



wwPDB X-ray Structure Validation Summary Report

Feb 27, 2014 – 02:33 PM GMT

PDB ID : 1VKX
Title : CRYSTAL STRUCTURE OF THE NF κ B P50/P65 HETERODIMER COM-
PLEXED TO THE IMMUNOGLOBULIN KB DNA
Authors : Chen, F.; Huang, D.B.; Ghosh, G.
Deposited on : 1997-09-17
Resolution : 2.90 Å(reported)

This is a wwPDB validation summary report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

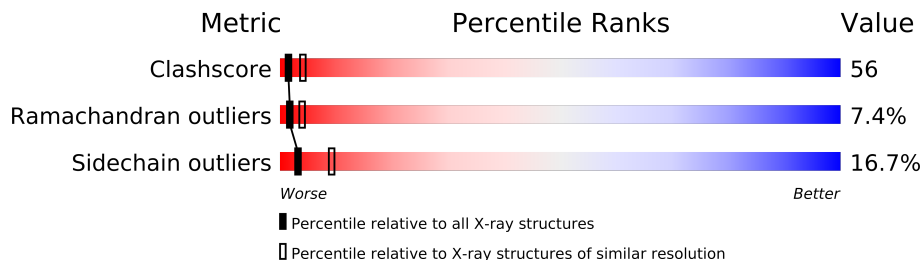
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Mogul	:	1.15 2013
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	21963
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP)	:	stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.90 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	79885	1326 (2.90-2.90)
Ramachandran outliers	78287	1290 (2.90-2.90)
Sidechain outliers	78261	1292 (2.90-2.90)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	C	12	
2	D	12	
3	A	273	
4	B	312	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5116 atoms, of which 0 are hydrogen and 0 are deuterium.

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 DNA chain called DNA (5'-D(*TP*GP*GP*GP*GP*AP*CP*TP*TP*TP*CP*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	12	Total	C	N	O	P	0	0	0
			243	117	42	73	11			

- Molecule 2 is a DNA chain called DNA (5'-D(*AP*GP*GP*AP*AP*AP*GP*TP*CP*CP*CP*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	12	Total	C	N	O	P	0	0	0
			243	116	49	67	11			

- Molecule 3 is a protein called PROTEIN (NF-KAPPA B P65 SUBUNIT).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	273	Total	C	N	O	S	0	0	0
			2176	1356	401	408	11			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	19	ALA	PRO	CONFLICT	UNP Q04207

- Molecule 4 is a protein called PROTEIN (NF-KAPPA B P50 SUBUNIT).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	B	312	Total	C	N	O	S	0	0	0
			2454	1554	428	460	12			

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

Note EDS was not executed.

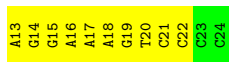
- Molecule 1: DNA (5'-D(*TP*GP*GP*GP*GP*AP*CP*TP*TP*TP*CP*C)-3')

Chain C: 



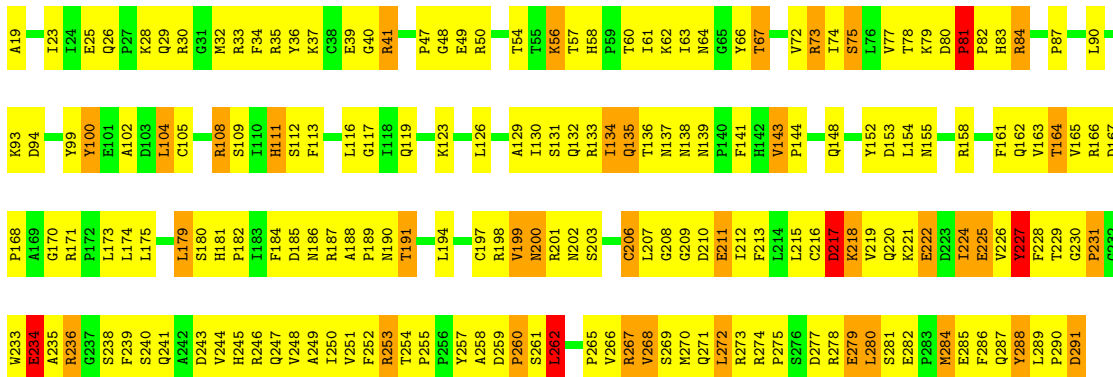
- Molecule 2: DNA (5'-D(*AP*GP*GP*AP*AP*AP*GP*TP*CP*CP*CP*C)-3')

