



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 5, 2018 – 07:46 PM EST

PDB ID : 1MV8  
Title : 1.55 Å crystal structure of a ternary complex of GDP-mannose dehydrogenase from *Pseudomonas aeruginosa*  
Authors : Snook, C.F.; Tipton, P.A.; Beamer, L.J.  
Deposited on : 2002-09-24  
Resolution : 1.55 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

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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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  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20030736  
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) : rb-20030736

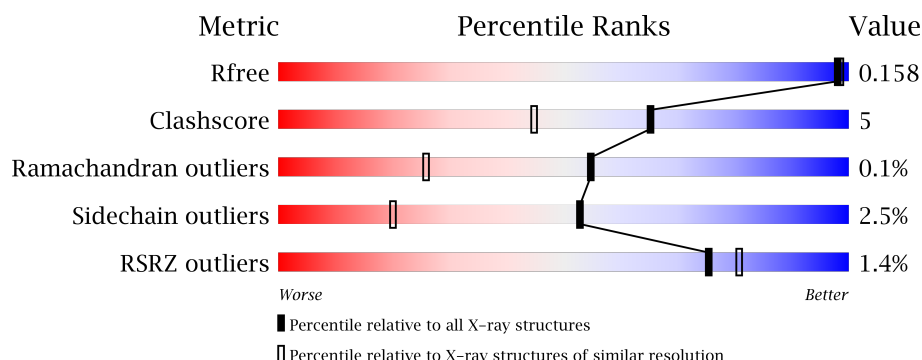
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.55 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	1088 (1.56-1.56)
Clashscore	112137	1132 (1.56-1.56)
Ramachandran outliers	110173	1110 (1.56-1.56)
Sidechain outliers	110143	1108 (1.56-1.56)
RSRZ outliers	101464	1089 (1.56-1.56)

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  $\geq 3$ , 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	436	<div> <div>3%</div> <div>86%</div> <div>12%</div> <div>.</div> </div>
1	B	436	<div> <div>%</div> <div>91%</div> <div>8%</div> <div>.</div> </div>
1	C	436	<div> <div>%</div> <div>91%</div> <div>8%</div> <div>.</div> </div>
1	D	436	<div> <div>%</div> <div>89%</div> <div>10%</div> <div>.</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NAD	B	2002	-	-	-	X
2	NAD	C	2003	-	-	-	X
2	NAD	D	2004	-	-	-	X
3	GDX	A	2005	-	-	-	X
3	GDX	A	2006	-	-	-	X
3	GDX	D	2007	-	-	-	X
3	GDX	D	2008	-	-	-	X
4	SUC	B	2012	-	-	-	X
5	ACY	C	2010	-	-	X	X

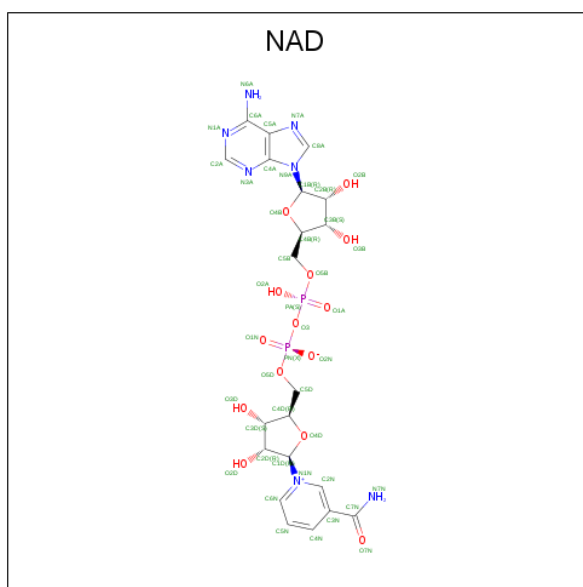


In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called GDP-mannose 6-dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	436	Total 3280	C 2065	N 562	O 635	S 18	0	0	0
1	B	436	Total 3273	C 2066	N 562	O 627	S 18	0	0	0
1	C	436	Total 3297	C 2077	N 566	O 636	S 18	0	0	0
1	D	436	Total 3291	C 2075	N 565	O 633	S 18	0	0	0

- Molecule 2 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula:  $C_{21}H_{27}N_7O_{14}P_2$ ).



