



Full wwPDB X-ray Structure Validation Report ⓘ

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PDB ID : 4UDC
Title : GR in complex with dexamethasone
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Deposited on : 2014-12-09
Resolution : 2.50 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

<http://wwpdb.org/validation/2016/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
Mogul : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

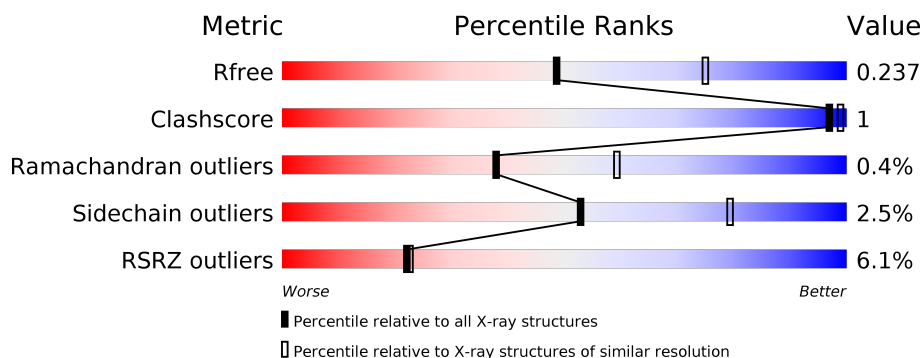
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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}	100719	3846 (2.50-2.50)
Clashscore	112137	4554 (2.50-2.50)
Ramachandran outliers	110173	4463 (2.50-2.50)
Sidechain outliers	110143	4465 (2.50-2.50)
RSRZ outliers	101464	3876 (2.50-2.50)

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. 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	280	
2	B	14	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 2280 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 GLUCOCORTICOID RECEPTOR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	248	Total	C	N	O	S	0	0	0
			2022	1301	332	372	17			

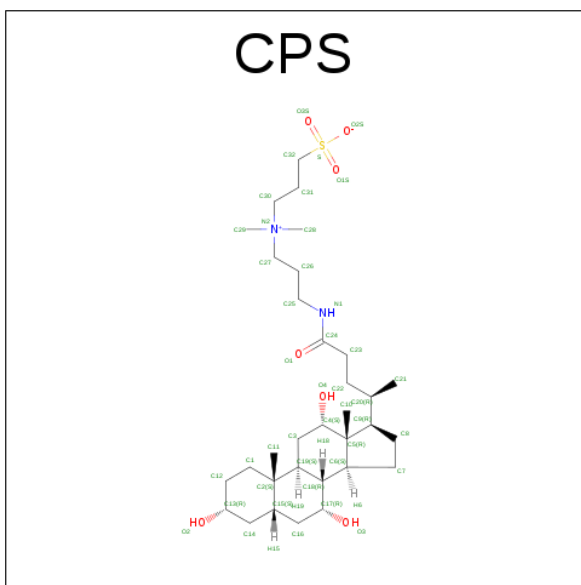
There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	498	GLY	-	EXPRESSION TAG	UNP P04150
A	499	SER	-	EXPRESSION TAG	UNP P04150
A	517	ASP	ASN	ENGINEERED MUTATION	UNP P04150
A	602	SER	PHE	ENGINEERED MUTATION	UNP P04150
A	638	ASP	CYS	ENGINEERED MUTATION	UNP P04150

- Molecule 2 is a protein called NUCLEAR RECEPTOR COACTIVATOR 2.

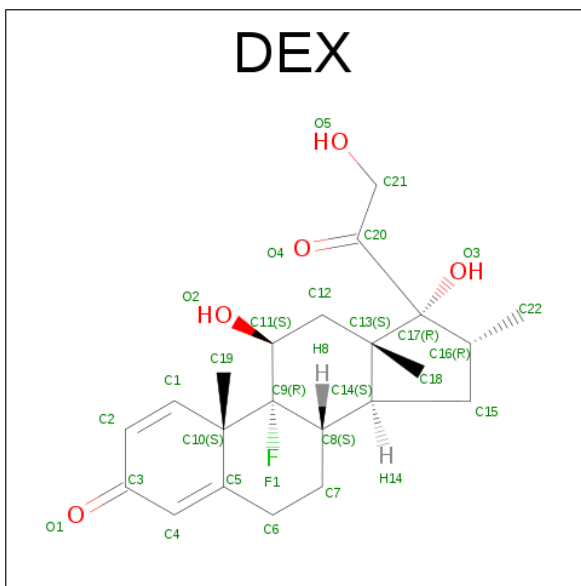
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	13	Total	C	N	O	0	0	0
			111	69	18	24			

- Molecule 3 is 3-[(3-CHOLAMIDOPROPYL)DIMETHYLAMMONIO]-1-PROPANESULFONATE (three-letter code: CPS) (formula: C₃₂H₅₈N₂O₇S).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			36	30	2	4		

- Molecule 4 is DEXAMETHASONE (three-letter code: DEX) (formula: $C_{22}H_{29}FO_5$).