Chain D: 



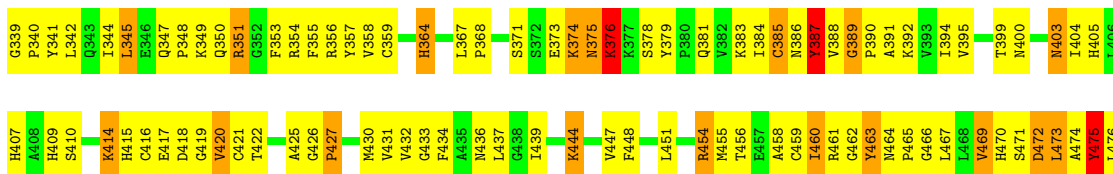
- Molecule 3: PROTEIN (NF-KAPPA B P65 SUBUNIT)

Chain A: 



- Molecule 4: PROTEIN (NF-KAPPA B P50 SUBUNIT)

Chain B: 





4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section will therefore be incomplete.

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	106.61Å 106.61Å 206.56Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.90	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-2.90)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.208 , 0.320	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	5116	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

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	C	0.95	0/271	1.05	3/417 (0.7%)
2	D	0.84	0/273	0.86	0/419
3	A	0.69	0/2228	0.94	4/3021 (0.1%)
4	B	0.66	1/2506 (0.0%)	0.90	1/3384 (0.0%)
All	All	0.70	1/5278 (0.0%)	0.93	8/7241 (0.1%)

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
1	C	0	3
3	A	0	1
4	B	0	2
All	All	0	6

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	385	CYS	CB-SG	-5.05	1.73	1.81

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	1	DT	C1'-O4'-C4'	-7.32	102.78	110.10
1	C	1	DT	C3'-C2'-C1'	-7.22	93.83	102.50
1	C	1	DT	O4'-C1'-N1	6.69	112.68	108.00
3	A	262	LEU	CA-CB-CG	5.80	128.64	115.30
3	A	135	GLN	N-CA-C	-5.71	95.59	111.00

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	A	227	TYR	Sidechain
4	B	387	TYR	Sidechain
1	C	1	DT	Sidechain
1	C	3	DG	Sidechain
1	C	9	DT	Sidechain

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	243	0	138	39	0
2	D	243	0	135	42	0
3	A	2176	0	2137	224	0
4	B	2454	0	2449	276	0
All	All	5116	0	4859	554	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 56.

The worst 5 of 554 close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
4:B:487:THR:HB	4:B:490:GLU:HB2	1.26	1.17
2:D:13:DA:H2"	2:D:14:DG:H5"	1.22	1.16
1:C:2:DG:H2"	1:C:3:DG:C5'	1.82	1.10
4:B:465:PRO:HB2	4:B:467:LEU:HD13	1.32	1.08
1:C:2:DG:H2"	1:C:3:DG:H5'	1.35	1.06

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

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	
3	A	271/273 (99%)	208 (77%)	44 (16%)	19 (7%)	2	4
4	B	310/312 (99%)	241 (78%)	45 (14%)	24 (8%)	1	3
All	All	581/585 (99%)	449 (77%)	89 (15%)	43 (7%)	2	4

5 of 43 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	29	GLN
3	A	40	GLY
3	A	81	PRO
3	A	209	GLY
3	A	231	PRO

5.3.2 Protein sidechains ⓘ

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	
3	A	242/242 (100%)	196 (81%)	46 (19%)	2	6
4	B	268/268 (100%)	229 (85%)	39 (15%)	5	13
All	All	510/510 (100%)	425 (83%)	85 (17%)	3	9

5 of 85 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	267	ARG
4	B	351	ARG
4	B	581	ARG
3	A	272	LEU

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Mol	Chain	Res	Type
3	A	284	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 18 such sidechains are listed below:

Mol	Chain	Res	Type
4	B	343	GLN
4	B	400	ASN
4	B	544	ASN
3	A	241	GLN
3	A	271	GLN

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section will therefore be empty.

6.4 Ligands ⓘ

EDS was not executed - this section will therefore be empty.

6.5 Other polymers ⓘ

EDS was not executed - this section will therefore be empty.