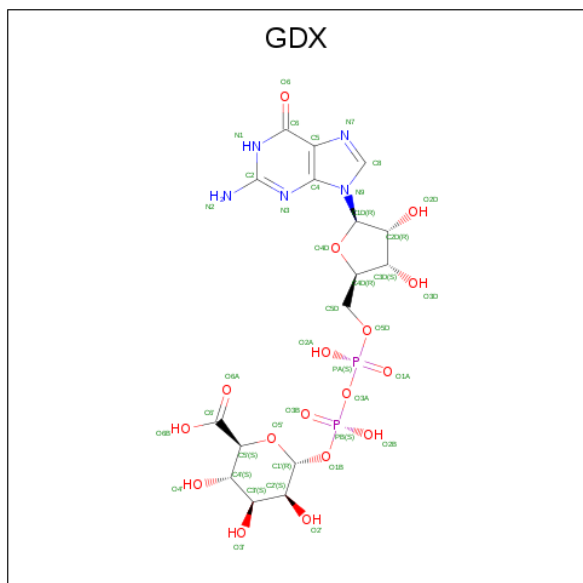
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 35	C 15	N 5	O 13	P 2	0	0
2	B	1	Total 35	C 15	N 5	O 13	P 2	0	0

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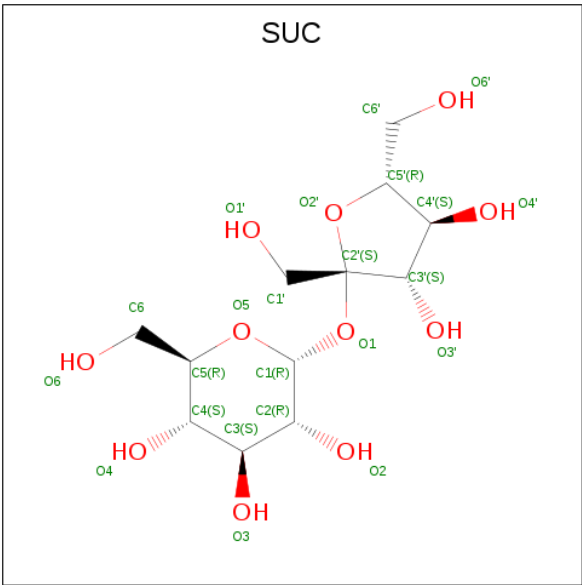
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	C	1	Total	C	N	O	P	0	0
			35	15	5	13	2		
2	D	1	Total	C	N	O	P	0	0
			35	15	5	13	2		

- Molecule 3 is GUANOSINE 5'-(TRIHYDROGEN DIPHOSPHATE), P'-D-MANNOPYRANOSYL ESTER (three-letter code: GDX) (formula:  $C_{16}H_{23}N_5O_{17}P_2$ ).



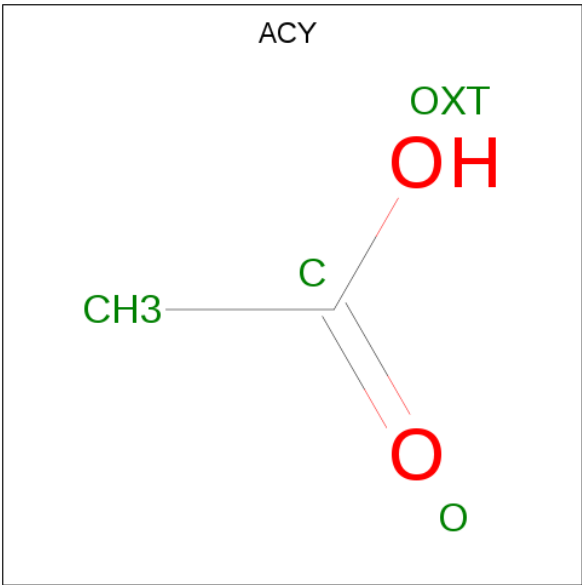
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			40	16	5	17	2		
3	A	1	Total	C	N	O	P	0	0
			40	16	5	17	2		
3	D	1	Total	C	N	O	P	0	0
			40	16	5	17	2		
3	D	1	Total	C	N	O	P	0	0
			40	16	5	17	2		

- Molecule 4 is SUCROSE (three-letter code: SUC) (formula:  $C_{12}H_{22}O_{11}$ ).



