



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2018 – 10:53 pm GMT

PDB ID : 3WCF
Title : The complex structure of HsSQS with ligand,BPH1218
Authors : Shang, N.; Li, Q.; Ko, T.P.; Chan, H.C.; Huang, C.H.; Ren, F.; Zheng, Y.;
Zhu, Z.; Chen, C.C.; Guo, R.T.
Deposited on : 2013-05-27
Resolution : 2.22 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

<https://www.wwpdb.org/validation/2017/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 : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

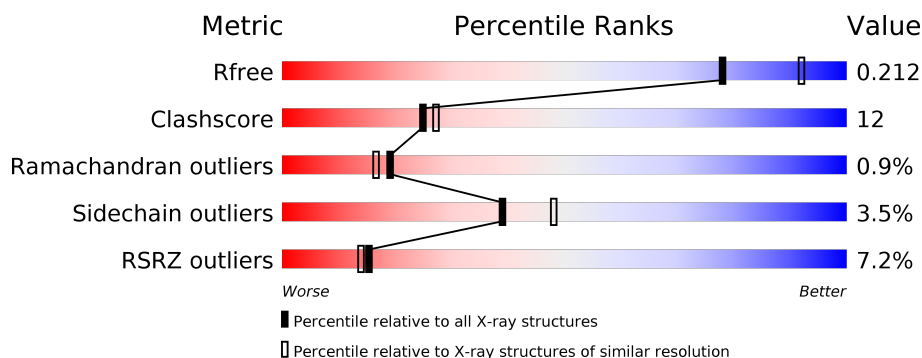
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.22 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}	111664	5192 (2.24-2.20)
Clashscore	122126	5911 (2.24-2.20)
Ramachandran outliers	120053	5828 (2.24-2.20)
Sidechain outliers	120020	5829 (2.24-2.20)
RSRZ outliers	108989	5078 (2.24-2.20)

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	360	<div> <div>4%</div> <div> <div></div> <div>75%</div> <div>17%</div> <div>• 7%</div> </div> </div>
1	B	360	<div> <div>6%</div> <div> <div></div> <div>72%</div> <div>20%</div> <div>• 7%</div> </div> </div>
1	C	360	<div> <div>3%</div> <div> <div></div> <div>69%</div> <div>22%</div> <div>• 7%</div> </div> </div>
1	D	360	<div> <div>6%</div> <div> <div></div> <div>70%</div> <div>21%</div> <div>• 7%</div> </div> </div>
1	E	360	<div> <div>6%</div> <div> <div></div> <div>69%</div> <div>22%</div> <div>• 7%</div> </div> </div>
1	F	360	<div> <div>17%</div> <div> <div></div> <div>61%</div> <div>30%</div> <div>• 7%</div> </div> </div>

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 16821 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 Squalene synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			
1	B	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			
1	C	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			
1	D	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			
1	E	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			
1	F	334	Total	C	N	O	S	0	0	0
			2696	1717	458	503	18			

There are 144 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	11	MET	-	EXPRESSION TAG	UNP P37268
A	12	GLY	-	EXPRESSION TAG	UNP P37268
A	13	SER	-	EXPRESSION TAG	UNP P37268
A	14	SER	-	EXPRESSION TAG	UNP P37268
A	15	HIS	-	EXPRESSION TAG	UNP P37268
A	16	HIS	-	EXPRESSION TAG	UNP P37268
A	17	HIS	-	EXPRESSION TAG	UNP P37268
A	18	HIS	-	EXPRESSION TAG	UNP P37268
A	19	HIS	-	EXPRESSION TAG	UNP P37268
A	20	HIS	-	EXPRESSION TAG	UNP P37268
A	21	SER	-	EXPRESSION TAG	UNP P37268
A	22	SER	-	EXPRESSION TAG	UNP P37268
A	23	GLY	-	EXPRESSION TAG	UNP P37268
A	24	LEU	-	EXPRESSION TAG	UNP P37268
A	25	VAL	-	EXPRESSION TAG	UNP P37268
A	26	PRO	-	EXPRESSION TAG	UNP P37268
A	27	ARG	-	EXPRESSION TAG	UNP P37268

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Chain	Residue	Modelled	Actual	Comment	Reference
A	28	GLY	-	EXPRESSION TAG	UNP P37268
A	29	SER	-	EXPRESSION TAG	UNP P37268
A	30	HIS	-	EXPRESSION TAG	UNP P37268
A	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
A	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
A	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268
A	353	ASN	ASP	SEE REMARK 999	UNP P37268
B	11	MET	-	EXPRESSION TAG	UNP P37268
B	12	GLY	-	EXPRESSION TAG	UNP P37268
B	13	SER	-	EXPRESSION TAG	UNP P37268
B	14	SER	-	EXPRESSION TAG	UNP P37268
B	15	HIS	-	EXPRESSION TAG	UNP P37268
B	16	HIS	-	EXPRESSION TAG	UNP P37268
B	17	HIS	-	EXPRESSION TAG	UNP P37268
B	18	HIS	-	EXPRESSION TAG	UNP P37268
B	19	HIS	-	EXPRESSION TAG	UNP P37268
B	20	HIS	-	EXPRESSION TAG	UNP P37268
B	21	SER	-	EXPRESSION TAG	UNP P37268
B	22	SER	-	EXPRESSION TAG	UNP P37268
B	23	GLY	-	EXPRESSION TAG	UNP P37268
B	24	LEU	-	EXPRESSION TAG	UNP P37268
B	25	VAL	-	EXPRESSION TAG	UNP P37268
B	26	PRO	-	EXPRESSION TAG	UNP P37268
B	27	ARG	-	EXPRESSION TAG	UNP P37268
B	28	GLY	-	EXPRESSION TAG	UNP P37268
B	29	SER	-	EXPRESSION TAG	UNP P37268
B	30	HIS	-	EXPRESSION TAG	UNP P37268
B	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
B	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
B	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268
B	353	ASN	ASP	SEE REMARK 999	UNP P37268
C	11	MET	-	EXPRESSION TAG	UNP P37268
C	12	GLY	-	EXPRESSION TAG	UNP P37268
C	13	SER	-	EXPRESSION TAG	UNP P37268
C	14	SER	-	EXPRESSION TAG	UNP P37268
C	15	HIS	-	EXPRESSION TAG	UNP P37268
C	16	HIS	-	EXPRESSION TAG	UNP P37268
C	17	HIS	-	EXPRESSION TAG	UNP P37268
C	18	HIS	-	EXPRESSION TAG	UNP P37268
C	19	HIS	-	EXPRESSION TAG	UNP P37268
C	20	HIS	-	EXPRESSION TAG	UNP P37268
C	21	SER	-	EXPRESSION TAG	UNP P37268

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Chain	Residue	Modelled	Actual	Comment	Reference
C	22	SER	-	EXPRESSION TAG	UNP P37268
C	23	GLY	-	EXPRESSION TAG	UNP P37268
C	24	LEU	-	EXPRESSION TAG	UNP P37268
C	25	VAL	-	EXPRESSION TAG	UNP P37268
C	26	PRO	-	EXPRESSION TAG	UNP P37268
C	27	ARG	-	EXPRESSION TAG	UNP P37268
C	28	GLY	-	EXPRESSION TAG	UNP P37268
C	29	SER	-	EXPRESSION TAG	UNP P37268
C	30	HIS	-	EXPRESSION TAG	UNP P37268
C	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
C	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
C	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268
C	353	ASN	ASP	SEE REMARK 999	UNP P37268
D	11	MET	-	EXPRESSION TAG	UNP P37268
D	12	GLY	-	EXPRESSION TAG	UNP P37268
D	13	SER	-	EXPRESSION TAG	UNP P37268
D	14	SER	-	EXPRESSION TAG	UNP P37268
D	15	HIS	-	EXPRESSION TAG	UNP P37268
D	16	HIS	-	EXPRESSION TAG	UNP P37268
D	17	HIS	-	EXPRESSION TAG	UNP P37268
D	18	HIS	-	EXPRESSION TAG	UNP P37268
D	19	HIS	-	EXPRESSION TAG	UNP P37268
D	20	HIS	-	EXPRESSION TAG	UNP P37268
D	21	SER	-	EXPRESSION TAG	UNP P37268
D	22	SER	-	EXPRESSION TAG	UNP P37268
D	23	GLY	-	EXPRESSION TAG	UNP P37268
D	24	LEU	-	EXPRESSION TAG	UNP P37268
D	25	VAL	-	EXPRESSION TAG	UNP P37268
D	26	PRO	-	EXPRESSION TAG	UNP P37268
D	27	ARG	-	EXPRESSION TAG	UNP P37268
D	28	GLY	-	EXPRESSION TAG	UNP P37268
D	29	SER	-	EXPRESSION TAG	UNP P37268
D	30	HIS	-	EXPRESSION TAG	UNP P37268
D	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
D	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
D	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268
D	353	ASN	ASP	SEE REMARK 999	UNP P37268
E	11	MET	-	EXPRESSION TAG	UNP P37268
E	12	GLY	-	EXPRESSION TAG	UNP P37268
E	13	SER	-	EXPRESSION TAG	UNP P37268
E	14	SER	-	EXPRESSION TAG	UNP P37268
E	15	HIS	-	EXPRESSION TAG	UNP P37268

