	242	HIS	-	expression tag	UNP P86993
F	234	GLY	-	expression tag	UNP P86993
F	235	ALA	-	expression tag	UNP P86993
F	236	ARG	-	expression tag	UNP P86993
F	237	HIS	-	expression tag	UNP P86993
F	238	HIS	-	expression tag	UNP P86993
F	239	HIS	-	expression tag	UNP P86993

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Chain	Residue	Modelled	Actual	Comment	Reference
F	240	HIS	-	expression tag	UNP P86993
F	241	HIS	-	expression tag	UNP P86993
F	242	HIS	-	expression tag	UNP P86993
G	234	GLY	-	expression tag	UNP P86993
G	235	ALA	-	expression tag	UNP P86993
G	236	ARG	-	expression tag	UNP P86993
G	237	HIS	-	expression tag	UNP P86993
G	238	HIS	-	expression tag	UNP P86993
G	239	HIS	-	expression tag	UNP P86993
G	240	HIS	-	expression tag	UNP P86993
G	241	HIS	-	expression tag	UNP P86993
G	242	HIS	-	expression tag	UNP P86993
H	234	GLY	-	expression tag	UNP P86993
H	235	ALA	-	expression tag	UNP P86993
H	236	ARG	-	expression tag	UNP P86993
H	237	HIS	-	expression tag	UNP P86993
H	238	HIS	-	expression tag	UNP P86993
H	239	HIS	-	expression tag	UNP P86993
H	240	HIS	-	expression tag	UNP P86993
H	241	HIS	-	expression tag	UNP P86993
H	242	HIS	-	expression tag	UNP P86993
I	234	GLY	-	expression tag	UNP P86993
I	235	ALA	-	expression tag	UNP P86993
I	236	ARG	-	expression tag	UNP P86993
I	237	HIS	-	expression tag	UNP P86993
I	238	HIS	-	expression tag	UNP P86993
I	239	HIS	-	expression tag	UNP P86993
I	240	HIS	-	expression tag	UNP P86993
I	241	HIS	-	expression tag	UNP P86993
I	242	HIS	-	expression tag	UNP P86993
J	234	GLY	-	expression tag	UNP P86993
J	235	ALA	-	expression tag	UNP P86993
J	236	ARG	-	expression tag	UNP P86993
J	237	HIS	-	expression tag	UNP P86993
J	238	HIS	-	expression tag	UNP P86993
J	239	HIS	-	expression tag	UNP P86993
J	240	HIS	-	expression tag	UNP P86993
J	241	HIS	-	expression tag	UNP P86993
J	242	HIS	-	expression tag	UNP P86993

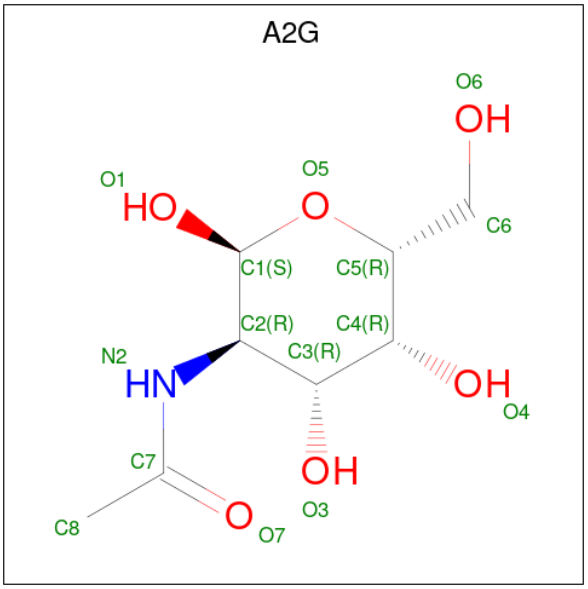
- Molecule 2 is a protein called TN-peptide ACE-GLY-VAL-THR-SER-ALA.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	a	6	Total C N O 32 19 5 8	0	0	0
2	b	6	Total C N O 32 19 5 8	0	0	0
2	c	6	Total C N O 32 19 5 8	0	0	0
2	d	6	Total C N O 32 19 5 8	0	0	0
2	e	6	Total C N O 32 19 5 8	0	0	0
2	f	6	Total C N O 32 19 5 8	0	0	0
2	g	6	Total C N O 32 19 5 8	0	0	0
2	h	6	Total C N O 32 19 5 8	0	0	0
2	i	6	Total C N O 32 19 5 8	0	0	0
2	j	6	Total C N O 32 19 5 8	0	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total Ca 2 2	0	0
3	B	2	Total Ca 2 2	0	0
3	C	2	Total Ca 2 2	0	0
3	D	2	Total Ca 2 2	0	0
3	E	2	Total Ca 2 2	0	0
3	F	2	Total Ca 2 2	0	0
3	G	2	Total Ca 2 2	0	0
3	H	2	Total Ca 2 2	0	0
3	I	2	Total Ca 2 2	0	0
3	J	2	Total Ca 2 2	0	0

