



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 15, 2017 – 04:04 am GMT

PDB ID : 1W8S  
Title : THE MECHANISM OF THE SCHIFF BASE FORMING FRUCTOSE-1,6-B  
ISPHOSPHATE ALDOLASE: STRUCTURAL ANALYSIS OF REACTION  
INTERMEDIATES  
Authors : Lorentzen, E.; Hensel, R.; Siebers, B.; Pohl, E.  
Deposited on : 2004-09-27  
Resolution : 1.85 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 : 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

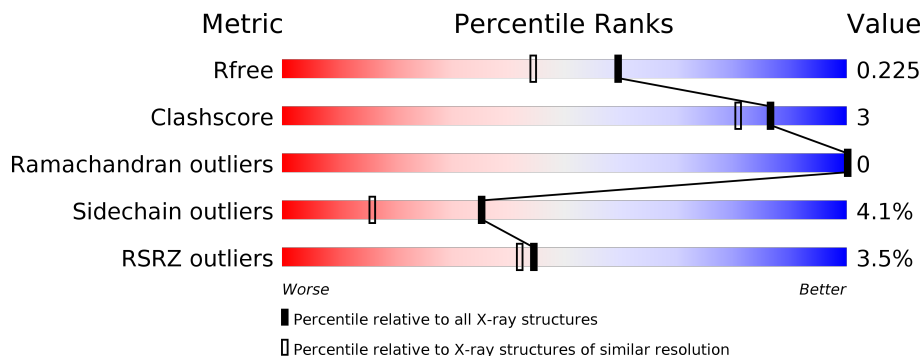
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.85 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	1923 (1.86-1.86)
Clashscore	112137	2083 (1.86-1.86)
Ramachandran outliers	110173	2060 (1.86-1.86)
Sidechain outliers	110143	2060 (1.86-1.86)
RSRZ outliers	101464	1932 (1.86-1.86)

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	263	<div> <div>3%</div> <div> <div></div> <div>86%</div> <div>9%</div> <div>5%</div> </div> </div>
1	B	263	<div> <div>3%</div> <div> <div></div> <div>87%</div> <div>6%</div> <div>5%</div> </div> </div>
1	C	263	<div> <div>7%</div> <div> <div></div> <div>86%</div> <div>9%</div> <div>5%</div> </div> </div>
1	D	263	<div> <div>4%</div> <div> <div></div> <div>86%</div> <div>8%</div> <div>5%</div> </div> </div>
1	E	263	<div> <div>3%</div> <div> <div></div> <div>86%</div> <div>9%</div> <div>•</div> </div> </div>
1	F	263	<div> <div>5%</div> <div> <div></div> <div>87%</div> <div>7%</div> <div>5%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	G	263	<div><div>%</div><div><div></div><div>87%</div><div>8%5%</div></div></div>
1	H	263	<div><div>4%</div><div><div></div><div>83%</div><div>11%5%</div></div></div>
1	I	263	<div><div>3%</div><div><div></div><div>89%</div><div>6%5%</div></div></div>
1	J	263	<div><div>%</div><div><div></div><div>87%</div><div>8%5%</div></div></div>

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 20960 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 FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	250	Total	C	N	O	S	0	3	0
			1940	1248	327	359	6			
1	B	250	Total	C	N	O	S	0	1	0
			1931	1242	327	357	5			
1	C	250	Total	C	N	O	S	0	2	0
			1936	1246	328	357	5			
1	D	250	Total	C	N	O	S	0	1	0
			1936	1245	330	356	5			
1	E	252	Total	C	N	O	S	0	2	0
			1942	1248	329	359	6			
1	F	250	Total	C	N	O	S	0	2	0
			1937	1245	330	356	6			
1	G	250	Total	C	N	O	S	0	4	0
			1949	1253	330	360	6			
1	H	250	Total	C	N	O	S	0	4	0
			1947	1252	331	359	5			
1	I	250	Total	C	N	O	S	0	2	0
			1935	1245	327	357	6			
1	J	250	Total	C	N	O	S	0	4	0
			1945	1252	328	359	6			

There are 20 discrepancies between the modelled and reference sequences:

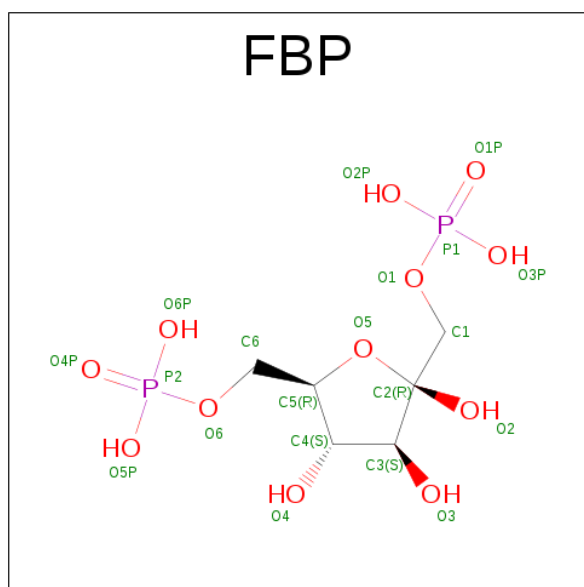
Chain	Residue	Modelled	Actual	Comment	Reference
A	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
B	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
C	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
D	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
E	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
F	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
G	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
H	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
I	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315

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Chain	Residue	Modelled	Actual	Comment	Reference
J	144	GLU	TRP	ENGINEERED MUTATION	UNP P58315
A	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
B	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
C	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
D	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
E	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
F	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
G	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
H	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
I	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315
J	146	PHE	TYR	ENGINEERED MUTATION	UNP P58315

- Molecule 2 is SUGAR (BETA-FRUCTOSE-1,6-DIPHOSPHATE) (three-letter code: FBP) (formula:  $C_6H_{14}O_{12}P_2$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 20	C 6	O 12	P 2	0	0
2	B	1	Total 20	C 6	O 12	P 2	0	0
2	C	1	Total 20	C 6	O 12	P 2	0	0
2	D	1	Total 20	C 6	O 12	P 2	0	0
2	E	1	Total 20	C 6	O 12	P 2	0	0

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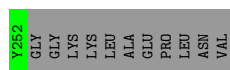
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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	F	1	Total	C	O	P	0	0
			20	6	12	2		
2	G	1	Total	C	O	P	0	0
			20	6	12	2		
2	H	1	Total	C	O	P	0	0
			20	6	12	2		
2	I	1	Total	C	O	P	0	0
			20	6	12	2		
2	J	1	Total	C	O	P	0	0
			20	6	12	2		

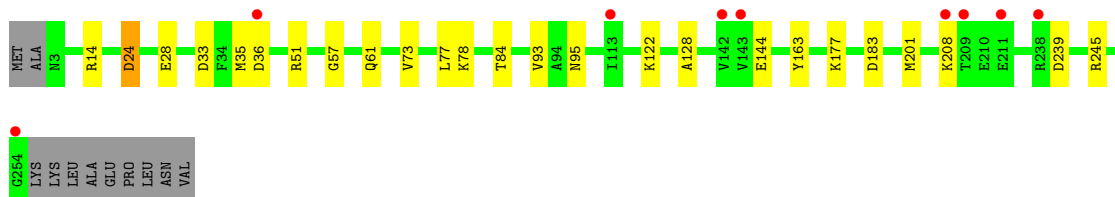
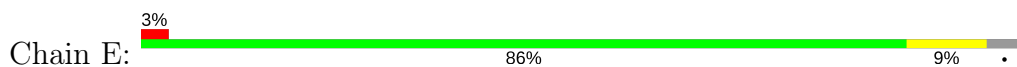
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	140	Total	O	0	0
			140	140		
3	B	154	Total	O	0	0
			154	154		
3	C	119	Total	O	0	0
			119	119		
3	D	111	Total	O	0	0
			111	111		
3	E	135	Total	O	0	0
			135	135		
3	F	115	Total	O	0	0
			115	115		
3	G	133	Total	O	0	0
			133	133		
3	H	147	Total	O	0	0
			147	147		
3	I	149	Total	O	0	0
			149	149		
3	J	159	Total	O	0	0
			159	159		

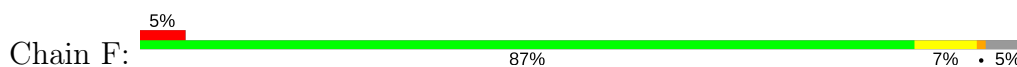




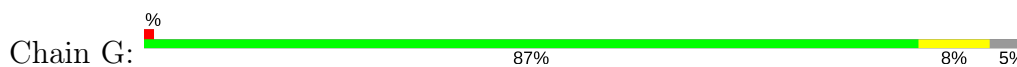
## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I



