



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 11, 2024 – 06:00 PM EDT

PDB ID : 1IYJ  
Title : STRUCTURE OF A BRCA2-DSS1 COMPLEX  
Authors : Pavletich, N.P.; Jeffrey, P.D.; Yang, H.J.  
Deposited on : 2002-08-28  
Resolution : 3.40 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](mailto: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>.

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

MolProbity : 4.02b-467  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
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) : 2.36.2

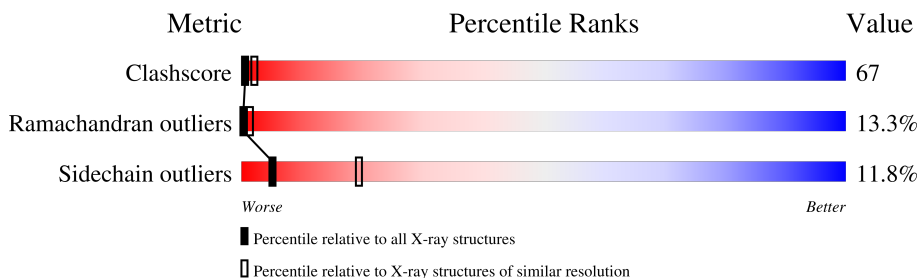
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.40 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))
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)

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  $\geq 3$ , 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  $\leq 5\%$ .

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	70	10% (green), 33% (yellow), 21% (orange), 36% (grey)
1	C	70	7% (green), 33% (yellow), 24% (orange), 36% (grey)
2	B	817	15% (green), 45% (yellow), 12% (orange), 28% (grey)
2	D	817	17% (green), 43% (yellow), 12% (orange), 28% (grey)

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 10092 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 Deleted in split hand/split foot protein 1.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
1	A	45	380	235	59	86	0	0	0
1	C	45	380	235	59	86	0	0	0

- Molecule 2 is a protein called breast cancer susceptibility.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	591	4666	2984	805	862	15	0	0	0
2	D	591	4666	2984	805	862	15	0	0	0

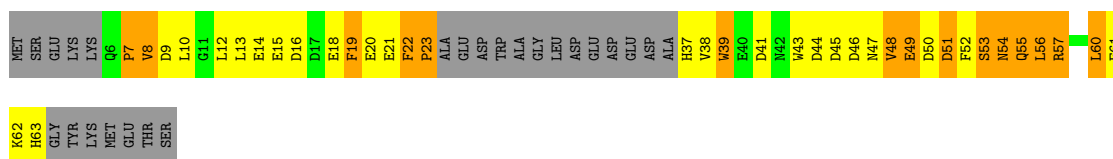
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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 was not executed.

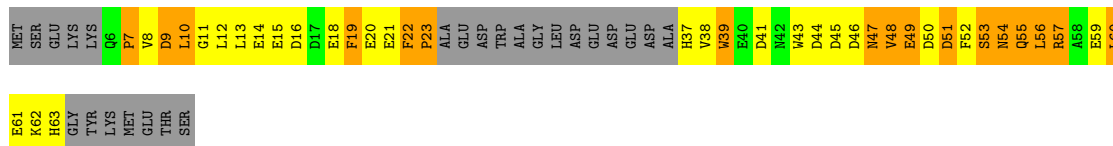
- Molecule 1: Deleted in split hand/split foot protein 1

Chain A: 