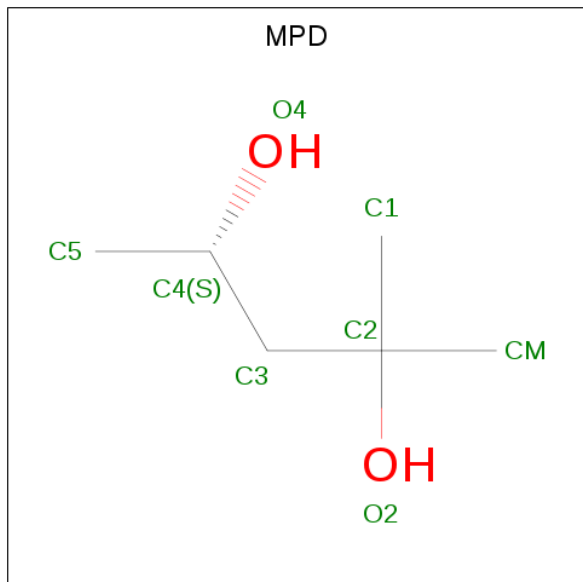
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			23	12	11		
4	D	1	Total	C	O	0	0
			23	12	11		

- Molecule 5 is ACETIC ACID (three-letter code: ACY) (formula: C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	C	O	0	0
			4	2	2		
5	C	1	Total	C	O	0	0
			4	2	2		

- Molecule 6 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula:  $C_6H_{14}O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	C	1	Total	C	O	0	0
			8	6	2		

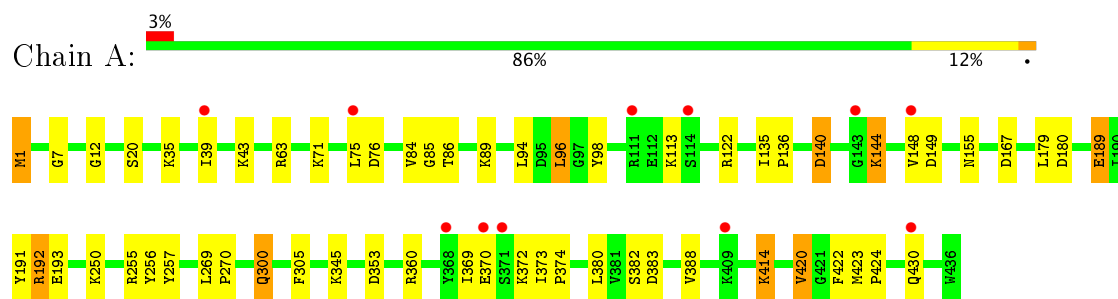
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	289	Total	O	0	0
			289	289		
7	B	301	Total	O	0	0
			301	301		
7	C	386	Total	O	0	0
			386	386		
7	D	400	Total	O	0	0
			400	400		

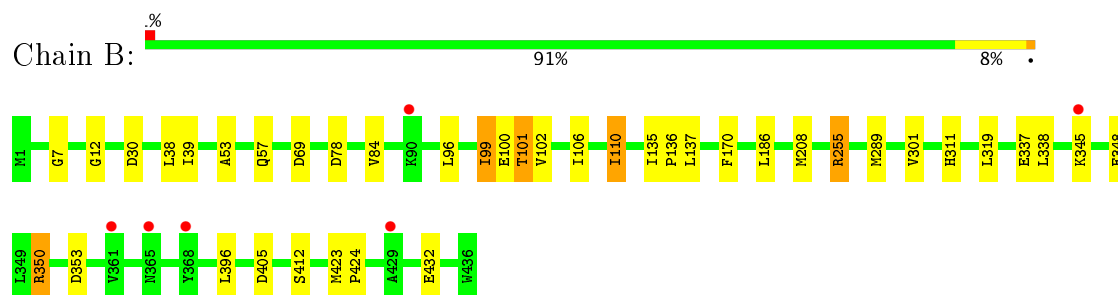
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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 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.