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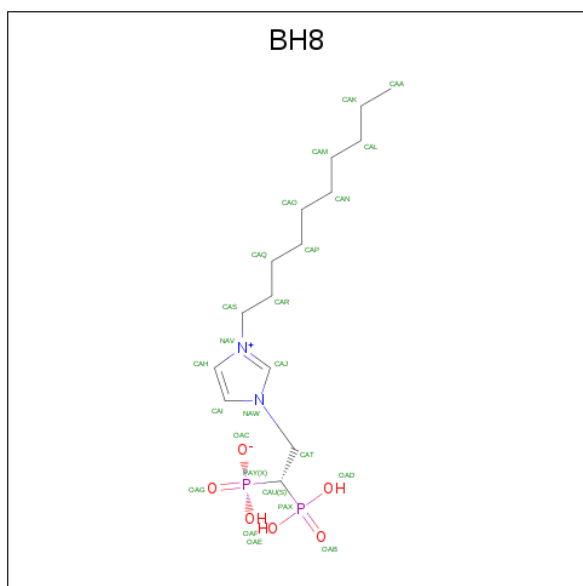
Chain	Residue	Modelled	Actual	Comment	Reference
E	16	HIS	-	EXPRESSION TAG	UNP P37268
E	17	HIS	-	EXPRESSION TAG	UNP P37268
E	18	HIS	-	EXPRESSION TAG	UNP P37268
E	19	HIS	-	EXPRESSION TAG	UNP P37268
E	20	HIS	-	EXPRESSION TAG	UNP P37268
E	21	SER	-	EXPRESSION TAG	UNP P37268
E	22	SER	-	EXPRESSION TAG	UNP P37268
E	23	GLY	-	EXPRESSION TAG	UNP P37268
E	24	LEU	-	EXPRESSION TAG	UNP P37268
E	25	VAL	-	EXPRESSION TAG	UNP P37268
E	26	PRO	-	EXPRESSION TAG	UNP P37268
E	27	ARG	-	EXPRESSION TAG	UNP P37268
E	28	GLY	-	EXPRESSION TAG	UNP P37268
E	29	SER	-	EXPRESSION TAG	UNP P37268
E	30	HIS	-	EXPRESSION TAG	UNP P37268
E	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
E	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
E	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268
E	353	ASN	ASP	SEE REMARK 999	UNP P37268
F	11	MET	-	EXPRESSION TAG	UNP P37268
F	12	GLY	-	EXPRESSION TAG	UNP P37268
F	13	SER	-	EXPRESSION TAG	UNP P37268
F	14	SER	-	EXPRESSION TAG	UNP P37268
F	15	HIS	-	EXPRESSION TAG	UNP P37268
F	16	HIS	-	EXPRESSION TAG	UNP P37268
F	17	HIS	-	EXPRESSION TAG	UNP P37268
F	18	HIS	-	EXPRESSION TAG	UNP P37268
F	19	HIS	-	EXPRESSION TAG	UNP P37268
F	20	HIS	-	EXPRESSION TAG	UNP P37268
F	21	SER	-	EXPRESSION TAG	UNP P37268
F	22	SER	-	EXPRESSION TAG	UNP P37268
F	23	GLY	-	EXPRESSION TAG	UNP P37268
F	24	LEU	-	EXPRESSION TAG	UNP P37268
F	25	VAL	-	EXPRESSION TAG	UNP P37268
F	26	PRO	-	EXPRESSION TAG	UNP P37268
F	27	ARG	-	EXPRESSION TAG	UNP P37268
F	28	GLY	-	EXPRESSION TAG	UNP P37268
F	29	SER	-	EXPRESSION TAG	UNP P37268
F	30	HIS	-	EXPRESSION TAG	UNP P37268
F	248	LEU	LYS	ENGINEERED MUTATION	UNP P37268
F	315	LEU	LYS	ENGINEERED MUTATION	UNP P37268
F	318	LEU	LYS	ENGINEERED MUTATION	UNP P37268

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Chain	Residue	Modelled	Actual	Comment	Reference
F	353	ASN	ASP	SEE REMARK 999	UNP P37268

- Molecule 2 is hydrogen [(1S)-2-(3-decyl-1H-imidazol-3-ium-1-yl)-1-phosphonoethyl]phosphate (three-letter code: BH8) (formula: C₁₅H₃₀N₂O₆P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			25	15	2	6	2		
2	B	1	Total	C	N	O	P	0	0
			25	15	2	6	2		
2	C	1	Total	C	N	O	P	0	0
			25	15	2	6	2		
2	D	1	Total	C	N	O	P	0	0
			25	15	2	6	2		
2	E	1	Total	C	N	O	P	0	0
			25	15	2	6	2		
2	F	1	Total	C	N	O	P	0	0
			25	15	2	6	2		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	151	Total	O	0	0
			151	151		
3	B	111	Total	O	0	0
			111	111		

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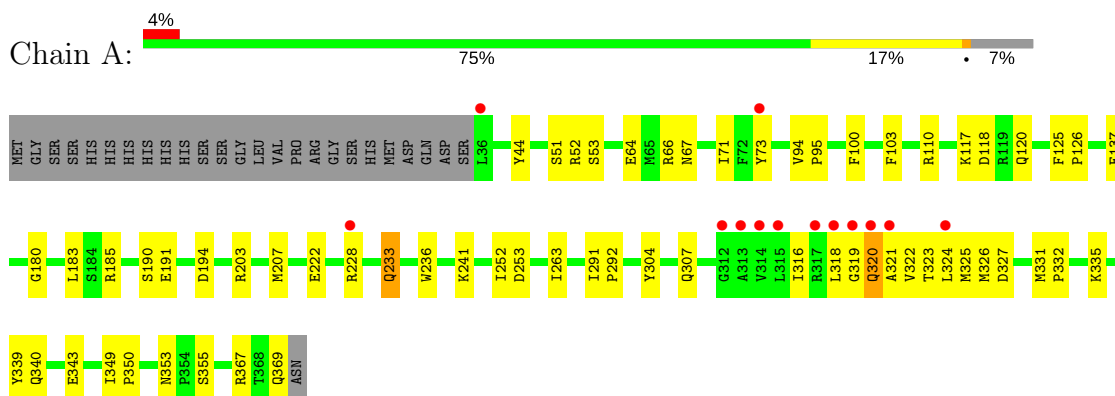
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	94	Total 94	O 94	0	0
3	D	68	Total 68	O 68	0	0
3	E	43	Total 43	O 43	0	0
3	F	28	Total 28	O 28	0	0