- Molecule 4 is 2-acetamido-2-deoxy-alpha-D-galactopyranose (three-letter code: A2G) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	a	1	Total C N O 14 8 1 5	0	0
4	b	1	Total C N O 14 8 1 5	0	0
4	c	1	Total C N O 14 8 1 5	0	0
4	d	1	Total C N O 14 8 1 5	0	0
4	e	1	Total C N O 14 8 1 5	0	0
4	f	1	Total C N O 14 8 1 5	0	0
4	g	1	Total C N O 14 8 1 5	0	0
4	h	1	Total C N O 14 8 1 5	0	0
4	i	1	Total C N O 14 8 1 5	0	0
4	j	1	Total C N O 14 8 1 5	0	0

- Molecule 5 is water.

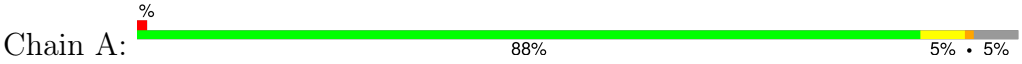
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	27	Total O 27 27	0	0
5	a	1	Total O 1 1	0	0
5	B	30	Total O 30 30	0	0
5	b	1	Total O 1 1	0	0
5	C	18	Total O 18 18	0	0
5	D	29	Total O 29 29	0	0
5	E	16	Total O 16 16	0	0
5	F	26	Total O 26 26	0	0
5	f	3	Total O 3 3	0	0
5	G	16	Total O 16 16	0	0
5	H	18	Total O 18 18	0	0
5	h	1	Total O 1 1	0	0
5	I	13	Total O 13 13	0	0
5	i	1	Total O 1 1	0	0
5	J	13	Total O 13 13	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.

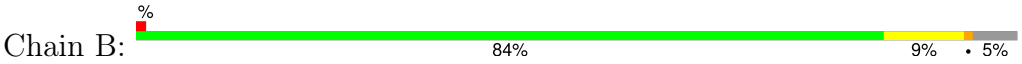
• Molecule 1: Lectin

Chain A:



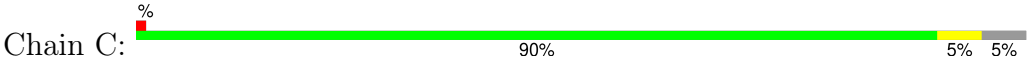
• Molecule 1: Lectin

Chain B:



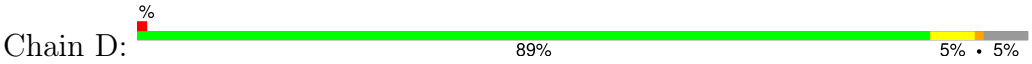
• Molecule 1: Lectin

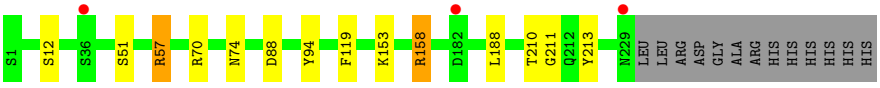
Chain C:



• Molecule 1: Lectin

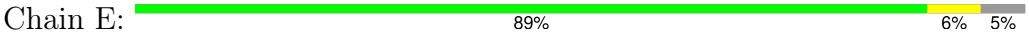
Chain D:





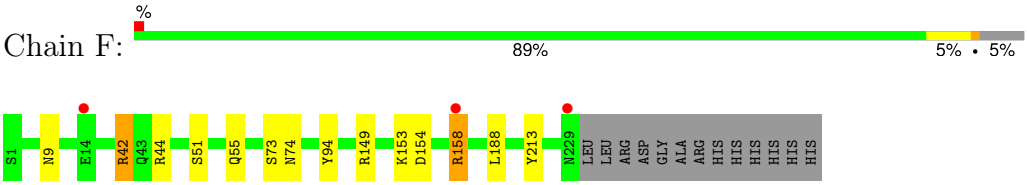
• Molecule 1: Lectin

Chain E:



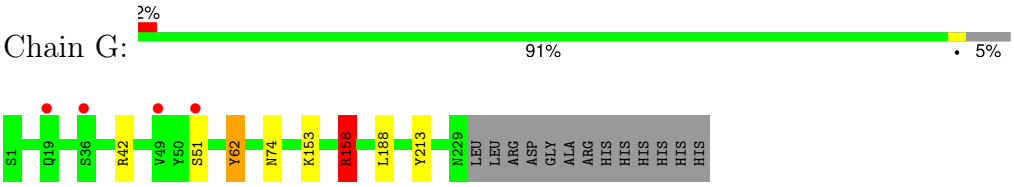
• Molecule 1: Lectin

Chain F:



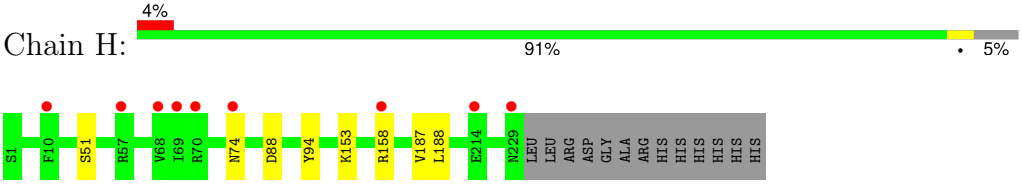
• Molecule 1: Lectin

Chain G:



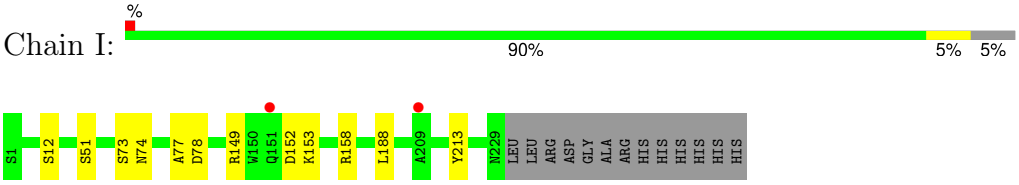
• Molecule 1: Lectin

Chain H:



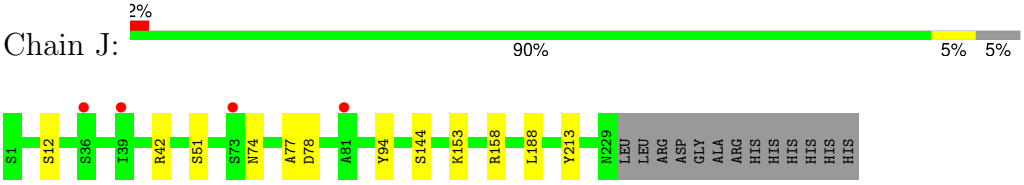
• Molecule 1: Lectin

Chain I:



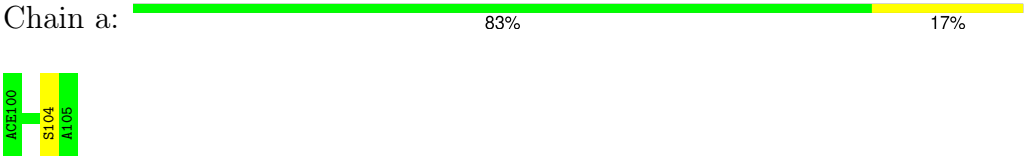
• Molecule 1: Lectin

Chain J:



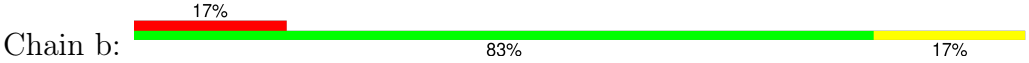
• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

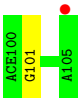
Chain a:



• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

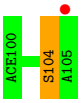
Chain b:





• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain c:



• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

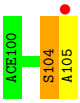
Chain d:

• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain e:

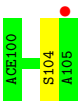
• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain f:



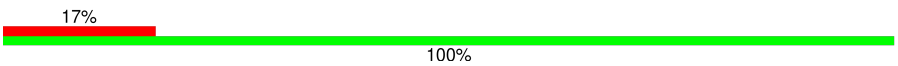
• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain g:



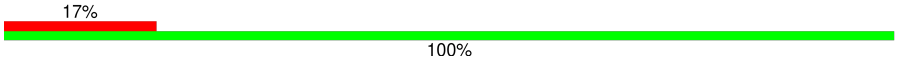
• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain h:



• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain i:



• Molecule 2: TN-peptide ACE-GLY-VAL-THR-SER-ALA

Chain j:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	65.08Å 187.29Å 258.39Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.38 – 2.75 49.38 – 2.75	Depositor EDS
% Data completeness (in resolution range)	79.7 (49.38-2.75) 83.6 (49.38-2.75)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.96 (at 2.69Å)	Xtriage
Refinement program	REFMAC 5.8.0107	Depositor
R, R_{free}	0.201 , 0.230 0.203 , 0.231	Depositor DCC
R_{free} test set	3444 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	47.6	Xtriage
Anisotropy	0.406	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 38.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	18803	wwPDB-VP
Average B, all atoms (Å^2)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.77% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: A2G, ACE, CA

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	1.22	4/1864 (0.2%)	1.11	10/2547 (0.4%)
1	B	1.26	12/1864 (0.6%)	1.08	13/2547 (0.5%)
1	C	0.88	0/1864	0.89	3/2547 (0.1%)
1	D	1.06	4/1864 (0.2%)	0.99	4/2547 (0.2%)
1	E	0.85	0/1864	0.90	7/2547 (0.3%)
1	F	0.98	1/1864 (0.1%)	0.99	8/2547 (0.3%)
1	G	0.81	1/1864 (0.1%)	0.87	2/2547 (0.1%)
1	H	0.95	0/1864	0.94	2/2547 (0.1%)
1	I	0.81	0/1864	0.87	3/2547 (0.1%)
1	J	0.81	0/1864	0.87	1/2547 (0.0%)
2	a	1.59	0/29	1.53	0/39
2	b	1.96	1/29 (3.4%)	1.29	0/39
2	c	1.36	0/29	1.17	0/39
2	d	1.80	1/29 (3.4%)	1.42	0/39
2	e	1.69	1/29 (3.4%)	1.17	0/39
2	f	1.98	1/29 (3.4%)	1.33	0/39
2	g	1.52	0/29	1.07	0/39
2	h	1.49	0/29	1.30	0/39
2	i	1.49	0/29	1.11	0/39
2	j	1.56	0/29	1.17	0/39
All	All	0.99	26/18930 (0.1%)	0.96	53/25860 (0.2%)

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
2	c	0	1
2	d	0	1
2	f	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
2	j	0	1
All	All	0	4

The worst 5 of 26 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	102	GLU	CG-CD	10.23	1.67	1.51
1	A	44	ARG	CZ-NH1	7.99	1.43	1.33
1	D	213	TYR	CE1-CZ	7.22	1.48	1.38
1	B	224	SER	CB-OG	7.04	1.51	1.42
1	B	102	GLU	CD-OE1	6.95	1.33	1.25

The worst 5 of 53 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	44	ARG	NE-CZ-NH1	14.75	127.67	120.30
1	A	44	ARG	NE-CZ-NH2	-10.33	115.14	120.30
1	F	74	ASN	CB-CA-C	-8.68	93.05	110.40
1	B	74	ASN	CB-CA-C	-8.09	94.21	110.40
1	A	88	ASP	CB-CG-OD2	-7.79	111.28	118.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	c	104	SER	Peptide
2	d	104	SER	Peptide
2	f	104	SER	Peptide
2	j	104	SER	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	1811	0	1718	0	0
1	B	1811	0	1718	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1811	0	1718	3	2
1	D	1811	0	1718	4	0
1	E	1811	0	1718	1	0
1	F	1811	0	1718	4	0
1	G	1811	0	1718	4	0
1	H	1811	0	1718	1	0
1	I	1811	0	1718	3	0
1	J	1811	0	1718	4	0
2	a	32	0	31	0	0
2	b	32	0	31	0	0
2	c	32	0	31	0	0
2	d	32	0	31	0	0
2	e	32	0	31	0	0
2	f	32	0	31	0	0
2	g	32	0	31	0	0
2	h	32	0	31	0	0
2	i	32	0	31	0	0
2	j	32	0	31	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	2	0	0	0	0
3	G	2	0	0	0	0
3	H	2	0	0	0	0
3	I	2	0	0	0	0
3	J	2	0	0	0	0
4	a	14	0	12	0	0
4	b	14	0	12	0	0
4	c	14	0	12	0	0
4	d	14	0	12	0	0
4	e	14	0	12	0	0
4	f	14	0	12	0	0
4	g	14	0	12	0	0
4	h	14	0	12	0	0
4	i	14	0	12	0	0
4	j	14	0	12	0	0
5	A	27	0	0	0	0
5	B	30	0	0	0	0
5	C	18	0	0	0	0
5	D	29	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	E	16	0	0	0	0
5	F	26	0	0	0	0
5	G	16	0	0	1	0
5	H	18	0	0	0	0
5	I	13	0	0	1	0
5	J	13	0	0	1	0
5	a	1	0	0	0	0
5	b	1	0	0	0	0
5	f	3	0	0	0	0
5	h	1	0	0	0	0
5	i	1	0	0	0	0
All	All	18803	0	17610	20	2