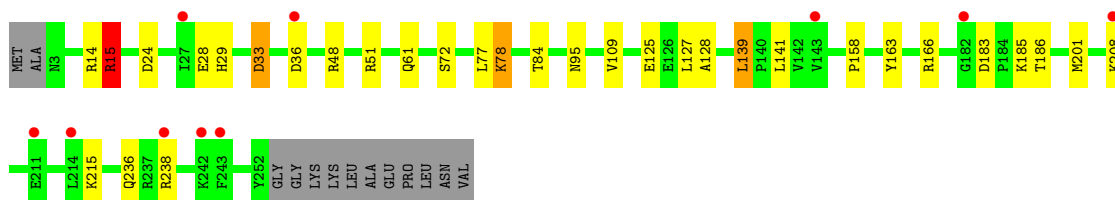
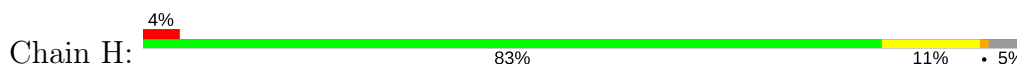
## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I



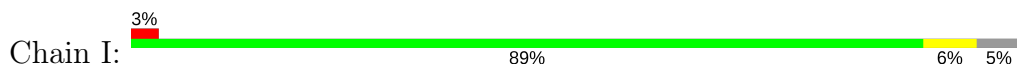
## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I



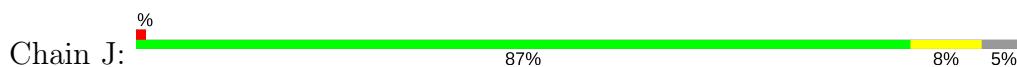
## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I

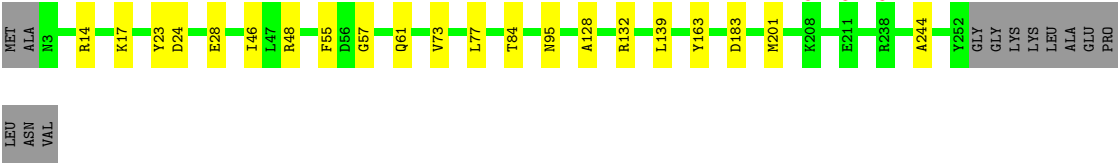


## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I



## ● Molecule 1: FRUCTOSE-BISPHOSPHATE ALDOLASE CLASS I





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	82.50Å 157.30Å 101.20Å 90.00° 107.90° 90.00°	Depositor
Resolution (Å)	40.00 – 1.85 37.39 – 1.85	Depositor EDS
% Data completeness (in resolution range)	1.0 (40.00-1.85) 95.6 (37.39-1.85)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.68 (at 1.85Å)	Xtriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.149 , 0.187 0.198 , 0.225	Depositor DCC
$R_{free}$ test set	2016 reflections (1.01%)	DCC
Wilson B-factor (Å <sup>2</sup> )	23.0	Xtriage
Anisotropy	0.041	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 46.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	20960	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	16.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.35% 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 ⓘ

### 5.1 Standard geometry ⓘ

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

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	0.68	0/1993	0.81	1/2695 (0.0%)
1	B	0.70	0/1976	0.80	4/2673 (0.1%)
1	C	0.66	0/1985	0.82	2/2684 (0.1%)
1	D	0.68	1/1981 (0.1%)	0.82	3/2679 (0.1%)
1	E	0.67	0/1992	0.78	3/2693 (0.1%)
1	F	0.67	0/1989	0.78	3/2689 (0.1%)
1	G	0.71	0/2007	0.84	1/2714 (0.0%)
1	H	0.72	2/2004 (0.1%)	0.85	6/2709 (0.2%)
1	I	0.71	0/1984	0.79	1/2683 (0.0%)
1	J	0.70	0/2002	0.85	3/2706 (0.1%)
All	All	0.69	3/19913 (0.0%)	0.82	27/26925 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	78	LYS	CE-NZ	5.53	1.62	1.49
1	D	78	LYS	CD-CE	5.21	1.64	1.51
1	H	78	LYS	CD-CE	5.16	1.64	1.51

The worst 5 of 27 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	132	ARG	NE-CZ-NH1	8.32	124.46	120.30
1	G	238	ARG	NE-CZ-NH1	6.72	123.66	120.30
1	A	174	ASP	CB-CG-OD2	6.54	124.19	118.30
1	C	36	ASP	CB-CG-OD2	6.37	124.03	118.30
1	D	36	ASP	CB-CG-OD2	6.05	123.74	118.30