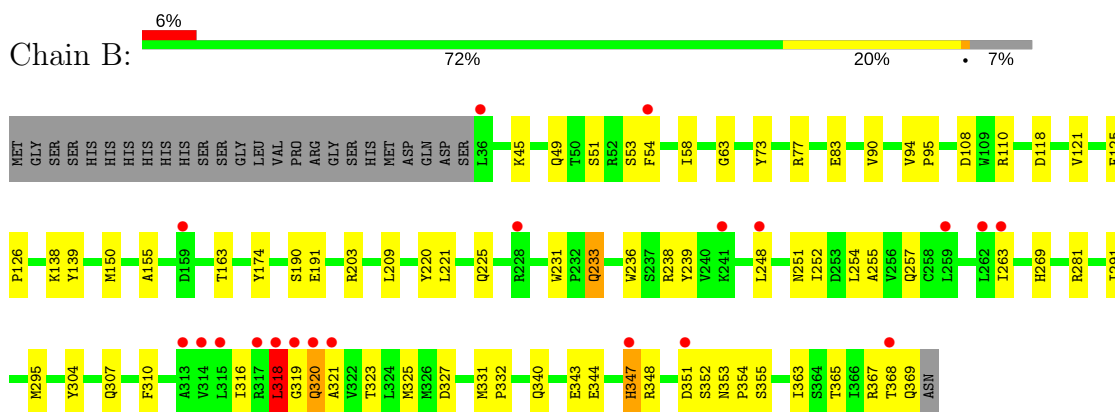
3 Residue-property plots

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

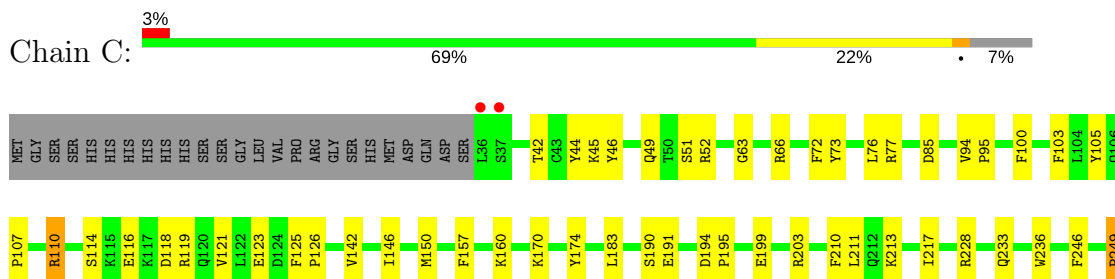
• Molecule 1: Squalene synthase

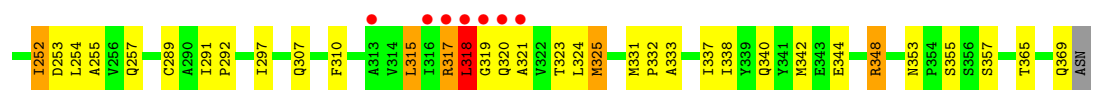


• Molecule 1: Squalene synthase

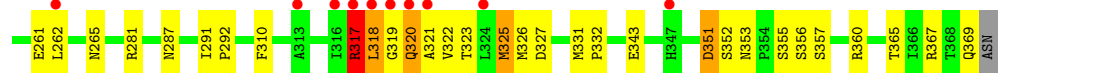


• Molecule 1: Squalene synthase

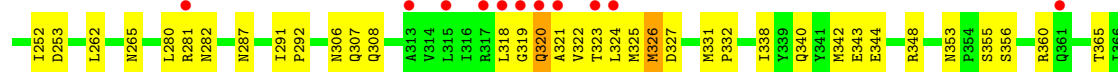
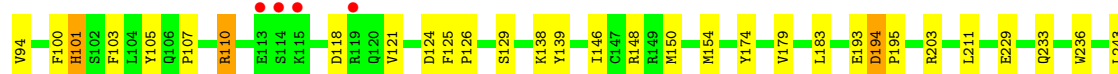




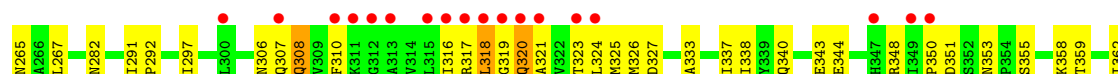
• Molecule 1: Squalene synthase



• Molecule 1: Squalene synthase



• Molecule 1: Squalene synthase



T363			
S364			
	R367		
	T368		
	Q369		
	ASN		

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	85.18Å 153.19Å 90.11Å 90.00° 92.37° 90.00°	Depositor
Resolution (Å)	25.00 – 2.22 25.00 – 2.22	Depositor EDS
% Data completeness (in resolution range)	(Not available) (25.00-2.22) 95.4 (25.00-2.22)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.43 (at 2.22Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.204 , 0.224 0.210 , 0.212	Depositor DCC
R_{free} test set	5442 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	32.7	Xtriage
Anisotropy	0.493	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 46.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.032 for h,-k,-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16821	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.18% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: BH8

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	0.33	0/2751	0.57	0/3724
1	B	0.32	0/2751	0.55	0/3724
1	C	0.31	0/2751	0.54	0/3724
1	D	0.31	0/2751	0.54	0/3724
1	E	0.30	0/2751	0.53	0/3724
1	F	0.29	0/2751	0.54	0/3724
All	All	0.31	0/16506	0.55	0/22344

There are no bond length outliers.

There are no bond angle outliers.

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	2696	0	2676	55	0
1	B	2696	0	2676	56	0
1	C	2696	0	2676	64	0
1	D	2696	0	2676	59	0
1	E	2696	0	2676	69	0
1	F	2696	0	2676	89	0
2	A	25	0	30	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	25	0	30	0	0
2	C	25	0	30	4	0
2	D	25	0	30	4	0
2	E	25	0	30	7	0
2	F	25	0	30	4	0
3	A	151	0	0	5	0
3	B	111	0	0	3	0
3	C	94	0	0	0	0
3	D	68	0	0	2	0
3	E	43	0	0	0	0
3	F	28	0	0	1	0
All	All	16821	0	16236	379	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 12.

