



Full wwPDB X-ray Structure Validation Report ⓘ

Jul 20, 2022 – 08:08 PM JST

PDB ID : 7BV7
Title : INTS3 complexed with INTS6
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Deposited on : 2020-04-09
Resolution : 2.40 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 : 2.29
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) : 2.29

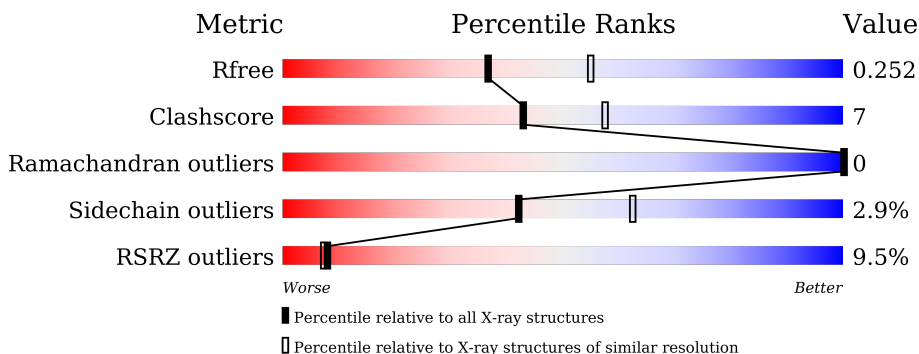
1 Overall quality at a glance

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	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 $\leq 5\%$. 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	436	 9% 62% 13% 16%
1	B	436	 7% 67% 13% 13%
2	C	88	 3% 78% 6% 13%

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 6182 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 Integrator complex subunit 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	336	2619	1679	435	483	22	0	0	0
1	B	348	2757	1765	459	510	23	0	0	0


- Molecule 2 is a protein called Integrator complex subunit 6.

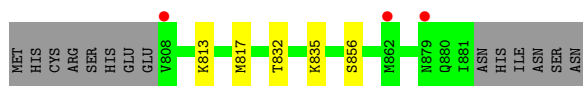
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	74	625	398	119	106	2	0	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	71	Total 71	O 71	0	0
3	B	81	Total 81	O 81	0	0
3	C	29	Total 29	O 29	0	0

• Molecule 2: Integrator complex subunit 6

Chain C: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	60.57Å 126.03Å 84.44Å 90.00° 102.12° 90.00°	Depositor
Resolution (Å)	43.95 – 2.40 49.45 – 2.40	Depositor EDS
% Data completeness (in resolution range)	89.7 (43.95-2.40) 89.7 (49.45-2.40)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.63 (at 2.39Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.205 , 0.249 0.210 , 0.252	Depositor DCC
R_{free} test set	2125 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å ²)	36.0	Xtrriage
Anisotropy	0.340	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 64.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6182	wwPDB-VP
Average B, all atoms (Å ²)	53.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.58% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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 [i](#)

5.1 Standard geometry [i](#)

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	0.35	0/2667	0.48	0/3618
1	B	0.27	0/2805	0.42	0/3798
2	C	0.28	0/632	0.40	0/842
All	All	0.31	0/6104	0.45	0/8258

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 [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	2619	0	2521	45	0
1	B	2757	0	2702	36	0
2	C	625	0	664	2	0
3	A	71	0	0	2	0
3	B	81	0	0	1	0
3	C	29	0	0	0	0
All	All	6182	0	5887	81	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 7.