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	1940	0	1953	15	0
1	B	1931	0	1946	9	0
1	C	1936	0	1955	10	1
1	D	1936	0	1954	7	0
1	E	1942	0	1957	14	0
1	F	1937	0	1955	7	0
1	G	1949	0	1963	9	1
1	H	1947	0	1964	26	0
1	I	1935	0	1951	8	0
1	J	1945	0	1962	9	0
2	A	20	0	10	2	0
2	B	20	0	10	0	0
2	C	20	0	10	0	0
2	D	20	0	10	0	0
2	E	20	0	10	1	0
2	F	20	0	10	0	0
2	G	20	0	10	0	0
2	H	20	0	10	1	0
2	I	20	0	10	1	0
2	J	20	0	10	0	0
3	A	140	0	0	1	0
3	B	154	0	0	1	0
3	C	119	0	0	2	0
3	D	111	0	0	1	0
3	E	135	0	0	3	0
3	F	115	0	0	1	0
3	G	133	0	0	2	0
3	H	147	0	0	9	0
3	I	149	0	0	0	0
3	J	159	0	0	2	0
All	All	20960	0	19660	99	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 3.

The worst 5 of 99 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:H:33[B]:ASP:CG	3:H:2018:HOH:O	2.07	0.93
1:C:144:GLU:CD	3:C:2083:HOH:O	2.21	0.78
1:G:89[B]:GLU:HG2	1:G:118:GLY:H	1.50	0.76
1:E:78:LYS:CE	1:E:144:GLU:OE2	2.34	0.75
1:H:33[A]:ASP:OD1	3:H:2018:HOH:O	2.04	0.74

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)
1:C:208:LYS:O	1:G:44:GLU:OE2[2_546]	2.13	0.07

## 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	251/263 (95%)	246 (98%)	5 (2%)	0	100	100
1	B	249/263 (95%)	243 (98%)	6 (2%)	0	100	100
1	C	250/263 (95%)	244 (98%)	6 (2%)	0	100	100
1	D	249/263 (95%)	244 (98%)	5 (2%)	0	100	100
1	E	252/263 (96%)	246 (98%)	6 (2%)	0	100	100
1	F	250/263 (95%)	245 (98%)	5 (2%)	0	100	100
1	G	252/263 (96%)	247 (98%)	5 (2%)	0	100	100
1	H	252/263 (96%)	246 (98%)	6 (2%)	0	100	100
1	I	250/263 (95%)	245 (98%)	5 (2%)	0	100	100
1	J	252/263 (96%)	247 (98%)	5 (2%)	0	100	100
All	All	2507/2630 (95%)	2453 (98%)	54 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 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	200/206 (97%)	190 (95%)	10 (5%)	28	11
1	B	198/206 (96%)	191 (96%)	7 (4%)	41	21
1	C	199/206 (97%)	191 (96%)	8 (4%)	36	17
1	D	198/206 (96%)	187 (94%)	11 (6%)	25	8
1	E	199/206 (97%)	190 (96%)	9 (4%)	32	13
1	F	199/206 (97%)	189 (95%)	10 (5%)	28	11
1	G	201/206 (98%)	194 (96%)	7 (4%)	41	21
1	H	201/206 (98%)	191 (95%)	10 (5%)	28	11
1	I	199/206 (97%)	193 (97%)	6 (3%)	46	28
1	J	201/206 (98%)	196 (98%)	5 (2%)	53	35
All	All	1995/2060 (97%)	1912 (96%)	83 (4%)	35	15

5 of 83 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	35[A]	MET
1	F	35[B]	MET
1	I	201	MET
1	E	35[B]	MET
1	E	183	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	87	ASN
1	E	61	GLN
1	H	236	GLN
1	D	61	GLN
1	H	61	GLN

