



Full wwPDB NMR Structure Validation Report ⓘ

May 28, 2020 – 08:48 pm BST

PDB ID : 1WLP
Title : Solution Structure Of The P22Phox-P47Phox Complex
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Deposited on : 2004-06-29

This is a Full wwPDB NMR 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/NMRValidationReportHelp>

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:

Cyrange : Kirchner and Güntert (2011)
NmrClust : Kelley et al. (1996)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : 2.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

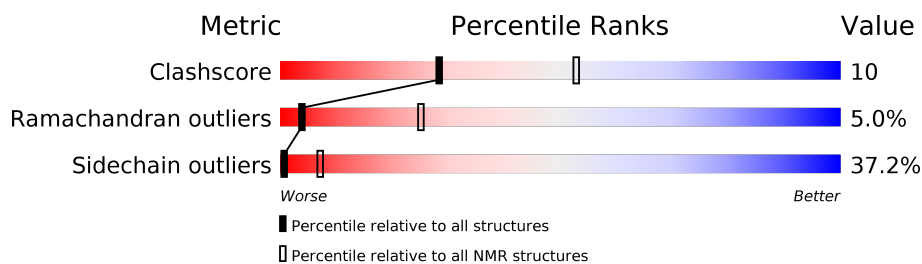
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment was not calculated.

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)	NMR archive (#Entries)
Clashscore	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and 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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	25	 64% 36%
2	B	138	 55% 36% 9%

2 Ensemble composition and analysis

This entry contains 1 models. Identification of well-defined residues and clustering analysis are not possible.

3 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 2486 atoms, of which 1221 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Cytochrome b-245 light chain.

Mol	Chain	Residues	Atoms					Trace
			Total	C	H	N	O	
1	A	25	375	114	192	36	33	0

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	CLONING ARTIFACT	UNP P13498
A	2	PRO	-	CLONING ARTIFACT	UNP P13498
A	3	LEU	-	CLONING ARTIFACT	UNP P13498
A	4	GLY	-	CLONING ARTIFACT	UNP P13498
A	5	SER	-	CLONING ARTIFACT	UNP P13498

- Molecule 2 is a protein called Neutrophil cytosol factor 1.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
2	B	138	2111	690	1029	167	221	4	0

There are 2 discrepancies between the modelled and reference sequences:

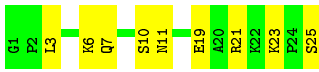
Chain	Residue	Modelled	Actual	Comment	Reference
B	149	GLY	-	CLONING ARTIFACT	UNP P14598
B	150	SER	-	CLONING ARTIFACT	UNP P14598

4 Residue-property plots [i](#)

These plots are provided for all protein, RNA and DNA chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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 outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

- Molecule 1: Cytochrome b-245 light chain

Chain A:  64% 36%



- Molecule 2: Neutrophil cytosol factor 1

Chain B:  55% 36% 9%



5 Refinement protocol and experimental data overview

The models were refined using the following method: ?.

Of the 20 calculated structures, 1 were deposited, based on the following criterion: *structures with the lowest energy*.

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
CNS	refinement	

No chemical shift data was provided. No validations of the models with respect to experimental NMR restraints is performed at this time.

6 Model quality i

6.1 Standard geometry i

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 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 each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
2	B	1082	1029	1025	26
All	All	1265	1221	1217	26

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 10.

All clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)
2:B:245:VAL:HG21	2:B:266:ILE:HG12	0.77	1.56
2:B:233:ALA:HB2	2:B:247:LEU:HD23	0.69	1.63
2:B:177:LEU:HD13	2:B:205:ILE:HG21	0.64	1.70
2:B:246:SER:O	2:B:247:LEU:HD12	0.64	1.93
2:B:253:VAL:HG11	2:B:266:ILE:HD12	0.57	1.75
2:B:267:ARG:HB2	2:B:272:THR:HG22	0.54	1.80
2:B:265:VAL:HA	2:B:273:GLY:O	0.54	2.03
2:B:253:VAL:HG21	2:B:266:ILE:CG1	0.53	2.33
2:B:175:MET:HG3	2:B:205:ILE:HG23	0.52	1.82
2:B:245:VAL:HG22	2:B:273:GLY:HA3	0.50	1.83
2:B:247:LEU:HD13	2:B:266:ILE:HD11	0.49	1.85
2:B:253:VAL:CG2	2:B:254:GLU:N	0.49	2.76
2:B:159:GLN:O	2:B:185:VAL:HG23	0.48	2.09
2:B:253:VAL:HG22	2:B:254:GLU:N	0.48	2.24
2:B:196:CYS:HB2	2:B:205:ILE:HD11	0.47	1.87