All (379) 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:F:317:ARG:HG3	1:F:318:LEU:HG	1.48	0.96
1:F:233:GLN:HA	1:F:236:TRP:NE1	1.89	0.88
1:F:224:GLN:HE21	1:F:244:GLY:HA2	1.36	0.88
1:D:211:LEU:HD12	2:D:401:BH8:H21	1.57	0.87
1:C:320:GLN:O	1:C:324:LEU:HG	1.77	0.85
1:E:211:LEU:HD12	2:E:401:BH8:H21	1.58	0.85
1:E:291:ILE:HB	1:E:292:PRO:HD3	1.61	0.83
1:E:51:SER:HB2	1:E:73:TYR:CZ	2.14	0.83
1:F:343:GLU:OE1	1:F:367:ARG:NH2	2.15	0.79
1:E:322:VAL:HB	1:E:340:GLN:HE22	1.47	0.79
1:A:353:ASN:ND2	1:A:355:SER:H	1.81	0.79
1:E:100:PHE:HA	1:E:103:PHE:CD2	2.19	0.78
1:F:105:TYR:O	1:F:107:PRO:HD3	1.84	0.77
1:C:45:LYS:O	1:C:49:GLN:HG3	1.84	0.77
1:B:233:GLN:HA	1:B:236:TRP:NE1	2.00	0.77
1:B:343:GLU:OE1	1:B:367:ARG:NH2	2.17	0.77
1:C:320:GLN:HB3	1:C:340:GLN:NE2	2.01	0.75
1:C:353:ASN:ND2	1:C:355:SER:H	1.84	0.75
1:E:105:TYR:O	1:E:107:PRO:HD3	1.86	0.74
1:E:365:THR:O	1:E:369:GLN:HG3	1.87	0.74
1:F:233:GLN:HA	1:F:236:TRP:CD1	2.23	0.73
1:F:317:ARG:HG3	1:F:318:LEU:N	2.04	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:318:LEU:HD12	1:B:319:GLY:H	1.54	0.72
1:A:319:GLY:HA3	1:A:323:THR:HG21	1.72	0.72
1:E:322:VAL:HB	1:E:340:GLN:NE2	2.04	0.72
1:F:150:MET:HG3	1:F:174:TYR:O	1.89	0.72
1:F:333:ALA:O	1:F:337:ILE:HG12	1.90	0.72
1:C:105:TYR:O	1:C:107:PRO:HD3	1.90	0.70
1:B:51:SER:HB2	1:B:73:TYR:CZ	2.27	0.69
1:D:94:VAL:HB	1:D:95:PRO:HD3	1.74	0.69
1:F:118:ASP:O	1:F:121:VAL:HG22	1.93	0.69
1:F:224:GLN:HE21	1:F:244:GLY:CA	2.05	0.69
1:F:320:GLN:HG2	1:F:321:ALA:H	1.58	0.68
1:D:353:ASN:ND2	1:D:355:SER:H	1.92	0.68
1:E:353:ASN:ND2	1:E:355:SER:H	1.92	0.68
1:E:45:LYS:O	1:E:49:GLN:HG3	1.94	0.68
1:A:325:MET:O	1:B:327:ASP:HB2	1.94	0.67
1:E:252:ILE:CG1	1:E:307:GLN:HG2	2.24	0.67
1:A:100:PHE:HA	1:A:103:PHE:CD2	2.30	0.67
1:A:353:ASN:HD22	1:A:355:SER:H	1.43	0.66
1:B:45:LYS:O	1:B:49:GLN:HG3	1.96	0.65
1:F:350:PRO:HG2	1:F:353:ASN:HB2	1.79	0.65
1:C:365:THR:O	1:C:369:GLN:HG3	1.96	0.65
1:C:291:ILE:HB	1:C:292:PRO:HD3	1.78	0.65
1:B:252:ILE:CG1	1:B:307:GLN:HG2	2.26	0.65
1:E:287:ASN:O	1:E:291:ILE:HG12	1.96	0.65
1:C:289:CYS:SG	2:C:401:BH8:H30	2.37	0.65
1:C:100:PHE:HA	1:C:103:PHE:CD2	2.32	0.65
1:C:320:GLN:HB3	1:C:340:GLN:HE22	1.62	0.64
1:D:291:ILE:HB	1:D:292:PRO:HD3	1.79	0.64
1:F:245:ASP:HA	1:F:248:LEU:HD13	1.79	0.64
1:E:118:ASP:O	1:E:121:VAL:HG22	1.96	0.64
1:D:320:GLN:HG2	1:D:321:ALA:H	1.63	0.64
1:F:239:TYR:O	1:F:254:LEU:HD13	1.97	0.64
1:D:233:GLN:HA	1:D:236:TRP:NE1	2.12	0.64
1:B:318:LEU:CD1	1:B:319:GLY:H	2.10	0.64
1:A:252:ILE:CG1	1:A:307:GLN:HG2	2.27	0.64
1:D:232:PRO:HG2	1:D:235:VAL:HB	1.80	0.64
1:E:325:MET:O	1:F:327:ASP:HB2	1.99	0.63
1:F:262:LEU:O	1:F:265:ASN:HB3	1.98	0.63
1:E:233:GLN:HA	1:E:236:TRP:NE1	2.14	0.63
1:A:323:THR:HB	1:A:340:GLN:OE1	1.98	0.63
1:C:77:ARG:O	1:C:77:ARG:HD3	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:150:MET:O	1:F:154:MET:HG3	1.98	0.62
1:E:252:ILE:HG13	1:E:307:GLN:HG2	1.81	0.62
1:E:211:LEU:CD1	2:E:401:BH8:H21	2.28	0.62
1:B:252:ILE:HG13	1:B:307:GLN:HG2	1.82	0.62
1:E:54:PHE:O	1:E:58:ILE:HG13	2.00	0.62
1:D:180:GLY:HA2	2:D:401:BH8:H30	1.80	0.62
1:F:319:GLY:O	1:F:320:GLN:O	2.17	0.62
1:C:325:MET:HA	1:C:325:MET:HE3	1.82	0.61
1:A:94:VAL:HB	1:A:95:PRO:HD3	1.83	0.61
1:E:320:GLN:O	1:E:324:LEU:HG	2.00	0.61
1:E:125:PHE:N	1:E:126:PRO:HD2	2.16	0.61
1:D:45:LYS:O	1:D:49:GLN:HG3	2.01	0.60
1:D:85:ASP:OD2	1:D:87:THR:HB	2.01	0.60
1:D:211:LEU:CD1	2:D:401:BH8:H21	2.30	0.60
1:F:320:GLN:O	1:F:324:LEU:HG	2.02	0.60
1:A:322:VAL:HB	1:A:340:GLN:NE2	2.17	0.59
1:F:224:GLN:HA	1:F:224:GLN:OE1	2.01	0.59
1:C:317:ARG:C	1:C:318:LEU:HG	2.22	0.59
1:A:233:GLN:HA	1:A:236:TRP:NE1	2.16	0.59
1:B:318:LEU:HD12	1:B:319:GLY:N	2.17	0.59
1:F:53:SER:HB2	2:F:401:BH8:OAF	2.02	0.59
1:F:260:ASN:HD22	1:F:353:ASN:ND2	2.00	0.59
1:C:94:VAL:HB	1:C:95:PRO:HD3	1.85	0.59
1:E:320:GLN:HG2	1:E:321:ALA:H	1.68	0.59
1:D:228:ARG:HH11	1:D:228:ARG:HG3	1.68	0.59
1:B:150:MET:HG3	1:B:174:TYR:O	2.02	0.58
1:D:325:MET:O	1:E:327:ASP:HB2	2.03	0.58
1:B:94:VAL:HB	1:B:95:PRO:HD3	1.85	0.58
1:B:353:ASN:ND2	1:B:355:SER:H	2.02	0.58
1:A:343:GLU:OE1	1:A:367:ARG:NE	2.34	0.58
1:C:233:GLN:HA	1:C:236:TRP:NE1	2.19	0.58
1:C:110:ARG:HB3	1:C:126:PRO:HD3	1.87	0.57
1:F:211:LEU:HD12	2:F:401:BH8:H15	1.85	0.57
1:E:179:VAL:HG11	2:E:401:BH8:H16	1.87	0.57
1:C:116:GLU:O	1:C:119:ARG:HD3	2.05	0.56
1:D:245:ASP:O	1:D:248:LEU:HB2	2.05	0.56
1:F:193:GLU:OE2	1:F:282:ASN:HB3	2.05	0.56
1:E:319:GLY:HA3	1:E:323:THR:HG21	1.86	0.56
1:C:150:MET:HG3	1:C:174:TYR:O	2.05	0.56
1:F:316:ILE:N	1:F:316:ILE:HD12	2.20	0.56
1:F:100:PHE:HA	1:F:103:PHE:CD2	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:353:ASN:HD22	1:C:355:SER:H	1.53	0.56
1:F:211:LEU:HD12	2:F:401:BH8:H22	1.85	0.56
1:F:51:SER:HB2	1:F:73:TYR:CZ	2.41	0.56
1:C:323:THR:HB	1:C:340:GLN:OE1	2.07	0.55
1:A:320:GLN:HG2	1:A:321:ALA:H	1.71	0.55
1:E:110:ARG:HG2	1:E:110:ARG:NH2	2.22	0.55
1:E:90:VAL:O	1:E:94:VAL:HG23	2.06	0.55
1:A:228:ARG:HG2	3:A:565:HOH:O	2.06	0.55
1:D:233:GLN:HA	1:D:236:TRP:CD1	2.41	0.55
1:E:110:ARG:CG	1:E:110:ARG:HH21	2.20	0.55
1:F:42:THR:HG22	1:F:46:TYR:CE2	2.42	0.55
1:D:319:GLY:HA3	1:D:323:THR:HG21	1.88	0.55
1:D:287:ASN:O	1:D:291:ILE:HG12	2.07	0.54
1:D:66:ARG:NH1	1:F:367:ARG:O	2.40	0.54
1:D:51:SER:HB2	1:D:73:TYR:CZ	2.42	0.54
1:F:236:TRP:CG	1:F:243:LEU:HD13	2.43	0.54
1:D:365:THR:O	1:D:369:GLN:HG3	2.08	0.54
1:E:126:PRO:HA	1:E:129:SER:OG	2.08	0.54
1:A:327:ASP:HB2	1:C:325:MET:O	2.08	0.54
1:C:331:MET:HB3	1:C:332:PRO:HD3	1.90	0.54
1:F:174:TYR:HA	1:F:178:LEU:HD12	1.89	0.53