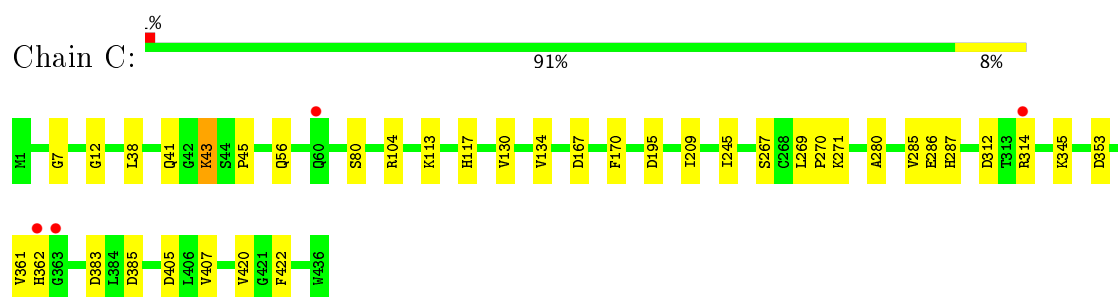
- Molecule 1: GDP-mannose 6-dehydrogenase



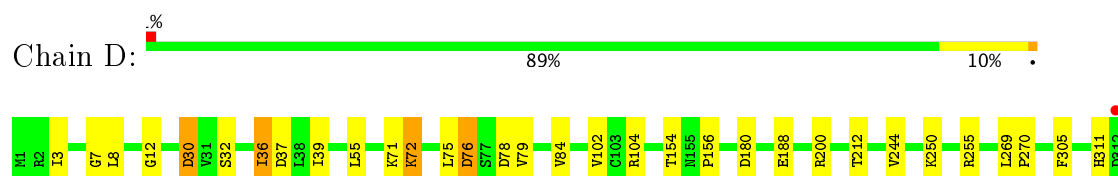
- Molecule 1: GDP-mannose 6-dehydrogenase



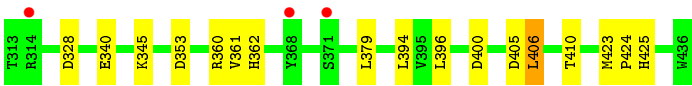
- Molecule 1: GDP-mannose 6-dehydrogenase



- Molecule 1: GDP-mannose 6-dehydrogenase







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	82.47Å 82.47Å 309.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.00 – 1.55 49.55 – 1.55	Depositor EDS
% Data completeness (in resolution range)	100.0 (40.00-1.55) 99.0 (49.55-1.55)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.68 (at 1.55Å)	Xtriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.174 , 0.194 0.151 , 0.158	Depositor DCC
$R_{free}$ test set	14843 reflections (5.32%)	DCC
Wilson B-factor (Å <sup>2</sup> )	15.1	Xtriage
Anisotropy	0.019	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	(Not available) , (Not available)	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.42$ , $\langle L^2 \rangle = 0.25$	Xtriage
Estimated twinning fraction	0.176 for h,-k,-l	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	14879	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	11.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.91% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: GDX, MPD, SUC, ACY, NAD

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	0.40	0/3333	0.73	6/4520 (0.1%)
1	B	0.41	1/3327 (0.0%)	0.75	5/4511 (0.1%)
1	C	0.40	0/3351	0.74	5/4543 (0.1%)
1	D	0.41	0/3345	0.75	9/4533 (0.2%)
All	All	0.41	1/13356 (0.0%)	0.74	25/18107 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	289	MET	SD-CE	-7.28	1.37	1.77