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 1.

The worst 5 of 20 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:J:144:SER:OG	5:J:401:HOH:O	2.11	0.68
1:G:42:ARG:NH1	1:J:213:TYR:OH	2.34	0.60
1:D:57:ARG:HH22	1:F:55:GLN:HE22	1.56	0.53
1:C:55:GLN:NE2	1:C:201:ASP:OD1	2.41	0.53
1:G:62:TYR:HB2	1:H:187:VAL:CG2	2.40	0.51

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:36:SER:CA	1:C:55:GLN:OE1[4_555]	1.90	0.30
1:C:36:SER:CB	1:C:55:GLN:OE1[4_555]	2.04	0.16

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	227/242 (94%)	215 (95%)	11 (5%)	1 (0%)	30 47
1	B	227/242 (94%)	214 (94%)	12 (5%)	1 (0%)	30 47
1	C	227/242 (94%)	215 (95%)	12 (5%)	0	100 100
1	D	227/242 (94%)	215 (95%)	11 (5%)	1 (0%)	30 47
1	E	227/242 (94%)	218 (96%)	9 (4%)	0	100 100
1	F	227/242 (94%)	217 (96%)	9 (4%)	1 (0%)	30 47
1	G	227/242 (94%)	216 (95%)	11 (5%)	0	100 100
1	H	227/242 (94%)	217 (96%)	9 (4%)	1 (0%)	30 47
1	I	227/242 (94%)	217 (96%)	10 (4%)	0	100 100
1	J	227/242 (94%)	216 (95%)	10 (4%)	1 (0%)	30 47
2	a	4/6 (67%)	3 (75%)	1 (25%)	0	100 100
2	b	4/6 (67%)	4 (100%)	0	0	100 100
2	c	4/6 (67%)	4 (100%)	0	0	100 100
2	d	4/6 (67%)	4 (100%)	0	0	100 100
2	e	4/6 (67%)	2 (50%)	2 (50%)	0	100 100
2	f	4/6 (67%)	4 (100%)	0	0	100 100
2	g	4/6 (67%)	3 (75%)	0	1 (25%)	0 0
2	h	4/6 (67%)	4 (100%)	0	0	100 100
2	i	4/6 (67%)	2 (50%)	2 (50%)	0	100 100
2	j	4/6 (67%)	3 (75%)	1 (25%)	0	100 100
All	All	2310/2480 (93%)	2193 (95%)	110 (5%)	7 (0%)	37 55

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	94	TYR
1	B	94	TYR
1	D	94	TYR
1	H	94	TYR
2	g	104	SER