All (81) 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:602:ILE:HG12	1:A:655:LEU:HD11	1.63	0.81
1:A:636:LEU:CD1	1:A:693:TYR:CE1	2.66	0.79
1:A:627:PHE:CD2	1:A:653:LEU:HD23	2.21	0.76
1:B:864:ARG:NH2	1:B:870:ASP:OD2	2.21	0.73
1:B:615:GLN:NE2	1:B:617:SER:OG	2.28	0.67
1:A:602:ILE:HG12	1:A:655:LEU:CD1	2.25	0.66
1:B:631:PHE:HB3	1:B:686:LYS:HE2	1.78	0.64
1:A:627:PHE:HD2	1:A:653:LEU:HD23	1.63	0.64
1:A:636:LEU:CD1	1:A:693:TYR:HE1	2.11	0.64
1:B:943:PHE:HA	1:B:948:ILE:HD11	1.78	0.63
1:A:822:LEU:HD11	1:A:847:GLN:HB3	1.82	0.62
1:B:636:LEU:HD12	1:B:693:TYR:CE1	2.35	0.61
1:B:615:GLN:NE2	1:B:617:SER:HG	1.99	0.60
1:A:627:PHE:CZ	1:A:652:PRO:HB2	2.37	0.60
1:B:744:PRO:HA	1:B:785:LEU:HD13	1.82	0.60
1:B:598:VAL:HG12	1:B:652:PRO:HA	1.85	0.58
1:A:782:MET:SD	1:B:871:GLN:HB3	2.45	0.57
1:B:785:LEU:HD21	1:B:787:MET:HE2	1.87	0.57
1:A:655:LEU:HD22	1:A:655:LEU:O	2.06	0.56
1:B:680:LEU:O	1:B:684:GLN:N	2.38	0.56
1:A:636:LEU:HD11	1:A:693:TYR:HE1	1.70	0.55
1:B:711:PHE:O	1:B:715:THR:HG23	2.07	0.55
1:A:684:GLN:HE21	1:A:686:LYS:H	1.55	0.54
1:A:704:LYS:N	3:A:1004:HOH:O	2.40	0.54
1:B:699:LYS:N	1:B:699:LYS:HD3	2.22	0.54
1:A:681:TYR:OH	1:A:727:ASP:OD1	2.22	0.54
1:A:598:VAL:O	1:A:602:ILE:HG13	2.08	0.53
1:A:660:LEU:HD21	1:A:673:LEU:HB3	1.91	0.53
1:A:619:LEU:O	1:A:623:LEU:HG	2.09	0.52
1:A:627:PHE:CE2	1:A:653:LEU:HD23	2.45	0.51
1:B:680:LEU:HD22	1:B:687:ILE:HG13	1.92	0.51
1:B:619:LEU:O	1:B:623:LEU:HD12	2.10	0.51
1:B:826:ILE:HG12	1:B:857:MET:HG2	1.93	0.51
1:A:656:ILE:HD12	1:A:673:LEU:HD22	1.94	0.50
1:B:587:GLN:HB2	1:B:600:GLN:OE1	2.11	0.50
1:B:919:LEU:N	3:B:1011:HOH:O	2.44	0.50
1:A:656:ILE:HD12	1:A:676:LEU:HD23	1.93	0.50
1:B:602:ILE:O	1:B:606:VAL:HG23	2.12	0.49
1:A:826:ILE:HG22	1:A:827:PRO:HD3	1.95	0.49
1:A:862:LEU:O	1:A:923:GLN:NE2	2.46	0.48
1:A:946:THR:HB	1:A:950:GLN:NE2	2.28	0.48
1:B:586:LEU:HD12	1:B:586:LEU:H	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:892:ILE:HD13	1:B:928:LEU:HD21	1.95	0.48
1:B:949:LEU:O	1:B:953:GLN:HG3	2.13	0.48
1:A:631:PHE:CE2	1:A:684:GLN:HG2	2.48	0.48
1:B:948:ILE:O	1:B:952:LEU:HG	2.14	0.48
1:B:845:LEU:HB2	1:B:872:PHE:CE2	2.49	0.48
1:A:636:LEU:HD13	1:A:693:TYR:CE1	2.46	0.47
1:B:680:LEU:HD23	1:B:684:GLN:HB3	1.95	0.47
1:A:695:LEU:HD21	1:A:707:LEU:HD23	1.97	0.47
1:A:800:SER:HA	1:A:803:TRP:CE2	2.50	0.47
1:B:797:LEU:HA	1:B:800:SER:HB3	1.96	0.47
1:B:588:LYS:HA	1:B:597:GLU:OE1	2.16	0.46
1:B:631:PHE:CE2	1:B:684:GLN:HG2	2.51	0.46
1:A:630:HIS:O	1:A:630:HIS:CG	2.68	0.46
1:A:695:LEU:HD13	1:A:705:MET:HA	1.98	0.45
1:B:826:ILE:HG22	1:B:827:PRO:HD3	1.99	0.44
1:A:893:LYS:HD3	1:A:947:PRO:HB3	2.00	0.44
1:A:778:CYS:HB3	1:B:871:GLN:HB2	1.98	0.44
1:A:892:ILE:HD13	1:A:928:LEU:HD21	1.99	0.44
2:C:832:THR:HA	2:C:835:LYS:HE3	2.00	0.43
1:B:816:LEU:HD21	1:B:847:GLN:HG3	2.00	0.43
1:A:646:GLU:HA	1:A:649:VAL:HG22	2.00	0.43
1:A:881:CYS:HB2	1:A:942:PHE:CD1	2.54	0.43
1:A:967:PHE:HZ	3:A:1002:HOH:O	2.00	0.42
1:A:854:SER:H	1:A:857:MET:HB2	1.84	0.42
1:A:719:ASP:HB3	1:A:722:THR:OG1	2.19	0.42
1:A:680:LEU:HA	1:A:680:LEU:HD23	1.76	0.42
2:C:813:LYS:O	2:C:817:MET:HG2	2.19	0.42
1:B:672:LEU:HD12	1:B:672:LEU:HA	1.93	0.41
1:A:636:LEU:HD12	1:A:636:LEU:HA	1.81	0.41
1:A:849:ARG:O	1:A:879:HIS:NE2	2.53	0.41
1:B:826:ILE:HD12	1:B:826:ILE:HA	1.85	0.41
1:A:965:MET:O	1:A:968:SER:OG	2.37	0.41
1:B:885:ASP:OD1	1:B:886:GLU:N	2.53	0.41
1:A:660:LEU:CD1	1:A:677:LEU:HD22	2.50	0.41
1:B:788:PHE:HB3	1:B:793:VAL:HB	2.03	0.41
1:B:846:LEU:HD23	1:B:846:LEU:HA	1.92	0.41
1:A:885:ASP:OD1	1:A:886:GLU:N	2.52	0.41
1:A:636:LEU:HD11	1:A:693:TYR:CE1	2.48	0.40
1:A:796:ILE:O	1:A:799:GLN:HG2	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	322/436 (74%)	309 (96%)	13 (4%)	0	100	100
1	B	332/436 (76%)	320 (96%)	12 (4%)	0	100	100
2	C	72/88 (82%)	70 (97%)	2 (3%)	0	100	100
All	All	726/960 (76%)	699 (96%)	27 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	282/405 (70%)	269 (95%)	13 (5%)	27	43
1	B	305/405 (75%)	300 (98%)	5 (2%)	62	79
2	C	68/83 (82%)	67 (98%)	1 (2%)	65	80
All	All	655/893 (73%)	636 (97%)	19 (3%)	42	62