1:C:195:PRO:O	1:C:199:GLU:HG3	2.08	0.53
1:D:343:GLU:CD	1:D:367:ARG:HH21	2.11	0.53
1:F:220:TYR:HB2	1:F:231:TRP:CZ2	2.44	0.53
1:A:353:ASN:HD21	1:A:355:SER:HB2	1.73	0.53
1:E:77:ARG:HD3	1:E:77:ARG:O	2.08	0.53
1:F:89:SER:OG	1:F:92:LYS:HB2	2.08	0.53
1:F:104:LEU:HD13	1:F:132:PHE:CE1	2.44	0.53
1:B:239:TYR:O	1:B:254:LEU:HD13	2.09	0.53
1:F:246:PHE:CD1	1:F:255:ALA:HA	2.44	0.53
1:A:51:SER:HB2	1:A:73:TYR:CZ	2.44	0.53
1:F:353:ASN:OD1	1:F:355:SER:N	2.31	0.52
1:A:343:GLU:CD	1:A:367:ARG:HH21	2.12	0.52
1:B:325:MET:HB3	1:C:291:ILE:HD12	1.91	0.52
1:D:100:PHE:HA	1:D:103:PHE:CD2	2.45	0.52
1:E:331:MET:HB3	1:E:332:PRO:HD3	1.90	0.52
1:F:131:GLU:HA	1:F:134:ASN:HD22	1.74	0.52
1:A:320:GLN:CG	1:A:321:ALA:H	2.23	0.52
1:B:320:GLN:HG2	1:B:321:ALA:H	1.74	0.52
1:C:325:MET:HA	1:C:325:MET:CE	2.39	0.52
1:E:51:SER:HB2	1:E:73:TYR:OH	2.08	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:239:TYR:HE1	1:B:257:GLN:HB3	1.74	0.52
1:C:72:PHE:CZ	1:C:76:LEU:HD11	2.45	0.52
1:E:233:GLN:HA	1:E:236:TRP:CE2	2.44	0.52
1:B:190:SER:O	1:B:191:GLU:HB2	2.09	0.52
1:D:343:GLU:OE2	1:D:367:ARG:NE	2.37	0.52
1:B:365:THR:O	1:B:369:GLN:HG3	2.09	0.52
1:E:233:GLN:HA	1:E:236:TRP:CD1	2.44	0.52
1:E:326:MET:HE2	1:F:291:ILE:HD11	1.91	0.52
1:D:190:SER:O	1:D:191:GLU:HB2	2.10	0.52
1:D:118:ASP:O	1:D:121:VAL:HG22	2.09	0.52
1:D:138:LYS:HE3	1:D:139:TYR:CZ	2.45	0.52
1:D:320:GLN:CG	1:D:321:ALA:H	2.23	0.52
1:F:72:PHE:CD1	1:F:143:ILE:HG23	2.45	0.52
1:A:117:LYS:HD2	1:A:118:ASP:CG	2.30	0.51
1:B:233:GLN:HA	1:B:236:TRP:CD1	2.45	0.51
1:D:255:ALA:HB1	1:D:310:PHE:CZ	2.44	0.51
1:E:150:MET:O	1:E:154:MET:HG3	2.10	0.51
1:C:118:ASP:O	1:C:121:VAL:HG22	2.09	0.51
1:E:67:ASN:O	1:E:71:ILE:HG12	2.10	0.51
1:E:110:ARG:HG2	1:E:110:ARG:HH21	1.76	0.51
1:E:353:ASN:HD22	1:E:355:SER:H	1.56	0.51
1:F:101:HIS:CD2	1:F:148:ARG:HG3	2.46	0.51
1:D:105:TYR:O	1:D:107:PRO:HD3	2.09	0.51
1:F:75:VAL:HG23	1:F:76:LEU:N	2.25	0.51
1:C:319:GLY:HA3	1:C:323:THR:HG21	1.93	0.51
1:C:51:SER:HB2	1:C:73:TYR:CZ	2.44	0.51
1:F:79:LEU:HB2	1:F:100:PHE:CE2	2.45	0.51
1:A:318:LEU:N	1:A:318:LEU:HD12	2.26	0.51
1:B:255:ALA:HB1	1:B:310:PHE:CZ	2.46	0.51
1:D:262:LEU:O	1:D:265:ASN:HB3	2.11	0.51
1:C:353:ASN:HD21	1:C:355:SER:HB2	1.75	0.51
1:B:347:HIS:CG	1:B:347:HIS:O	2.63	0.51
1:A:233:GLN:HA	1:A:236:TRP:CD1	2.46	0.50
1:A:194:ASP:CG	1:D:281:ARG:HH21	2.14	0.50
1:F:54:PHE:N	1:F:54:PHE:CD1	2.79	0.50
1:B:155:ALA:HB3	3:B:535:HOH:O	2.10	0.50
1:D:117:LYS:HG3	1:D:118:ASP:N	2.27	0.50
1:D:153:GLY:HA3	1:D:174:TYR:CG	2.46	0.50
1:C:183:LEU:CD1	2:C:401:BH8:H26	2.42	0.50
1:D:66:ARG:NH2	1:F:367:ARG:O	2.44	0.50
1:F:115:LYS:HA	1:F:115:LYS:HE2	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:125:PHE:N	1:D:126:PRO:CD	2.75	0.50
1:F:46:TYR:CE1	1:F:120:GLN:HG2	2.46	0.50
1:A:343:GLU:HG2	3:A:562:HOH:O	2.11	0.50
1:F:323:THR:C	1:F:325:MET:H	2.15	0.50
1:A:353:ASN:ND2	1:A:355:SER:HB2	2.27	0.49
1:E:100:PHE:HA	1:E:103:PHE:CE2	2.46	0.49
1:B:118:ASP:O	1:B:121:VAL:HG22	2.12	0.49
1:F:54:PHE:N	1:F:54:PHE:HD1	2.10	0.49
1:A:183:LEU:HD12	2:A:401:BH8:H23	1.94	0.49
1:A:52:ARG:HG3	1:A:53:SER:N	2.28	0.49
1:C:344:GLU:O	1:C:348:ARG:HD2	2.13	0.49
1:C:42:THR:HG22	1:C:46:TYR:CE2	2.47	0.49
1:D:351:ASP:OD1	1:D:351:ASP:N	2.45	0.49
1:B:51:SER:HB2	1:B:73:TYR:OH	2.13	0.48
1:C:320:GLN:HG2	1:C:321:ALA:H	1.76	0.48
1:E:124:ASP:C	1:E:126:PRO:HD2	2.33	0.48
1:F:323:THR:HB	1:F:340:GLN:OE1	2.13	0.48
1:E:262:LEU:O	1:E:265:ASN:HB3	2.13	0.48
1:A:44:TYR:OH	1:A:66:ARG:HG2	2.12	0.48
1:F:263:ILE:O	1:F:267:LEU:HG	2.13	0.48
1:D:137:GLU:HB2	3:D:505:HOH:O	2.13	0.48
1:B:325:MET:CB	1:C:291:ILE:HD12	2.43	0.48
1:C:315:LEU:H	1:C:315:LEU:HD23	1.79	0.48
1:E:150:MET:HG3	1:E:174:TYR:O	2.14	0.48
1:F:208:GLY:HA2	2:F:401:BH8:H21	1.96	0.48
1:B:316:ILE:N	1:B:316:ILE:HD12	2.29	0.48
1:F:90:VAL:O	1:F:94:VAL:HG23	2.14	0.48
1:A:325:MET:HA	1:A:325:MET:HE3	1.96	0.48
1:D:255:ALA:HB1	1:D:310:PHE:CE2	2.49	0.48
1:A:64:GLU:HG3	3:A:605:HOH:O	2.13	0.48
1:D:153:GLY:HA3	1:D:174:TYR:CD1	2.49	0.48
1:F:320:GLN:CG	1:F:321:ALA:H	2.23	0.48
1:B:220:TYR:HB2	1:B:231:TRP:CZ2	2.48	0.47
1:C:125:PHE:N	1:C:126:PRO:CD	2.78	0.47
1:B:138:LYS:HE3	1:B:139:TYR:CZ	2.50	0.47
1:B:209:LEU:HD23	1:B:269:HIS:CE1	2.49	0.47
1:E:343:GLU:OE2	1:E:367:ARG:NE	2.44	0.47
1:C:210:PHE:CE2	1:C:297:ILE:HG13	2.50	0.47
1:D:318:LEU:HD12	1:D:319:GLY:H	1.79	0.47
1:D:41:LYS:HD3	1:F:364:SER:OG	2.14	0.47
1:A:125:PHE:N	1:A:126:PRO:CD	2.77	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:331:MET:HB3	1:D:332:PRO:HD3	1.96	0.47
1:A:335:LYS:HB3	1:A:339:TYR:CE2	2.49	0.47
1:B:163:THR:HA	1:B:233:GLN:HB3	1.96	0.47
1:B:344:GLU:O	1:B:348:ARG:HG3	2.15	0.47
2:E:401:BH8:H9	2:E:401:BH8:OAE	2.15	0.47
1:B:248:LEU:HB2	1:B:251:ASN:HD22	1.80	0.47
1:D:42:THR:HG22	1:D:46:TYR:CE2	2.50	0.47
1:D:318:LEU:HD12	1:D:319:GLY:N	2.30	0.46
1:E:194:ASP:OD1	1:E:195:PRO:HD2	2.15	0.46
1:C:252:ILE:HD11	1:C:307:GLN:HB3	1.98	0.46
1:B:125:PHE:N	1:B:126:PRO:CD	2.78	0.46
1:D:150:MET:HG3	1:D:174:TYR:O	2.16	0.46
1:E:193:GLU:OE2	1:E:282:ASN:HB3	2.16	0.46
1:F:224:GLN:NE2	1:F:244:GLY:CA	2.78	0.46
1:A:291:ILE:HB	1:A:292:PRO:HD3	1.98	0.46
1:F:308:GLN:OE1	1:F:308:GLN:HA	2.14	0.46
1:F:65:MET:O	1:F:69:VAL:HG23	2.14	0.46
1:F:72:PHE:HD1	1:F:143:ILE:HG23	1.80	0.46
1:A:183:LEU:CD1	2:A:401:BH8:H23	2.45	0.46
1:D:356:SER:O	1:D:360:ARG:HG3	2.16	0.46
1:F:320:GLN:HG3	3:F:518:HOH:O	2.15	0.46
1:F:170:LYS:O	1:F:173:HIS:HB3	2.16	0.46
1:B:90:VAL:HG23	3:B:571:HOH:O	2.14	0.45
1:E:85:ASP:HB3	1:E:88:ILE:HD12	1.99	0.45
1:A:320:GLN:O	1:A:324:LEU:HG	2.16	0.45