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	198/209 (95%)	193 (98%)	5 (2%)	42 64
1	B	198/209 (95%)	193 (98%)	5 (2%)	42 64
1	C	198/209 (95%)	194 (98%)	4 (2%)	50 70
1	D	198/209 (95%)	193 (98%)	5 (2%)	42 64
1	E	198/209 (95%)	193 (98%)	5 (2%)	42 64
1	F	198/209 (95%)	194 (98%)	4 (2%)	50 70
1	G	198/209 (95%)	194 (98%)	4 (2%)	50 70
1	H	198/209 (95%)	194 (98%)	4 (2%)	50 70
1	I	198/209 (95%)	193 (98%)	5 (2%)	42 64
1	J	198/209 (95%)	193 (98%)	5 (2%)	42 64
2	a	3/3 (100%)	2 (67%)	1 (33%)	0 0
2	b	3/3 (100%)	3 (100%)	0	100 100
2	c	3/3 (100%)	2 (67%)	1 (33%)	0 0
2	d	3/3 (100%)	3 (100%)	0	100 100
2	e	3/3 (100%)	3 (100%)	0	100 100
2	f	3/3 (100%)	2 (67%)	1 (33%)	0 0
2	g	3/3 (100%)	3 (100%)	0	100 100
2	h	3/3 (100%)	3 (100%)	0	100 100
2	i	3/3 (100%)	3 (100%)	0	100 100
2	j	3/3 (100%)	3 (100%)	0	100 100
All	All	2010/2120 (95%)	1961 (98%)	49 (2%)	44 65

5 of 49 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	158	ARG
1	H	51	SER
1	F	188	LEU

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Mol	Chain	Res	Type
1	G	153	LYS
1	H	158	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	26	ASN
1	F	55	GLN

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 30 ligands modelled in this entry, 20 are monoatomic - leaving 10 for Mogul analysis.

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	$\#\|Z\| > 2$
4	A2G	b	201	2	14,14,15	1.23	1 (7%)	17,19,21	1.94	5 (29%)
4	A2G	a	201	2	14,14,15	1.01	1 (7%)	17,19,21	3.24	8 (47%)
4	A2G	j	201	2	14,14,15	0.67	0	17,19,21	2.29	4 (23%)
4	A2G	g	201	2	14,14,15	0.74	0	17,19,21	1.52	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	A2G	h	201	2	14,14,15	0.88	0	17,19,21	2.14	6 (35%)
4	A2G	d	201	2	14,14,15	1.43	4 (28%)	17,19,21	2.04	5 (29%)
4	A2G	e	201	2	14,14,15	0.72	0	17,19,21	2.16	5 (29%)
4	A2G	f	201	2	14,14,15	0.97	0	17,19,21	1.93	5 (29%)
4	A2G	i	201	2	14,14,15	1.40	2 (14%)	17,19,21	1.69	5 (29%)
4	A2G	c	201	2	14,14,15	0.74	0	17,19,21	1.58	3 (17%)

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
4	A2G	b	201	2	-	0/6/23/26	0/1/1/1
4	A2G	a	201	2	-	0/6/23/26	0/1/1/1
4	A2G	j	201	2	-	0/6/23/26	0/1/1/1
4	A2G	g	201	2	-	1/6/23/26	0/1/1/1
4	A2G	h	201	2	-	0/6/23/26	0/1/1/1
4	A2G	d	201	2	-	0/6/23/26	0/1/1/1
4	A2G	e	201	2	-	2/6/23/26	0/1/1/1
4	A2G	f	201	2	-	0/6/23/26	0/1/1/1
4	A2G	i	201	2	-	0/6/23/26	0/1/1/1
4	A2G	c	201	2	-	0/6/23/26	0/1/1/1

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	i	201	A2G	C1-C2	-3.55	1.47	1.52
4	a	201	A2G	C1-C2	-2.85	1.48	1.52
4	b	201	A2G	C3-C2	-2.82	1.46	1.52
4	d	201	A2G	C1-C2	-2.63	1.48	1.52
4	d	201	A2G	O5-C1	-2.59	1.39	1.43

The worst 5 of 49 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	a	201	A2G	C1-O5-C5	9.59	125.04	112.19
4	j	201	A2G	C1-O5-C5	6.53	120.93	112.19
4	h	201	A2G	C1-O5-C5	5.34	119.35	112.19
4	e	201	A2G	C1-O5-C5	5.25	119.23	112.19
4	e	201	A2G	O5-C5-C4	-4.49	99.90	110.83

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	e	201	A2G	C4-C5-C6-O6
4	e	201	A2G	O5-C5-C6-O6
4	g	201	A2G	O5-C5-C6-O6