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	615	GLN
1	A	630	HIS
1	A	636	LEU
1	A	655	LEU
1	A	656	ILE

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Mol	Chain	Res	Type
1	A	674	LEU
1	A	680	LEU
1	A	682	GLN
1	A	686	LYS
1	A	687	ILE
1	A	706	ASN
1	A	791	ASP
1	A	881	CYS
1	B	696	ARG
1	B	698	SER
1	B	842	SER
1	B	881	CYS
1	B	968	SER
2	C	856	SER

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

Mol	Chain	Res	Type
1	A	682	GLN
1	A	684	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 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

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(Å ²)	Q<0.9
1	A	336/436 (77%)	0.82	40 (11%) 4 4	23, 53, 108, 126	0
1	B	348/436 (79%)	0.63	29 (8%) 11 10	20, 48, 96, 113	0
2	C	74/88 (84%)	0.35	3 (4%) 37 36	27, 46, 66, 70	0
All	All	758/960 (78%)	0.69	72 (9%) 8 7	20, 50, 100, 126	0

All (72) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	616	LEU	7.9
1	A	596	CYS	7.8
1	A	620	ALA	7.4
1	B	596	CYS	7.2
1	A	598	VAL	6.6
1	A	629	ALA	6.0
1	A	603	VAL	5.9
1	A	599	MET	5.8
1	B	586	LEU	5.7
1	A	606	VAL	4.8
1	B	585	GLN	4.7
1	A	630	HIS	4.7
1	B	607	LEU	4.5
1	A	627	PHE	4.5
1	B	606	VAL	4.3
1	A	607	LEU	4.1
1	B	616	LEU	4.0
1	A	631	PHE	3.9
1	A	655	LEU	3.9
1	B	941	ASN	3.8
1	A	597	GLU	3.7
1	B	583	VAL	3.7
1	B	603	VAL	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	649	VAL	3.7
1	A	602	ILE	3.7
1	B	672	LEU	3.6
1	A	604	ASP	3.6
1	A	676	LEU	3.5
1	A	600	GLN	3.5
1	A	650	GLY	3.3
1	A	654	TYR	3.3
1	A	605	GLN	3.3
1	A	673	LEU	3.3
1	B	669	SER	3.2
1	B	629	ALA	3.1
1	A	621	SER	3.0
1	A	656	ILE	3.0
1	A	601	GLU	2.9
1	B	937	ASN	2.9
1	A	953	GLN	2.9
1	B	714	ALA	2.7
1	B	940	GLN	2.7
2	C	808	VAL	2.7
2	C	879	ASN	2.7
1	A	948	ILE	2.7
1	B	944	SER	2.6
1	A	652	PRO	2.6
1	A	937	ASN	2.6
1	B	627	PHE	2.6
1	A	882	MET	2.6
1	B	602	ILE	2.5
1	B	655	LEU	2.5
1	B	653	LEU	2.5
2	C	862	MET	2.4
1	A	622	CYS	2.4
1	A	936	THR	2.4
1	B	650	GLY	2.3
1	B	654	TYR	2.3
1	B	597	GLU	2.3
1	A	659	ASN	2.3
1	B	626	LEU	2.3
1	A	680	LEU	2.3
1	B	618	VAL	2.2
1	A	940	GLN	2.1
1	A	595	GLN	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	810	CYS	2.1
1	B	604	ASP	2.1
1	B	600	GLN	2.1
1	B	953	GLN	2.1
1	A	618	VAL	2.1
1	A	897	ILE	2.0
1	A	637	PRO	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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.