The worst 5 of 25 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	167	ASP	CB-CG-OD2	6.00	123.70	118.30
1	C	405	ASP	CB-CG-OD2	5.74	123.47	118.30
1	B	405	ASP	CB-CG-OD2	5.64	123.38	118.30
1	D	405	ASP	CB-CG-OD2	5.62	123.36	118.30
1	C	195	ASP	CB-CG-OD2	5.52	123.27	118.30

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	3280	0	3256	40	0
1	B	3273	0	3255	25	0
1	C	3297	0	3281	26	0
1	D	3291	0	3281	42	0
2	A	35	0	19	2	0
2	B	35	0	19	0	0
2	C	35	0	19	0	0
2	D	35	0	19	0	0
3	A	80	0	32	0	0
3	D	80	0	32	0	0
4	B	23	0	22	0	0
4	D	23	0	22	0	0
5	C	8	0	6	3	0
6	C	8	0	14	0	0
7	A	289	0	0	2	0
7	B	301	0	0	3	0
7	C	386	0	0	7	1
7	D	400	0	0	8	1
All	All	14879	0	13277	127	1

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 5.

The worst 5 of 127 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:D:305:PHE:HZ	1:D:345:LYS:CD	1.47	1.26
1:B:348:GLU:OE2	1:B:350:ARG:NH2	1.82	1.11
1:D:305:PHE:CZ	1:D:345:LYS:CD	2.35	1.08
1:D:305:PHE:HZ	1:D:345:LYS:HD3	1.15	1.05
1:D:305:PHE:CZ	1:D:345:LYS:HD3	1.94	1.02

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:C:2358:HOH:O	7:D:2112:HOH:O[4_545]	1.98	0.22

## 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	
1	A	434/436 (100%)	421 (97%)	12 (3%)	1 (0%)	51	23
1	B	434/436 (100%)	420 (97%)	14 (3%)	0	100	100
1	C	434/436 (100%)	421 (97%)	13 (3%)	0	100	100
1	D	434/436 (100%)	422 (97%)	12 (3%)	0	100	100
All	All	1736/1744 (100%)	1684 (97%)	51 (3%)	1 (0%)	55	26

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	192	ARG

### 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	
1	A	356/370 (96%)	341 (96%)	15 (4%)	34	6
1	B	353/370 (95%)	342 (97%)	11 (3%)	45	13
1	C	359/370 (97%)	355 (99%)	4 (1%)	78	57
1	D	358/370 (97%)	353 (99%)	5 (1%)	71	45
All	All	1426/1480 (96%)	1391 (98%)	35 (2%)	53	20

5 of 35 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	38	LEU
1	B	101	THR
1	D	72	LYS
1	B	39	ILE
1	B	96	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 12 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	425	HIS
1	C	117	HIS
1	D	300	GLN
1	B	362	HIS
1	C	287	HIS

### 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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

13 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
2	NAD	A	2001	-	33,38,48	0.96	1 (3%)	32,58,73	1.97	3 (9%)
3	GDX	A	2005	-	33,43,43	4.15	14 (42%)	42,67,67	1.90	12 (28%)
3	GDX	A	2006	-	33,43,43	4.12	14 (42%)	42,67,67	2.01	12 (28%)
2	NAD	B	2002	-	33,38,48	1.09	2 (6%)	32,58,73	2.21	3 (9%)
4	SUC	B	2012	-	24,24,24	0.44	0	36,36,36	0.73	0
2	NAD	C	2003	-	33,38,48	1.08	1 (3%)	32,58,73	1.92	3 (9%)
5	ACY	C	2009	-	1,3,3	0.53	0	0,3,3	0.00	-
5	ACY	C	2010	-	1,3,3	1.06	0	0,3,3	0.00	-
6	MPD	C	2011	-	7,7,7	0.24	0	9,10,10	0.31	0
2	NAD	D	2004	-	33,38,48	1.10	2 (6%)	32,58,73	1.96	2 (6%)
3	GDX	D	2007	-	33,43,43	4.08	15 (45%)	42,67,67	1.92	12 (28%)
3	GDX	D	2008	-	33,43,43	4.12	16 (48%)	42,67,67	1.97	12 (28%)
4	SUC	D	2013	-	24,24,24	0.42	0	36,36,36	0.61	0