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Atom-1	Atom-2	Clash(Å)	Distance(Å)
2:B:253:VAL:HG21	2:B:266:ILE:HG13	0.46	1.87
2:B:245:VAL:HG22	2:B:273:GLY:CA	0.45	2.42
2:B:161:TYR:HB3	2:B:210:LEU:HD22	0.45	1.89
2:B:253:VAL:HG23	2:B:267:ARG:C	0.44	2.33
2:B:197:GLN:HA	2:B:202:ARG:HB3	0.44	1.90
2:B:253:VAL:HG21	2:B:266:ILE:CD1	0.43	2.43
2:B:234:ILE:HG21	2:B:281:GLN:HB2	0.43	1.91
2:B:253:VAL:HB	2:B:268:LYS:HG3	0.43	1.91
2:B:247:LEU:CD1	2:B:266:ILE:HD11	0.42	2.43
2:B:197:GLN:HA	2:B:202:ARG:CB	0.41	2.45
2:B:253:VAL:HG21	2:B:266:ILE:HD12	0.40	1.92

6.3 Torsion angles [i](#)

6.3.1 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 PDB entries followed by that with respect to all NMR entries. 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	23/25 (92%)	21 (91%)	2 (9%)	0 (0%)	100	100
2	B	136/138 (99%)	106 (78%)	22 (16%)	8 (6%)	3	21
All	All	159/163 (98%)	127 (80%)	24 (15%)	8 (5%)	4	25

All 8 Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type
2	B	212	PRO
2	B	279	TYR
2	B	169	LYS
2	B	285	GLN
2	B	214	ASP
2	B	170	THR
2	B	228	GLY
2	B	263	TRP

6.3.2 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 PDB entries followed by that with respect to all NMR entries. 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	21/21 (100%)	12 (57%)	9 (43%)	0	3
2	B	116/116 (100%)	74 (64%)	42 (36%)	1	8
All	All	137/137 (100%)	86 (63%)	51 (37%)	1	7

All 51 residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type
2	B	275	PHE
2	B	280	LEU
2	B	286	ASP
2	B	201	LYS
2	B	243	ASP
2	B	238	THR
2	B	173	SER
2	B	169	LYS
1	A	23	LYS
1	A	21	ARG
2	B	215	SER
2	B	191	SER
2	B	209	PHE
2	B	267	ARG
1	A	19	GLU
1	A	6	LYS
2	B	186	VAL
2	B	226	TYR
1	A	11	ASN
2	B	188	LYS
2	B	258	LYS
1	A	10	SER
2	B	285	GLN
2	B	214	ASP
2	B	157	ILE
2	B	259	LEU
2	B	158	LEU
1	A	7	GLN

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Mol	Chain	Res	Type
1	A	3	LEU
2	B	199	LYS
2	B	246	SER
2	B	229	GLU
2	B	208	SER
2	B	266	ILE
2	B	182	VAL
2	B	221	ASP
2	B	181	ASP
2	B	249	GLU
2	B	282	LYS
2	B	254	GLU
2	B	232	VAL
2	B	205	ILE
2	B	245	VAL
1	A	25	SER
2	B	283	SER
2	B	202	ARG
2	B	260	LEU
2	B	225	ASN
2	B	268	LYS
2	B	278	MET
2	B	272	THR

6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

6.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.6 Ligand geometry [i](#)

There are no ligands in this entry.

6.7 Other polymers [i](#)

There are no such molecules in this entry.

6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

7 Chemical shift validation

No chemical shift data were provided