### 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 ⓘ

10 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	FBP	A	270	-	18,20,20	0.85	1 (5%)	23,32,32	1.05	2 (8%)
2	FBP	B	270	-	18,20,20	1.01	1 (5%)	23,32,32	0.67	0
2	FBP	C	270	-	18,20,20	0.98	1 (5%)	23,32,32	0.90	1 (4%)
2	FBP	D	270	-	18,20,20	0.88	1 (5%)	23,32,32	0.69	0
2	FBP	E	270	-	18,20,20	0.69	1 (5%)	23,32,32	0.90	0
2	FBP	F	270	-	18,20,20	0.87	1 (5%)	23,32,32	0.82	0
2	FBP	G	270	-	18,20,20	0.74	0	23,32,32	0.68	0
2	FBP	H	270	-	18,20,20	0.92	1 (5%)	23,32,32	0.96	1 (4%)
2	FBP	I	270	-	18,20,20	0.77	1 (5%)	23,32,32	1.25	4 (17%)
2	FBP	J	270	-	18,20,20	0.97	1 (5%)	23,32,32	0.60	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	FBP	A	270	-	-	0/13/32/32	0/1/1/1
2	FBP	B	270	-	-	0/13/32/32	0/1/1/1
2	FBP	C	270	-	-	0/13/32/32	0/1/1/1
2	FBP	D	270	-	-	0/13/32/32	0/1/1/1
2	FBP	E	270	-	-	0/13/32/32	0/1/1/1
2	FBP	F	270	-	-	0/13/32/32	0/1/1/1
2	FBP	G	270	-	-	0/13/32/32	0/1/1/1
2	FBP	H	270	-	-	0/13/32/32	0/1/1/1
2	FBP	I	270	-	-	0/13/32/32	0/1/1/1
2	FBP	J	270	-	-	0/13/32/32	0/1/1/1

The worst 5 of 9 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	270	FBP	O3-C3	-2.05	1.38	1.42
2	A	270	FBP	O2-C2	2.07	1.44	1.40
2	I	270	FBP	O2-C2	2.11	1.44	1.40
2	F	270	FBP	O2-C2	2.37	1.44	1.40
2	E	270	FBP	O2-C2	2.41	1.45	1.40

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	270	FBP	O6P-P2-O6	-2.25	100.75	106.73
2	A	270	FBP	O6P-P2-O6	-2.13	101.07	106.73
2	I	270	FBP	O3P-P1-O1	2.19	112.57	106.73
2	I	270	FBP	O6-P2-O4P	2.21	112.68	106.47
2	H	270	FBP	O5P-P2-O6	2.38	113.07	106.73

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	270	FBP	2	0
2	E	270	FBP	1	0
2	H	270	FBP	1	0
2	I	270	FBP	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, 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	250/263 (95%)	0.17	7 (2%) 53 52	11, 14, 22, 28	0
1	B	250/263 (95%)	0.07	7 (2%) 53 52	11, 14, 22, 26	0
1	C	250/263 (95%)	0.32	19 (7%) 15 15	11, 15, 22, 28	0
1	D	250/263 (95%)	0.02	10 (4%) 39 37	11, 14, 22, 25	0
1	E	252/263 (95%)	0.12	9 (3%) 43 41	11, 14, 22, 28	0
1	F	250/263 (95%)	0.18	13 (5%) 28 27	11, 15, 21, 29	0
1	G	250/263 (95%)	-0.06	3 (1%) 79 79	10, 14, 22, 30	0
1	H	250/263 (95%)	0.12	10 (4%) 39 37	10, 15, 21, 27	0
1	I	250/263 (95%)	0.12	7 (2%) 53 52	11, 14, 22, 27	0
1	J	250/263 (95%)	-0.07	3 (1%) 79 79	11, 14, 22, 28	0
All	All	2502/2630 (95%)	0.10	88 (3%) 44 42	10, 14, 22, 30	0

The worst 5 of 88 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	254	GLY	4.7
1	D	208	LYS	4.4
1	C	238	ARG	4.1
1	F	238	ARG	3.6
1	C	214	LEU	3.5

### 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
2	FBP	I	270	20/20	0.95	0.10	0.22	12,25,36,38	0
2	FBP	D	270	20/20	0.95	0.09	-0.15	12,25,36,37	0
2	FBP	C	270	20/20	0.93	0.11	-0.19	13,24,34,36	0
2	FBP	G	270	20/20	0.95	0.09	-0.26	11,23,33,33	0
2	FBP	B	270	20/20	0.96	0.10	-0.28	14,23,36,36	0
2	FBP	J	270	20/20	0.95	0.09	-0.32	16,24,34,35	0
2	FBP	A	270	20/20	0.95	0.09	-0.47	12,26,35,36	0
2	FBP	E	270	20/20	0.95	0.08	-0.53	14,26,34,35	0
2	FBP	H	270	20/20	0.97	0.08	-0.60	13,24,37,39	0
2	FBP	F	270	20/20	0.96	0.08	-0.73	14,23,30,31	0

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

There are no such residues in this entry.