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
2	NAD	A	2001	-	-	0/18/51/62	0/4/4/5
3	GDX	A	2005	-	-	0/17/61/61	0/4/4/4
3	GDX	A	2006	-	-	0/17/61/61	0/4/4/4
2	NAD	B	2002	-	-	0/18/51/62	0/4/4/5
4	SUC	B	2012	-	-	0/12/51/51	0/2/2/2
2	NAD	C	2003	-	-	0/18/51/62	0/4/4/5
5	ACY	C	2009	-	-	0/0/0/0	0/0/0/0
5	ACY	C	2010	-	-	0/0/0/0	0/0/0/0
6	MPD	C	2011	-	-	0/5/5/5	0/0/0/0
2	NAD	D	2004	-	-	0/18/51/62	0/4/4/5
3	GDX	D	2007	-	-	0/17/61/61	0/4/4/4
3	GDX	D	2008	-	-	0/17/61/61	0/4/4/4
4	SUC	D	2013	-	-	0/12/51/51	0/2/2/2

The worst 5 of 65 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	2005	GDX	C2D-C1D	-10.56	1.36	1.53
3	D	2007	GDX	C2D-C1D	-10.10	1.37	1.53
3	A	2006	GDX	C2D-C1D	-10.06	1.37	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	2008	GDX	C2D-C1D	-9.81	1.38	1.53
3	D	2007	GDX	C4'-C5'	-7.54	1.36	1.53

The worst 5 of 59 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	2002	NAD	N3A-C2A-N1A	-10.72	119.53	128.86
2	A	2001	NAD	N3A-C2A-N1A	-9.56	120.53	128.86
2	C	2003	NAD	N3A-C2A-N1A	-9.21	120.84	128.86
2	D	2004	NAD	N3A-C2A-N1A	-9.07	120.96	128.86
3	D	2007	GDX	C5-C6-N1	-4.90	116.50	123.48

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2001	NAD	2	0
5	C	2009	ACY	1	0
5	C	2010	ACY	3	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	436/436 (100%)	-0.07	11 (2%) 58 65	4, 9, 18, 25	1 (0%)
1	B	436/436 (100%)	-0.18	6 (1%) 75 81	4, 9, 17, 23	2 (0%)
1	C	436/436 (100%)	-0.31	4 (0%) 84 87	3, 8, 16, 21	0
1	D	436/436 (100%)	-0.29	4 (0%) 84 87	3, 7, 16, 25	0
All	All	1744/1744 (100%)	-0.21	25 (1%) 75 81	3, 8, 17, 25	3 (0%)

The worst 5 of 25 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	368	TYR	5.1
1	D	368	TYR	4.3
1	A	148	VAL	4.1
1	A	371	SER	3.5
1	B	345	LYS	3.2

### 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, 95<sup>th</sup> 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( $\text{\AA}^2$ )	Q<0.9
3	GDX	A	2006	40/40	0.95	0.15	8.87	12,14,16,18	0
3	GDX	A	2005	40/40	0.94	0.14	7.27	13,15,16,17	0
3	GDX	D	2007	40/40	0.95	0.14	6.97	11,13,14,16	0
2	NAD	C	2003	35/44	0.97	0.14	4.80	12,16,18,19	0
5	ACY	C	2010	4/4	0.89	0.13	4.56	26,26,26,27	0
3	GDX	D	2008	40/40	0.96	0.14	4.10	11,13,15,16	0
2	NAD	D	2004	35/44	0.97	0.13	3.66	12,15,16,18	0
4	SUC	B	2012	23/23	0.69	0.19	2.96	31,34,40,41	0
2	NAD	B	2002	35/44	0.96	0.12	2.14	15,17,19,19	0
4	SUC	D	2013	23/23	0.80	0.12	1.62	25,27,30,32	0
2	NAD	A	2001	35/44	0.97	0.12	1.45	14,17,21,23	0
5	ACY	C	2009	4/4	0.90	0.11	-	26,26,27,27	0
6	MPD	C	2011	8/8	0.35	0.37	-	38,39,39,40	0

## 6.5 Other polymers

There are no such residues in this entry.