1:D:248:LEU:HA	1:D:248:LEU:HD12	1.72	0.45
1:D:150:MET:O	1:D:154:MET:HG3	2.16	0.45
1:E:280:LEU:O	1:E:281:ARG:HD3	2.16	0.45
1:E:356:SER:HB2	1:E:360:ARG:HH12	1.81	0.45
1:C:85:ASP:OD1	1:C:114:SER:HA	2.17	0.45
1:A:222:GLU:HB2	3:A:556:HOH:O	2.16	0.45
1:C:190:SER:O	1:C:191:GLU:HB2	2.16	0.45
1:B:320:GLN:NE2	1:C:52:ARG:HG2	2.31	0.45
1:E:101:HIS:CE1	1:E:148:ARG:HD3	2.52	0.45
1:E:338:ILE:O	1:E:342:MET:HG2	2.17	0.45
1:C:233:GLN:HA	1:C:236:TRP:CD1	2.52	0.45
1:C:44:TYR:OH	1:C:66:ARG:HG2	2.16	0.45
1:F:132:PHE:CD2	1:F:132:PHE:C	2.90	0.45
1:F:233:GLN:HB3	1:F:233:GLN:HE21	1.62	0.45
1:F:245:ASP:O	1:F:248:LEU:HB2	2.17	0.45
1:A:323:THR:HG23	1:A:324:LEU:N	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:238:ARG:HH22	1:D:261:GLU:CD	2.19	0.44
1:E:229:GLU:HB3	1:E:243:LEU:HD23	1.99	0.44
1:B:221:LEU:HG	1:B:225:GLN:OE1	2.17	0.44
1:C:252:ILE:CG2	1:C:253:ASP:N	2.80	0.44
1:C:255:ALA:HB1	1:C:310:PHE:CZ	2.52	0.44
1:C:315:LEU:CD2	1:C:315:LEU:H	2.27	0.44
1:F:306:ASN:ND2	1:F:308:GLN:HB2	2.32	0.44
1:B:353:ASN:HA	1:B:354:PRO:HD3	1.80	0.44
1:A:190:SER:O	1:A:191:GLU:HB2	2.17	0.44
1:B:233:GLN:HE21	1:B:233:GLN:HB3	1.52	0.44
1:B:331:MET:HB3	1:B:332:PRO:HD3	2.00	0.44
1:D:67:ASN:O	1:D:71:ILE:HG12	2.18	0.44
1:F:255:ALA:HB1	1:F:310:PHE:CE2	2.52	0.44
1:A:252:ILE:HG23	1:A:253:ASP:N	2.33	0.44
1:F:255:ALA:HB1	1:F:310:PHE:CZ	2.53	0.44
1:C:146:ILE:HG22	1:C:150:MET:HE3	1.99	0.44
1:F:256:VAL:O	1:F:259:LEU:HB3	2.18	0.44
1:A:252:ILE:HG12	1:A:307:GLN:HG2	1.98	0.43
1:A:318:LEU:CD1	1:A:318:LEU:N	2.81	0.43
1:A:180:GLY:HA2	2:A:401:BH8:H24	2.00	0.43
2:D:401:BH8:H7	3:D:556:HOH:O	2.18	0.43
1:E:320:GLN:CG	1:E:321:ALA:H	2.30	0.43
1:B:239:TYR:CE1	1:B:257:GLN:HB3	2.53	0.43
1:E:356:SER:HB2	1:E:360:ARG:NH1	2.33	0.43
1:A:207:MET:HE3	2:A:401:BH8:H28	2.00	0.43
1:A:207:MET:CE	2:A:401:BH8:H28	2.49	0.43
1:D:51:SER:HB2	1:D:73:TYR:OH	2.18	0.43
1:E:252:ILE:HG12	1:E:307:GLN:HG2	1.99	0.43
1:A:319:GLY:CA	1:A:323:THR:HG21	2.46	0.43
1:C:157:PHE:CE2	1:C:160:LYS:HE3	2.53	0.43
1:F:148:ARG:HG2	1:F:148:ARG:HH21	1.83	0.43
1:F:252:ILE:CG1	1:F:307:GLN:HG2	2.49	0.43
1:B:238:ARG:CB	1:B:238:ARG:HH11	2.32	0.42
1:B:51:SER:OG	1:B:54:PHE:HB2	2.19	0.42
1:D:51:SER:OG	1:D:54:PHE:HB2	2.19	0.42
1:A:207:MET:HB3	2:A:401:BH8:H27	2.00	0.42
1:B:363:ILE:O	1:B:367:ARG:HG3	2.18	0.42
1:C:333:ALA:O	1:C:337:ILE:HG13	2.19	0.42
1:D:233:GLN:O	1:D:237:SER:HB3	2.19	0.42
1:B:368:THR:HG22	1:B:368:THR:O	2.20	0.42
1:A:318:LEU:H	1:A:318:LEU:CD1	2.33	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:367:ARG:O	1:C:66:ARG:NH1	2.47	0.42
1:B:281:ARG:NH2	1:F:194:ASP:OD2	2.49	0.42
1:A:316:ILE:N	1:A:316:ILE:HD12	2.34	0.42
1:C:254:LEU:HD23	1:C:257:GLN:NE2	2.35	0.42
1:F:164:SER:O	1:F:167:GLU:HB2	2.20	0.42
1:F:200:ASP:OD1	1:F:203:ARG:HG3	2.20	0.42
1:F:75:VAL:CG2	1:F:76:LEU:N	2.83	0.42
1:A:353:ASN:HD22	1:A:355:SER:N	2.15	0.42
1:B:344:GLU:O	1:B:348:ARG:NH1	2.53	0.42
1:C:213:LYS:O	1:C:217:ILE:HG13	2.20	0.42
1:C:183:LEU:HD12	2:C:401:BH8:H26	2.01	0.42
1:F:343:GLU:HA	1:F:343:GLU:OE1	2.20	0.42
1:F:359:THR:O	1:F:362:ILE:HG22	2.20	0.42
1:D:246:PHE:CD1	1:D:255:ALA:HA	2.54	0.42
1:E:319:GLY:CA	1:E:323:THR:HG21	2.48	0.42
1:F:238:ARG:HH22	1:F:261:GLU:CD	2.23	0.42
1:A:263:ILE:CD1	1:A:304:TYR:HA	2.50	0.42
1:B:263:ILE:HD12	1:B:304:TYR:HA	2.02	0.42
1:C:211:LEU:HD12	2:C:401:BH8:H20	2.02	0.42
1:D:100:PHE:HA	1:D:103:PHE:CE2	2.55	0.42
1:E:306:ASN:OD1	1:E:308:GLN:HB2	2.20	0.42
1:E:326:MET:HA	1:F:327:ASP:HB2	2.02	0.42
1:F:297:ILE:CD1	1:F:338:ILE:HG12	2.50	0.42
1:A:252:ILE:HG13	1:A:307:GLN:HG2	2.02	0.41
1:D:317:ARG:H	1:D:317:ARG:HG2	1.35	0.41
1:D:322:VAL:O	1:D:326:MET:HG3	2.20	0.41
1:E:252:ILE:HG23	1:E:253:ASP:N	2.34	0.41
1:A:185:ARG:NH1	3:A:530:HOH:O	2.53	0.41
1:A:331:MET:HB3	1:A:332:PRO:HD3	2.02	0.41
1:C:252:ILE:HD12	1:C:307:GLN:HG2	2.02	0.41
1:E:327:ASP:OD1	1:E:327:ASP:C	2.58	0.41
1:A:349:ILE:HA	1:A:350:PRO:HD3	1.87	0.41
1:F:239:TYR:HE1	1:F:257:GLN:HE21	1.68	0.41
1:F:50:THR:HB	1:F:77:ARG:NH1	2.34	0.41
1:A:67:ASN:O	1:A:71:ILE:HG12	2.21	0.41
1:C:210:PHE:HE2	1:C:297:ILE:HG13	1.86	0.41
1:C:353:ASN:ND2	1:C:355:SER:HB2	2.35	0.41
1:E:101:HIS:ND1	1:E:148:ARG:HB2	2.36	0.41
1:E:138:LYS:HE3	1:E:139:TYR:CZ	2.54	0.41
1:E:73:TYR:C	1:E:73:TYR:CD1	2.93	0.41
1:D:353:ASN:HD21	1:D:355:SER:HB2	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:348:ARG:O	1:F:350:PRO:HD3	2.20	0.41
1:C:320:GLN:CG	1:C:321:ALA:H	2.33	0.41
1:E:146:ILE:HG22	1:E:150:MET:HE3	2.01	0.41
1:B:291:ILE:O	1:B:295:MET:HG3	2.21	0.41
1:F:125:PHE:N	1:F:126:PRO:CD	2.84	0.41
1:B:316:ILE:CD1	1:B:316:ILE:N	2.83	0.41
1:D:320:GLN:HG2	1:D:321:ALA:N	2.33	0.41
1:E:323:THR:C	1:E:325:MET:H	2.24	0.41
1:F:362:ILE:HG23	1:F:363:ILE:N	2.36	0.41
1:C:246:PHE:CE1	1:C:255:ALA:HA	2.56	0.41
1:E:183:LEU:CD1	2:E:401:BH8:H25	2.51	0.41
1:B:344:GLU:HG2	1:B:348:ARG:HH12	1.86	0.41
1:B:54:PHE:O	1:B:58:ILE:HG13	2.21	0.41
1:E:183:LEU:HD12	2:E:401:BH8:H25	2.03	0.41
1:A:52:ARG:CG	1:A:53:SER:N	2.83	0.41
1:C:119:ARG:O	1:C:123:GLU:HG3	2.21	0.41
1:B:320:GLN:CG	1:B:321:ALA:H	2.33	0.40
1:E:344:GLU:O	1:E:348:ARG:HG3	2.21	0.40
1:F:77:ARG:HD3	1:F:77:ARG:O	2.21	0.40
1:C:51:SER:HB2	1:C:73:TYR:CE1	2.56	0.40
1:F:355:SER:O	1:F:358:LYS:N	2.54	0.40
1:B:108:ASP:HB2	3:B:566:HOH:O	2.21	0.40
1:C:338:ILE:O	1:C:342:MET:HG2	2.22	0.40
1:B:238:ARG:NH1	1:B:238:ARG:HB2	2.37	0.40
1:E:183:LEU:HD12	2:E:401:BH8:CAL	2.51	0.40
1:F:55:ALA:O	1:F:59:GLN:HG3	2.21	0.40
1:C:142:VAL:O	1:C:146:ILE:HG12	2.21	0.40
1:E:356:SER:O	1:E:360:ARG:HG3	2.20	0.40
1:F:291:ILE:HB	1:F:292:PRO:HD3	2.03	0.40

