



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2020 – 09:04 AM BST

PDB ID : 6RRK
Title : Crystal structure of the central region of human cohesin subunit STAG1 in complex with RAD21 peptide
Authors : Newman, J.A.; katis, V.L.; von Delft, F.; Arrowsmith, C.H.; Edwards, A.; Bountra, C.; Gileadi, O.
Deposited on : 2019-05-20
Resolution : 3.17 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.13

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7289 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 Cohesin subunit SA-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	B	431	3419	2179	566	651	23	0	0	0
1	A	430	3426	2181	569	653	23	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	457	SER	-	expression tag	UNP Q8WVM7
B	458	MET	-	expression tag	UNP Q8WVM7
A	457	SER	-	expression tag	UNP Q8WVM7
A	458	MET	-	expression tag	UNP Q8WVM7

- Molecule 2 is a protein called Double-strand-break repair protein rad21 homolog.

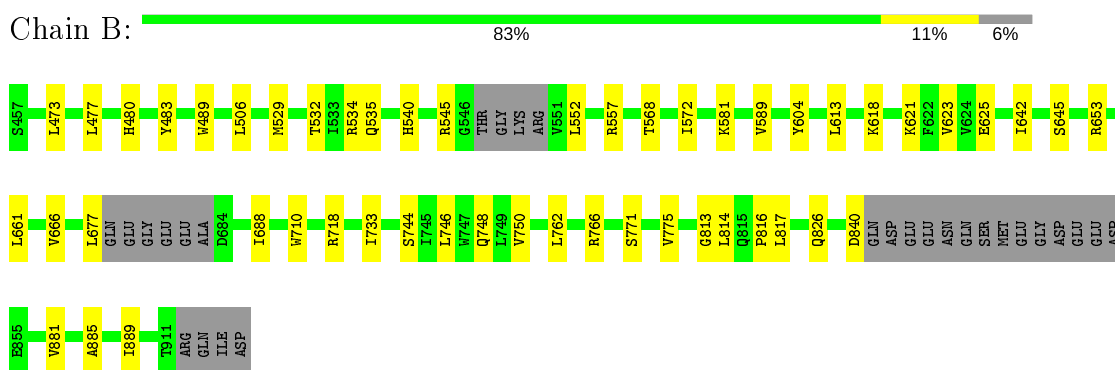
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	27	222	147	39	35	1	0	0	0
2	D	27	222	147	39	35	1	0	0	0

3 Residue-property plots [i](#)

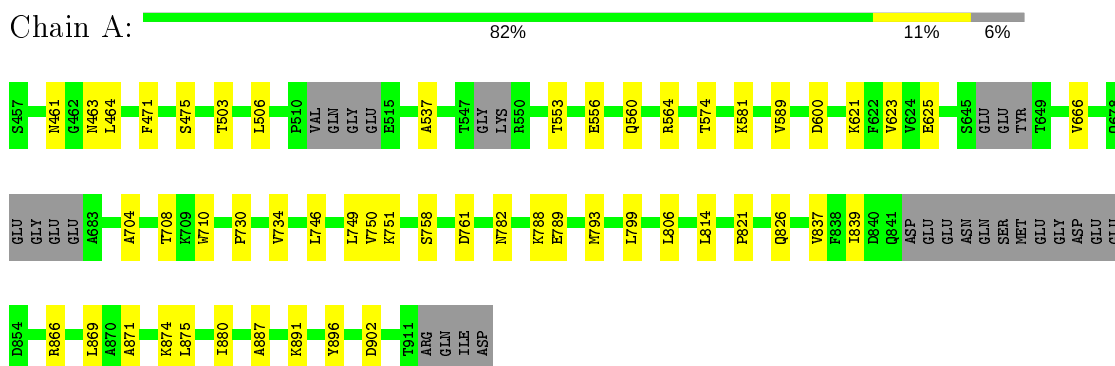
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS failed to run properly.

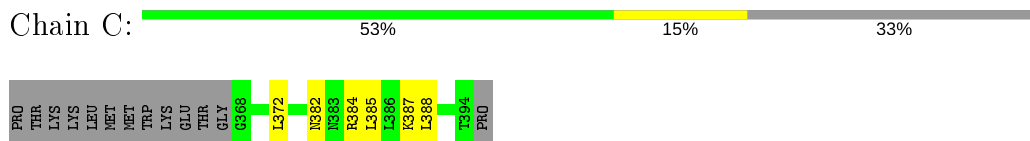
- Molecule 1: Cohesin subunit SA-1



- Molecule 1: Cohesin subunit SA-1



- Molecule 2: Double-strand-break repair protein rad21 homolog



- Molecule 2: Double-strand-break repair protein rad21 homolog



PRO	THR	LYS	LEU	MET	TRP	LYS	GLU	THR	GLY	6368	1394	PRO
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4 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	74.33Å 86.29Å 118.58Å 90.00° 95.36° 90.00°	Depositor
Resolution (Å)	60.23 – 3.17	Depositor
% Data completeness (in resolution range)	96.4 (60.23-3.17)	Depositor
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 3.19Å)	Xtrriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, R_{free}	0.219 , 0.278	Depositor
Wilson B-factor (Å ²)	99.6	Xtrriage
Anisotropy	0.343	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	7289	wwPDB-VP
Average B, all atoms (Å ²)	121.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.47% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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

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	0.24	0/3485	0.39	0/4713
1	B	0.24	0/3480	0.39	0/4709
2	C	0.24	0/227	0.37	0/307
2	D	0.24	0/227	0.35	0/307
All	All	0.24	0/7419	0.39	0/10036