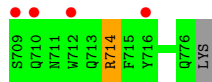
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	F	O	0	0
			28	22	1	5		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	80	Total 80	O 80	0	0
5	B	3	Total 3	O 3	0	0

i

- Molecule 1: GLUCOCORTICOID RECEPTOR



- Molecule 2: NUCLEAR RECEPTOR COACTIVATOR 2



4 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	84.66Å 84.66Å 105.91Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	31.81 – 2.50 31.81 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.4 (31.81-2.50) 94.7 (31.81-2.50)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.54 (at 2.51Å)	Xtriage
Refinement program	BUSTER 2.11.5	Depositor
R, R_{free}	0.210 , 0.253 0.196 , 0.237	Depositor DCC
R_{free} test set	735 reflections (5.22%)	DCC
Wilson B-factor (Å ²)	40.4	Xtriage
Anisotropy	0.588	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 40.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.046 for -h,-k,l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	2280	wwPDB-VP
Average B, all atoms (Å ²)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.63% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: DEX, CPS

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	0.48	0/2066	0.65	1/2795 (0.0%)
2	B	0.53	0/111	0.66	0/147
All	All	0.48	0/2177	0.65	1/2942 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	706	GLY	C-N-CA	5.07	134.38	121.70

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	2022	0	2034	2	0
2	B	111	0	107	2	0
3	A	36	0	52	1	0
4	A	28	0	29	1	0
5	A	80	0	0	0	0
5	B	3	0	0	0	0
All	All	2280	0	2222	5	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 1.

All (5) 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:B:752:ASP:O	2:B:753:ASP:HB2	2.01	0.59
1:A:701:ILE:HG12	1:A:714:ARG:HG2	1.90	0.53
3:A:1777:CPS:H3	3:A:1777:CPS:H1	1.86	0.42
2:B:748:LEU:HD23	2:B:751:LYS:HD3	2.02	0.41
1:A:570:GLN:HE22	4:A:1778:DEX:C3	2.34	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	246/280 (88%)	238 (97%)	7 (3%)	1 (0%)	38	59
2	B	11/14 (79%)	11 (100%)	0	0	100	100
All	All	257/294 (87%)	249 (97%)	7 (3%)	1 (0%)	38	59

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	707	ASN

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	228/255 (89%)	224 (98%)	4 (2%)	64	86
2	B	12/13 (92%)	10 (83%)	2 (17%)	2	4
All	All	240/268 (90%)	234 (98%)	6 (2%)	53	79

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	558	ARG
1	A	619	ASN
1	A	632	GLN
1	A	714	ARG
2	B	751	LYS
2	B	753	ASP

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

Mol	Chain	Res	Type
1	A	570	GLN
1	A	711	ASN

5.3.3 RNA ⓘ

There are no RNA molecules 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 ⓘ

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	CPS	A	1777	-	39,39,45	0.64	0	61,61,70	1.24	5 (8%)
4	DEX	A	1778	-	31,31,31	0.98	2 (6%)	52,53,53	1.76	12 (23%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	CPS	A	1777	-	-	0/17/82/90	0/4/4/4
4	DEX	A	1778	-	-	0/8/84/84	0/4/4/4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1778	DEX	C9-C8	2.03	1.56	1.54
4	A	1778	DEX	C13-C14	2.06	1.58	1.54

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1778	DEX	C19-C10-C1	-3.31	103.02	106.62
4	A	1778	DEX	C5-C4-C3	-3.21	119.78	122.73
4	A	1778	DEX	C10-C9-C11	-2.96	113.39	115.51
3	A	1777	CPS	C11-C2-C1	-2.80	103.64	108.24
4	A	1778	DEX	C22-C16-C15	-2.38	109.32	113.45
4	A	1778	DEX	C12-C13-C14	-2.14	106.10	108.01
3	A	1777	CPS	C11-C2-C19	2.06	114.11	111.16
4	A	1778	DEX	C2-C3-C4	2.17	119.42	117.14
3	A	1777	CPS	C1-C2-C15	2.20	111.21	107.79
3	A	1777	CPS	C10-C5-C6	2.29	114.85	111.23
4	A	1778	DEX	O2-C11-C9	2.32	112.55	109.10
4	A	1778	DEX	F1-C9-C10	2.32	106.19	104.18
4	A	1778	DEX	C19-C10-C9	3.18	115.89	113.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1778	DEX	C15-C16-C17	3.53	107.87	105.14
3	A	1777	CPS	C16-C17-C18	3.89	115.64	111.50
4	A	1778	DEX	F1-C9-C11	4.02	106.30	102.73
4	A	1778	DEX	C6-C5-C10	5.32	118.77	115.60

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1777	CPS	1	0
4	A	1778	DEX	1	0

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](#)

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	248/280 (88%)	0.13	16 (6%) 20 20	28, 46, 78, 102	0
2	B	13/14 (92%)	-0.25	0 100 100	34, 41, 71, 77	0
All	All	261/294 (88%)	0.11	16 (6%) 22 22	28, 46, 78, 102	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	706	GLY	3.7
1	A	529	THR	3.7
1	A	712	TRP	3.6
1	A	631	GLU	3.3
1	A	710	GLN	3.1
1	A	617	SER	3.1
1	A	705	GLU	3.0
1	A	709	SER	2.9
1	A	667	LYS	2.7
1	A	671	LEU	2.5
1	A	663	TYR	2.5
1	A	603	LEU	2.3
1	A	716	TYR	2.3
1	A	707	ASN	2.3
1	A	630	ASN	2.2
1	A	668	THR	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 carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
3	CPS	A	1777	36/42	0.86	0.24	1.83	50,64,92,93	0
4	DEX	A	1778	28/28	0.98	0.19	0.84	25,34,37,39	0

6.5 Other polymers [i](#)

There are no such residues in this entry.