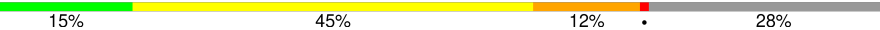


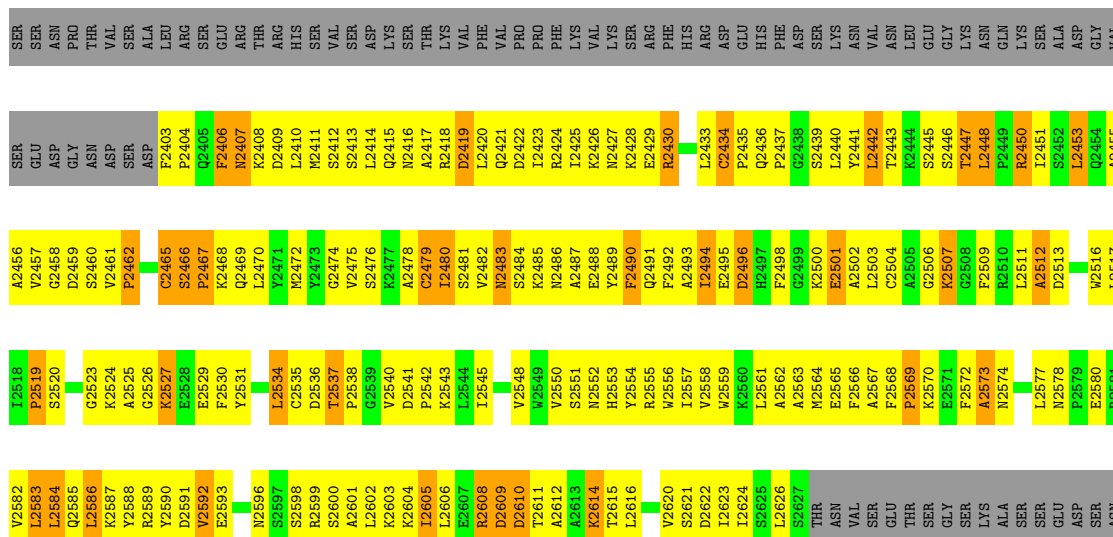
- Molecule 1: Deleted in split hand/split foot protein 1

Chain C: 



- Molecule 2: breast cancer susceptibility

Chain B: 





E3094	F3099	C3025	R2960	W2899	K2779	A2716
M3095	L3026	L3026	T2961	K2900	E2780	R2717
I3096	H3027	H3027	L2966	L2901	A2781	H2718
D3097	L3028	L3028	L2967	R2902	L2782	H2719
F3098	L3029	L3029	V2968	V2903	R2783	S2720
F3099	V3030	V3030	S2969	T2904	F2784	K2721
Y3100	V3031	V3031	S2970	S2905	ALA	ALA
K3101	K3032	K3032	E2971	Y2906	GLU	GLU
E3102	F3033	F3033	S2972	K2907	HIS	F2724
A3103	G3034	G3034	L2972	K2908	LEU	F2725
E3104	L3035	L3035	L2973	R2909	GLN	H2726
K3105	D3036	D3036	L2974	R2910	GLN	ALA
K3106	L3037	L3037	Q2975	E2910	CYS	R2729
L3107	N3038	N3038	Q2976	K2911	LYS	R2730
I3108	E3039	E3039	Q2978	S2912	LYS	F2731
Q3109	D3040	D3040	P2979	A2913	GLU	P2732
V3110	I3041	I3041	R2980	L2914	ALA	L2733
L3111	K3042	K3042	E2981	L2915	GLN	P2734
K3112	P3043	P3043	L2982	S2916	LEU	L2735
G3113	R3044	R3044	L2983	I2917	THR	S2736
D3114	V3045	V3045	P2984	W2918	LYS	S2737
S3115	L3046	L3046	F2985	R2919	VAL	L2738
P3116	I3047	I3047	S2986	P2920	HIS	F2739
K3117	A3048	A3048	K2987	S2921	THR	S2740
TRP	A3049	A3049	L2988	S2922	TYR	D2741
SER	S3050	S3050	S2989	D2923	ARG	G2742
THR	N3051	N3051	D2990	L2924	LYS	G2743
PRO	W3054	W3054	P2991	P2925	GLU	N2744
ASN	R3055	R3055	A2992	S2926	HIS	V2745
ASP	P3056	P3056	F2993	L2927	LEU	G2746
PRO	E3057	E3057	Q2994	L2928	GLU	C2747
THR	S3058	S3058	P2995	T2929	ASP	C2747
ARG	T3059	T3059	P2996	E2930	LYS	V2748
GLU	S3060	S3060	C2997	G2931	LYS	D2749
PRO	R3061	R3061	E2999	E2932	ALA	V2750
TYR	V3062	V3062	S3000	Q2932	ALA	L2751
PRO	P3063	P3063	D3001	R2933	ARG	V2752
ALA	T3064	T3064	V3002	Y2934	ILE	Q2753
SER	L3065	L3065	V3005	R2935	GLN	R2754
THR	F3066	F3066	V3006	L2936	VAL	V2755
CYS	A3067	A3067	V3007	Y2937	LEU	V2756
SER	G3068	G3068	S3008	H2938	SER	Y2757
ALA	F3070	F3070	V3009	P2939	ARG	P2757
SER	S3071	S3071	V3010	L2939	ALA	L2758
LEU	H3081	H3081	K3011	S2940	LEU	Q2759
SER	F3082	F3082	P3012	V2941	THR	W2760
GLY	Q3083	Q3083	G3014	S2942	ARG	V2761
GLY	E3084	E3084	L3015	K2943	GLN	E2762
GLN	R3085	R3085	A3016	S2944	GLN	K2763
LEU	V3086	V3086	P3017	K2945	VAL	T2764
PRO	T3087	T3087	S2952	N2946	VAL	T2764
ARG	M3088	M3088	L3018	E2949	HIS	V2765
SER	M3089	M3089	V3019	W2950	GLU	S2766
SER	K3090	K3090	L3020	P2951	LEU	G2767
PRO	H3091	H3091	S3022	S2952	GLN	S2768
	A3092	A3092	D3023	T2955	ASP	Y2769
	I3093	I3093	E3024	A2957	GLY	Y2769
				K2959	GLY	Y2769
					ALA	R2772
					GLU	R2773
					LEU	E2774
					TYR	R2775
					ALA	E2776
					ALA	E2777
					VAL	E2778