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	3426	0	3384	32	0
1	B	3419	0	3371	30	0
2	C	222	0	237	5	0
2	D	222	0	237	0	0
All	All	7289	0	7229	63	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (63) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:477:LEU:HB3	1:B:480:HIS:HB2	1.76	0.67
1:A:589:VAL:HG11	1:A:623:VAL:HG11	1.82	0.62
1:B:589:VAL:HG11	1:B:623:VAL:HG11	1.83	0.59
1:A:871:ALA:HA	1:A:874:LYS:HE2	1.85	0.59
1:B:688:ILE:HG23	1:B:733:ILE:HD11	1.85	0.58
1:A:866:ARG:NH2	1:A:902:ASP:OD2	2.37	0.58
1:B:677:LEU:HD11	1:B:718:ARG:HH22	1.68	0.57
1:A:471:PHE:O	1:A:475:SER:OG	2.20	0.56
1:A:564:ARG:NH2	1:A:600:ASP:OD1	2.38	0.56
1:A:839:ILE:O	1:A:896:TYR:OH	2.21	0.55
1:A:506:LEU:O	1:A:581:LYS:NZ	2.31	0.54
1:B:480:HIS:HA	1:B:483:TYR:HD2	1.72	0.54
1:B:613:LEU:HD23	1:B:653:ARG:HD2	1.89	0.54
1:A:902:ASP:N	1:A:902:ASP:OD1	2.41	0.53
1:A:746:LEU:HB3	2:C:385:LEU:HD22	1.90	0.53
1:B:572:ILE:HD12	1:B:604:TYR:CZ	2.43	0.53
1:A:461:ASN:O	1:A:464:LEU:N	2.41	0.53
1:B:552:LEU:HB2	1:B:557:ARG:HH21	1.73	0.53
1:B:529:MET:O	1:B:532:THR:OG1	2.23	0.53
1:A:821:PRO:O	1:A:826:GLN:NE2	2.40	0.52
1:B:814:LEU:HD22	1:B:817:LEU:HD12	1.92	0.51
1:A:799:LEU:HD22	1:A:821:PRO:HG3	1.92	0.51
1:B:568:THR:O	1:B:572:ILE:HG12	2.10	0.51
2:C:384:ARG:HA	2:C:387:LYS:HD2	1.93	0.51
1:A:704:ALA:HA	2:C:382:ASN:HB2	1.93	0.49
1:B:642:ILE:O	1:B:645:SER:OG	2.20	0.49
1:B:885:ALA:O	1:B:889:ILE:HG13	2.13	0.48
1:B:506:LEU:O	1:B:581:LYS:NZ	2.38	0.47
1:A:749:LEU:HD23	2:C:388:LEU:HD13	1.97	0.47
1:A:666:VAL:HG21	1:A:710:TRP:CD1	2.51	0.46
1:A:553:THR:OG1	1:A:556:GLU:OE1	2.26	0.46
1:A:887:ALA:O	1:A:891:LYS:HG2	2.15	0.46
1:B:766:ARG:NE	1:B:816:PRO:O	2.30	0.45
1:A:874:LYS:NZ	2:C:372:LEU:O	2.50	0.45
1:B:621:LYS:HG3	1:B:661:LEU:HD13	1.99	0.45
1:B:744:SER:O	1:B:748:GLN:HG3	2.17	0.45
1:B:489:TRP:CD2	1:B:535:GLN:HG2	2.52	0.45
1:B:746:LEU:O	1:B:750:VAL:HG23	2.17	0.44
1:B:534:ARG:NH2	1:B:540:HIS:O	2.47	0.44
1:A:758:SER:HB3	1:A:761:ASP:OD1	2.16	0.44
1:A:461:ASN:O	1:A:463:ASN:N	2.51	0.44
1:B:666:VAL:HG21	1:B:710:TRP:CD1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:762:LEU:O	1:B:766:ARG:HB2	2.18	0.43
1:A:537:ALA:O	1:A:560:GLN:NE2	2.47	0.43
1:B:771:SER:O	1:B:775:VAL:HG23	2.18	0.43
1:A:806:LEU:HD11	1:A:814:LEU:HD13	2.01	0.43
1:A:789:GLU:O	1:A:793:MET:HG3	2.19	0.43
1:B:473:LEU:HD12	1:B:473:LEU:HA	1.87	0.43
1:A:503:THR:HG21	1:A:574:THR:HG21	2.01	0.42
1:A:782:ASN:O	1:A:788:LYS:HE3	2.18	0.42
1:A:621:LYS:O	1:A:625:GLU:HG3	2.19	0.42
1:B:621:LYS:O	1:B:625:GLU:HG3	2.19	0.42
1:A:746:LEU:O	1:A:750:VAL:HG23	2.20	0.42
1:A:708:THR:HG21	1:A:751:LYS:NZ	2.34	0.42
1:B:762:LEU:HD21	1:B:813:GLY:O	2.19	0.42
1:A:837:VAL:HG11	1:A:869:LEU:HB2	2.01	0.42
1:A:621:LYS:NZ	1:A:625:GLU:OE2	2.51	0.41
1:B:840:ASP:OD1	1:B:840:ASP:N	2.44	0.41
1:B:618:LYS:HE3	1:B:618:LYS:HB3	1.80	0.41
1:A:730:PRO:O	1:A:734:VAL:HG23	2.20	0.41
1:B:826:GLN:HG2	1:B:881:VAL:HG12	2.02	0.41
1:B:483:TYR:HB3	1:B:545:ARG:NH2	2.36	0.41
1:A:875:LEU:HD22	1:A:880:ILE:HG21	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

6.4 Ligands

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers

EDS failed to run properly - this section is therefore empty.