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	
1	A	332/360 (92%)	321 (97%)	10 (3%)	1 (0%)	43	47
1	B	332/360 (92%)	320 (96%)	9 (3%)	3 (1%)	19	16
1	C	332/360 (92%)	314 (95%)	14 (4%)	4 (1%)	14	10
1	D	332/360 (92%)	314 (95%)	15 (4%)	3 (1%)	19	16
1	E	332/360 (92%)	311 (94%)	18 (5%)	3 (1%)	19	16
1	F	332/360 (92%)	310 (93%)	18 (5%)	4 (1%)	14	10
All	All	1992/2160 (92%)	1890 (95%)	84 (4%)	18 (1%)	19	16

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	318	LEU
1	C	317	ARG
1	D	317	ARG
1	F	320	GLN
1	B	320	GLN
1	E	320	GLN
1	E	318	LEU
1	A	320	GLN
1	D	320	GLN
1	C	63	GLY
1	C	249	PRO
1	C	318	LEU
1	D	63	GLY
1	F	66	ARG
1	F	63	GLY
1	F	200	ASP
1	E	63	GLY
1	B	63	GLY

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.

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	297/320 (93%)	289 (97%)	8 (3%)	48 59
1	B	297/320 (93%)	285 (96%)	12 (4%)	34 42
1	C	297/320 (93%)	285 (96%)	12 (4%)	34 42
1	D	297/320 (93%)	285 (96%)	12 (4%)	34 42
1	E	297/320 (93%)	290 (98%)	7 (2%)	52 64
1	F	297/320 (93%)	286 (96%)	11 (4%)	37 45
All	All	1782/1920 (93%)	1720 (96%)	62 (4%)	39 48

All (62) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	110	ARG
1	A	120	GLN
1	A	137	GLU
1	A	203	ARG
1	A	233	GLN
1	A	241	LYS
1	A	326	MET
1	A	369	GLN
1	B	53	SER
1	B	77	ARG
1	B	83	GLU
1	B	110	ARG
1	B	203	ARG
1	B	233	GLN
1	B	318	LEU
1	B	323	THR
1	B	340	GLN
1	B	347	HIS
1	B	351	ASP
1	B	352	SER
1	C	110	ARG
1	C	170	LYS
1	C	194	ASP
1	C	203	ARG
1	C	228	ARG
1	C	249	PRO
1	C	252	ILE

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Mol	Chain	Res	Type
1	C	315	LEU
1	C	318	LEU
1	C	325	MET
1	C	348	ARG
1	C	357	SER
1	D	52	ARG
1	D	203	ARG
1	D	233	GLN
1	D	248	LEU
1	D	249	PRO
1	D	317	ARG
1	D	318	LEU
1	D	325	MET
1	D	327	ASP
1	D	351	ASP
1	D	352	SER
1	D	357	SER
1	E	52	ARG
1	E	83	GLU
1	E	101	HIS
1	E	110	ARG
1	E	194	ASP
1	E	203	ARG
1	E	326	MET
1	F	54	PHE
1	F	83	GLU
1	F	113	GLU
1	F	115	LYS
1	F	123	GLU
1	F	233	GLN
1	F	308	GLN
1	F	318	LEU
1	F	326	MET
1	F	344	GLU
1	F	351	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	120	GLN
1	A	225	GLN
1	A	233	GLN

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Mol	Chain	Res	Type
1	A	257	GLN
1	B	233	GLN
1	B	251	ASN
1	B	257	GLN
1	C	120	GLN
1	C	225	GLN
1	C	233	GLN
1	C	347	HIS
1	C	353	ASN
1	D	48	ASN
1	D	59	GLN
1	D	224	GLN
1	D	251	ASN
1	D	257	GLN
1	D	353	ASN
1	E	215	ASN
1	E	225	GLN
1	E	257	GLN
1	F	101	HIS
1	F	134	ASN
1	F	166	GLN
1	F	224	GLN
1	F	225	GLN
1	F	233	GLN
1	F	257	GLN
1	F	369	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

6 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	BH8	A	401	-	24,25,25	2.37	7 (29%)	30,34,34	1.03	1 (3%)
2	BH8	B	401	-	24,25,25	2.35	6 (25%)	30,34,34	0.98	2 (6%)
2	BH8	C	401	-	24,25,25	2.35	6 (25%)	30,34,34	1.01	2 (6%)
2	BH8	D	401	-	24,25,25	2.37	7 (29%)	30,34,34	1.02	2 (6%)
2	BH8	E	401	-	24,25,25	2.37	6 (25%)	30,34,34	1.02	2 (6%)
2	BH8	F	401	-	24,25,25	2.36	7 (29%)	30,34,34	0.98	2 (6%)

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	BH8	A	401	-	-	0/22/26/26	0/1/1/1
2	BH8	B	401	-	-	0/22/26/26	0/1/1/1
2	BH8	C	401	-	-	0/22/26/26	0/1/1/1
2	BH8	D	401	-	-	0/22/26/26	0/1/1/1
2	BH8	E	401	-	-	0/22/26/26	0/1/1/1
2	BH8	F	401	-	-	0/22/26/26	0/1/1/1

All (39) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	BH8	PAY-OAC	-4.00	1.48	1.54
2	E	401	BH8	PAY-OAC	-4.00	1.48	1.54
2	D	401	BH8	PAY-OAC	-3.95	1.48	1.54
2	B	401	BH8	PAY-OAC	-3.94	1.48	1.54
2	F	401	BH8	PAY-OAC	-3.93	1.48	1.54
2	C	401	BH8	PAY-OAC	-3.92	1.48	1.54
2	E	401	BH8	CAH-NAV	-2.44	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	401	BH8	CAH-NAV	-2.40	1.33	1.37
2	B	401	BH8	CAH-NAV	-2.37	1.33	1.37
2	F	401	BH8	CAI-NAW	-2.37	1.33	1.37
2	A	401	BH8	CAI-NAW	-2.33	1.33	1.37
2	D	401	BH8	CAI-NAW	-2.24	1.33	1.37
2	F	401	BH8	CAH-NAV	-2.22	1.33	1.37
2	C	401	BH8	CAH-NAV	-2.21	1.33	1.37
2	A	401	BH8	CAH-NAV	-2.16	1.33	1.37
2	C	401	BH8	PAY-OAF	4.05	1.61	1.54
2	D	401	BH8	PAY-OAF	4.06	1.61	1.54
2	F	401	BH8	PAY-OAF	4.06	1.61	1.54
2	F	401	BH8	PAX-OAE	4.06	1.61	1.54
2	A	401	BH8	PAX-OAE	4.08	1.61	1.54
2	C	401	BH8	PAX-OAD	4.08	1.61	1.54
2	C	401	BH8	PAX-OAE	4.09	1.61	1.54
2	D	401	BH8	PAX-OAE	4.09	1.61	1.54
2	A	401	BH8	PAY-OAF	4.10	1.61	1.54
2	E	401	BH8	PAY-OAF	4.10	1.61	1.54
2	B	401	BH8	PAX-OAE	4.10	1.61	1.54
2	F	401	BH8	PAX-OAD	4.12	1.61	1.54
2	A	401	BH8	PAX-OAD	4.12	1.61	1.54
2	D	401	BH8	PAX-OAD	4.13	1.61	1.54
2	B	401	BH8	PAY-OAF	4.13	1.61	1.54
2	E	401	BH8	PAX-OAD	4.14	1.61	1.54
2	B	401	BH8	PAX-OAD	4.14	1.61	1.54
2	E	401	BH8	PAX-OAE	4.15	1.61	1.54
2	F	401	BH8	PAY-OAG	7.05	1.61	1.49
2	D	401	BH8	PAY-OAG	7.07	1.61	1.49
2	C	401	BH8	PAY-OAG	7.09	1.61	1.49
2	B	401	BH8	PAY-OAG	7.09	1.61	1.49
2	A	401	BH8	PAY-OAG	7.09	1.61	1.49
2	E	401	BH8	PAY-OAG	7.10	1.61	1.49