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	229/242 (94%)	-0.51	2 (0%) 81 83	30, 41, 56, 76	0
1	B	229/242 (94%)	-0.51	2 (0%) 81 83	30, 41, 56, 73	0
1	C	229/242 (94%)	-0.03	2 (0%) 81 83	42, 58, 76, 89	0
1	D	229/242 (94%)	-0.44	3 (1%) 74 77	31, 43, 61, 78	0
1	E	229/242 (94%)	0.09	0 100 100	46, 65, 84, 96	0
1	F	229/242 (94%)	-0.30	3 (1%) 74 77	34, 48, 68, 82	0
1	G	229/242 (94%)	0.49	4 (1%) 69 70	54, 72, 95, 108	0
1	H	229/242 (94%)	0.38	9 (3%) 44 45	45, 61, 90, 101	0
1	I	229/242 (94%)	0.21	2 (0%) 81 83	54, 72, 96, 110	0
1	J	229/242 (94%)	0.49	4 (1%) 69 70	61, 76, 98, 110	0
2	a	5/6 (83%)	-0.17	0 100 100	41, 41, 44, 49	0
2	b	5/6 (83%)	0.76	1 (20%) 3 4	46, 47, 49, 56	0
2	c	5/6 (83%)	0.46	1 (20%) 3 4	62, 66, 70, 75	0
2	d	5/6 (83%)	0.38	1 (20%) 3 4	39, 39, 41, 46	0
2	e	5/6 (83%)	1.84	1 (20%) 3 4	67, 72, 77, 84	0
2	f	5/6 (83%)	0.35	1 (20%) 3 4	43, 43, 46, 50	0
2	g	5/6 (83%)	0.92	1 (20%) 3 4	67, 68, 70, 72	0
2	h	5/6 (83%)	0.77	1 (20%) 3 4	57, 58, 60, 61	0
2	i	5/6 (83%)	0.73	1 (20%) 3 4	60, 61, 62, 62	0
2	j	5/6 (83%)	1.09	1 (20%) 3 4	65, 66, 69, 69	0
All	All	2340/2480 (94%)	0.00	40 (1%) 69 70	30, 58, 89, 110	0

The worst 5 of 40 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	e	105	ALA	6.8
1	H	70	ARG	4.7
2	j	105	ALA	4.4
2	b	105	ALA	3.7
2	f	105	ALA	3.4

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
4	A2G	e	201	14/15	0.92	0.10	63,67,68,68	0
4	A2G	b	201	14/15	0.93	0.10	38,40,42,44	0
4	A2G	c	201	14/15	0.94	0.08	56,59,61,62	0
4	A2G	a	201	14/15	0.94	0.09	35,37,38,38	0
4	A2G	g	201	14/15	0.94	0.08	63,65,66,67	0
4	A2G	i	201	14/15	0.94	0.09	58,60,63,65	0
4	A2G	j	201	14/15	0.94	0.08	63,65,67,68	0
4	A2G	h	201	14/15	0.95	0.07	52,55,60,61	0
4	A2G	d	201	14/15	0.97	0.07	32,34,35,36	0
4	A2G	f	201	14/15	0.98	0.06	37,39,40,41	0
3	CA	H	301	1/1	0.99	0.02	49,49,49,49	0
3	CA	H	302	1/1	0.99	0.03	52,52,52,52	0
3	CA	I	301	1/1	0.99	0.03	52,52,52,52	0
3	CA	J	301	1/1	0.99	0.03	59,59,59,59	0
3	CA	A	302	1/1	0.99	0.04	36,36,36,36	0
3	CA	B	301	1/1	0.99	0.02	33,33,33,33	0
3	CA	C	301	1/1	0.99	0.02	47,47,47,47	0
3	CA	C	302	1/1	0.99	0.05	54,54,54,54	0
3	CA	E	301	1/1	0.99	0.05	54,54,54,54	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CA	E	302	1/1	0.99	0.05	62,62,62,62	0
3	CA	F	301	1/1	0.99	0.02	36,36,36,36	0
3	CA	F	302	1/1	0.99	0.02	35,35,35,35	0
3	CA	G	301	1/1	0.99	0.03	60,60,60,60	0
3	CA	G	302	1/1	0.99	0.02	59,59,59,59	0
3	CA	B	302	1/1	1.00	0.02	36,36,36,36	0
3	CA	J	302	1/1	1.00	0.04	61,61,61,61	0
3	CA	D	301	1/1	1.00	0.01	30,30,30,30	0
3	CA	D	302	1/1	1.00	0.02	31,31,31,31	0
3	CA	A	301	1/1	1.00	0.02	32,32,32,32	0
3	CA	I	302	1/1	1.00	0.04	55,55,55,55	0

6.5 Other polymers (i)

There are no such residues in this entry.