## 4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 43	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	130.31Å 130.31Å 192.62Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 3.40	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-3.40)	Depositor
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	CNS	Depositor
R, $R_{free}$	0.244 , 0.295	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	10092	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	56.0	wwPDB-VP

## 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	0.42	0/388	0.80	1/526 (0.2%)
1	C	0.41	0/388	0.80	1/526 (0.2%)
2	B	0.42	0/4774	0.71	2/6475 (0.0%)
2	D	0.42	0/4774	0.71	3/6475 (0.0%)
All	All	0.42	0/10324	0.71	7/14002 (0.0%)

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	2467	PRO	N-CA-CB	6.04	110.54	103.30
2	D	2467	PRO	N-CA-CB	5.96	110.45	103.30
1	A	7	PRO	N-CA-CB	5.61	110.03	103.30
1	C	7	PRO	N-CA-CB	5.50	109.90	103.30
2	D	2941	VAL	N-CA-C	-5.50	96.16	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	A	380	0	306	61	0
1	C	380	0	306	66	0
2	B	4666	0	4694	652	0
2	D	4666	0	4694	629	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	10092	0	10000	1356	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 67.

The worst 5 of 1356 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)
2:D:2683:THR:HG22	2:D:2713:THR:HB	1.22	1.16
2:D:2750:VAL:HG11	2:D:2903:VAL:HB	1.18	1.16
2:B:2683:THR:HG22	2:B:2713:THR:HB	1.20	1.13
2:B:2750:VAL:HG11	2:B:2903:VAL:HB	1.19	1.12
2:B:2942:SER:HB3	2:B:2953:ILE:HD11	1.39	1.03

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	41/70 (59%)	18 (44%)	11 (27%)	12 (29%)	0   0
1	C	41/70 (59%)	18 (44%)	11 (27%)	12 (29%)	0   0
2	B	585/817 (72%)	387 (66%)	128 (22%)	70 (12%)	0   3
2	D	585/817 (72%)	391 (67%)	122 (21%)	72 (12%)	0   2
All	All	1252/1774 (71%)	814 (65%)	272 (22%)	166 (13%)	0   1

5 of 166 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	41	ASP
1	A	47	ASN

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Mol	Chain	Res	Type
1	A	51	ASP
1	A	53	SER
1	A	57	ARG

### 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	41/63 (65%)	33 (80%)	8 (20%)	1 4
1	C	41/63 (65%)	33 (80%)	8 (20%)	1 4
2	B	517/721 (72%)	459 (89%)	58 (11%)	6 22
2	D	517/721 (72%)	459 (89%)	58 (11%)	6 22
All	All	1116/1568 (71%)	984 (88%)	132 (12%)	5 19

5 of 132 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	2945	LYS
2	D	3026	LEU
2	D	3109	GLN
2	B	2944	SER
2	B	2915	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 34 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	3051	ASN
2	D	3053	GLN
2	D	3095	ASN
2	B	3053	GLN
2	B	3051	ASN

### 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

### 6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.