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	401	BH8	OAF-PAY-OAG	-2.93	105.99	113.43
2	F	401	BH8	OAF-PAY-OAG	-2.88	106.11	113.43
2	D	401	BH8	OAF-PAY-OAG	-2.85	106.19	113.43
2	C	401	BH8	OAF-PAY-OAG	-2.83	106.22	113.43
2	E	401	BH8	OAF-PAY-OAG	-2.80	106.30	113.43
2	B	401	BH8	OAF-PAY-OAG	-2.64	106.71	113.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	401	BH8	OAG-PAY-CAU	-2.33	105.39	112.13
2	F	401	BH8	OAG-PAY-CAU	-2.21	105.75	112.13
2	B	401	BH8	OAG-PAY-CAU	-2.19	105.79	112.13
2	C	401	BH8	OAG-PAY-CAU	-2.15	105.92	112.13
2	E	401	BH8	OAG-PAY-CAU	-2.12	106.01	112.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	BH8	6	0
2	C	401	BH8	4	0
2	D	401	BH8	4	0
2	E	401	BH8	7	0
2	F	401	BH8	4	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

6.1 Protein, DNA and RNA chains

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	334/360 (92%)	-0.16	13 (3%) 39 37	17, 32, 64, 105	0
1	B	334/360 (92%)	0.06	20 (5%) 22 20	22, 35, 74, 108	0
1	C	334/360 (92%)	0.01	9 (2%) 54 52	25, 38, 70, 101	0
1	D	334/360 (92%)	0.14	21 (6%) 20 18	24, 45, 77, 104	0
1	E	334/360 (92%)	0.29	21 (6%) 20 18	30, 49, 86, 109	0
1	F	334/360 (92%)	0.92	61 (18%) 1 1	27, 66, 107, 119	0
All	All	2004/2160 (92%)	0.21	145 (7%) 15 14	17, 43, 94, 119	0

All (145) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	318	LEU	11.3
1	D	36	LEU	9.5
1	F	320	GLN	8.6
1	F	241	LYS	7.9
1	C	36	LEU	7.1
1	E	324	LEU	6.5
1	F	228	ARG	6.3
1	F	318	LEU	6.2
1	A	318	LEU	6.2
1	F	317	ARG	6.1
1	E	320	GLN	5.9
1	A	315	LEU	5.9
1	E	318	LEU	5.9
1	F	319	GLY	5.7
1	A	317	ARG	5.7
1	D	318	LEU	5.6
1	B	320	GLN	5.3
1	E	319	GLY	5.2
1	F	313	ALA	5.1

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Mol	Chain	Res	Type	RSRZ
1	F	315	LEU	5.0
1	F	324	LEU	4.9
1	F	312	GLY	4.9
1	F	36	LEU	4.8
1	D	324	LEU	4.7
1	F	316	ILE	4.7
1	F	158	LEU	4.6
1	B	319	GLY	4.6
1	A	320	GLN	4.5
1	F	92	LYS	4.5
1	F	159	ASP	4.5
1	A	319	GLY	4.5
1	C	320	GLN	4.3
1	B	313	ALA	4.2
1	B	315	LEU	4.2
1	D	320	GLN	4.2
1	F	250	GLU	4.0
1	F	251	ASN	4.0
1	F	321	ALA	3.9
1	B	317	ARG	3.9
1	D	159	ASP	3.8
1	F	240	VAL	3.8
1	D	228	ARG	3.7
1	B	321	ALA	3.7
1	C	313	ALA	3.6
1	E	36	LEU	3.5
1	C	318	LEU	3.4
1	C	321	ALA	3.4
1	E	119	ARG	3.4
1	C	316	ILE	3.3
1	F	160	LYS	3.3
1	E	317	ARG	3.3
1	F	231	TRP	3.3
1	F	323	THR	3.2
1	E	321	ALA	3.2
1	F	248	LEU	3.2
1	E	323	THR	3.2
1	E	315	LEU	3.2
1	F	114	SER	3.1
1	D	347	HIS	3.1
1	D	38	SER	3.1
1	C	319	GLY	3.1

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Mol	Chain	Res	Type	RSRZ
1	B	263	ILE	3.1
1	F	113	GLU	3.1
1	F	242	LYS	3.0
1	D	37	SER	3.0
1	D	319	GLY	3.0
1	F	225	GLN	3.0
1	F	54	PHE	3.0
1	F	230	PHE	2.9
1	D	91	GLU	2.9
1	B	241	LYS	2.9
1	F	227	GLY	2.9
1	F	162	VAL	2.9
1	E	88	ILE	2.8
1	B	228	ARG	2.8
1	F	310	PHE	2.8
1	F	249	PRO	2.8
1	F	52	ARG	2.8
1	B	351	ASP	2.7
1	F	243	LEU	2.7
1	D	53	SER	2.7
1	E	281	ARG	2.7
1	F	347	HIS	2.7
1	A	313	ALA	2.7
1	E	115	LYS	2.7
1	F	350	PRO	2.6
1	B	347	HIS	2.6
1	F	72	PHE	2.6
1	A	228	ARG	2.6
1	F	117	LYS	2.6
1	B	368	THR	2.6
1	A	36	LEU	2.6
1	F	259	LEU	2.6
1	B	159	ASP	2.6
1	F	115	LYS	2.6
1	B	259	LEU	2.5
1	D	90	VAL	2.5
1	C	317	ARG	2.5
1	A	324	LEU	2.5
1	E	113	GLU	2.4
1	E	37	SER	2.4
1	E	92	LYS	2.4
1	A	73	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
1	F	216	ILE	2.4
1	F	311	LYS	2.4
1	D	321	ALA	2.4
1	A	314	VAL	2.4
1	F	217	ILE	2.4
1	F	76	LEU	2.4
1	B	54	PHE	2.4
1	F	238	ARG	2.4
1	E	70	CYS	2.4
1	F	246	PHE	2.4
1	F	174	TYR	2.3
1	A	321	ALA	2.3
1	D	313	ALA	2.3
1	F	233	GLN	2.3
1	F	236	TRP	2.3
1	F	87	THR	2.2
1	F	258	CYS	2.2
1	B	314	VAL	2.2
1	C	37	SER	2.2
1	D	317	ARG	2.2
1	E	114	SER	2.2
1	F	300	LEU	2.1
1	D	233	GLN	2.1
1	A	312	GLY	2.1
1	D	252	ILE	2.1
1	F	307	GLN	2.1
1	B	36	LEU	2.1
1	E	52	ARG	2.1
1	F	163	THR	2.1
1	F	85	ASP	2.1
1	E	313	ALA	2.1
1	D	316	ILE	2.1
1	F	88	ILE	2.1
1	F	349	ILE	2.1
1	B	248	LEU	2.1
1	E	361	GLN	2.0
1	F	166	GLN	2.0
1	D	241	LYS	2.0
1	D	262	LEU	2.0
1	F	119	ARG	2.0
1	F	103	PHE	2.0
1	B	262	LEU	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. 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	B-factors(\AA^2)	Q<0.9
2	BH8	D	401	25/25	0.60	0.28	48,86,98,98	0
2	BH8	A	401	25/25	0.69	0.31	41,84,95,96	0
2	BH8	F	401	25/25	0.77	0.27	57,89,99,99	0
2	BH8	E	401	25/25	0.78	0.23	58,86,93,93	0
2	BH8	B	401	25/25	0.82	0.19	32,60,68,68	0
2	BH8	C	401	25/25	0.83	0.20	39,71,80,81	0

6.5 Other polymers [i](#)

There are no such residues in this entry.