



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 06:07 AM EDT

PDB ID : 1BO1  
Title : PHOSPHATIDYLINOSITOL PHOSPHATE KINASE TYPE II BETA  
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Deposited on : 1998-08-02  
Resolution : 3.00 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](mailto: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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

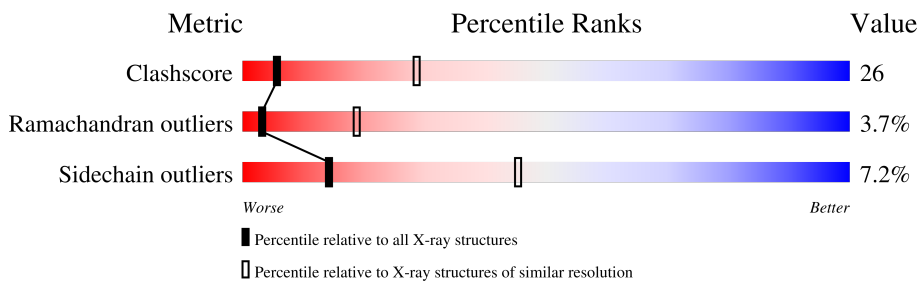
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. 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  $\leq 5\%$ .

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	416	
1	B	416	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 5301 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 PROTEIN (PHOSPHATIDYLINOSITOL PHOSPHATE KINASE IIBETA).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	326	Total	C	N	O	S	0	0	0
			2674	1695	454	511	14			
1	B	318	Total	C	N	O	S	0	0	0
			2608	1651	448	494	15			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	13	Total	O	0	0
			13	13		
2	B	6	Total	O	0	0
			6	6		



A232	GLU
K233	CYS
D234	GLU
L235	ASN
P236	ASP
T237	GLY
F238	VAL
K239	GLY
D240	GLY
N241	ASN
D242	LEU
F243	LEU
L244	CYS
N245	SER
E246	TYR
G247	GLY
Q248	THR
K249	PRO
L250	PRO
H251	ASP
V252	SER
S256	PRO
K257	GLY
F260	LEU
K263	SER
L264	PRO
K265	ARG
R266	ARG
D267	PHE
V268	PHE
E269	GLY
F270	PRO
L271	GLU
A272	PHE
Q273	PHE
L274	D343
K275	P344
L276	S345
D277	V346
D278	D347
Y279	V348
S280	Y349
L281	A350
L282	M351
V283	K352
H286	S353
D287	H354
V288	S357
A291	P358
R301	K359
A302	K360
E303	Y363
ASP	F364
GLU	M365
	A366
	I367
I368	PRO
D369	TYR
I370	ASP
L371	THR
T372	THR
PRO	LYS
TYR	LYS
ASP	LYS
THR	ALA
LYS	ALA
LYS	ALA
ALA	ALA
ALA	ALA
HIS	ALA
ALA	ALA
ALA	ALA
ALA	ALA
LYS	ALA
THR	THR
VAL	VAL
LYS	LYS
HIS	HIS
GLY	GLY
ALA	ALA
GLY	GLY
ALA	ALA
ALA	ALA
GLU	GLU
ILE	ILE
SER	SER
T397	T397
V398	V398
N399	N399
P400	P400
Y403	Y403
S404	S404
R405	R405
R406	R406
F407	F407
M408	M408
E409	E409
F410	F410
M411	M411
S412	S412
M413	M413
I414	I414
L415	L415
T416	T416

## 4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	109.92Å 182.40Å 106.47Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.00 – 3.00	Depositor
% Data completeness (in resolution range)	94.9 (6.00-3.00)	Depositor
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.05	Depositor
Refinement program	X-PLOR 3.8	Depositor
R, $R_{free}$	0.229 , 0.299	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	5301	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	48.0	wwPDB-VP

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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	0.44	0/2726	0.68	1/3668 (0.0%)
1	B	0.43	0/2660	0.70	1/3580 (0.0%)
All	All	0.44	0/5386	0.69	2/7248 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	368	ILE	N-CA-C	6.23	127.81	111.00
1	A	368	ILE	N-CA-C	5.41	125.62	111.00

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	2674	0	2631	126	0
1	B	2608	0	2572	144	0
2	A	13	0	0	0	0
2	B	6	0	0	1	0
All	All	5301	0	5203	268	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 26.

All (268) 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:B:212:HIS:HD2	1:B:287:ASP:H	1.20	0.90
1:B:157:VAL:HG21	1:B:197:TYR:CD2	2.07	0.90
1:A:223:ALA:H	1:A:225:GLU:HG2	1.39	0.87
1:A:215:TYR:HB2	1:A:283:VAL:HB	1.60	0.83
1:B:215:TYR:HB2	1:B:283:VAL:HB	1.63	0.80
1:A:157:VAL:HG21	1:A:197:TYR:CD2	2.17	0.80
1:B:249:LYS:HB3	1:B:251:HIS:CE1	2.16	0.80
1:A:249:LYS:HB3	1:A:251:HIS:CE1	2.18	0.79
1:A:157:VAL:HA	1:A:186:MET:HE1	1.63	0.78
1:B:98:TYR:HD1	1:B:186:MET:HG2	1.49	0.78
1:A:98:TYR:HD1	1:A:186:MET:HG2	1.50	0.77
1:B:157:VAL:HA	1:B:186:MET:HE1	1.67	0.77
1:A:183:PHE:HA	1:A:201:THR:HG22	1.67	0.77
1:B:109:ARG:HH11	1:B:172:VAL:HA	1.48	0.76
1:B:183:PHE:HA	1:B:201:THR:HG22	1.68	0.76
1:A:343:ASP:HB2	1:A:344:PRO:HD3	1.68	0.76
1:A:66:LEU:HD13	1:A:102:VAL:HG22	1.66	0.75
1:B:243:PHE:HZ	1:B:414:ILE:HG23	1.49	0.74
1:A:109:ARG:NH1	1:A:172:VAL:HG22	2.02	0.74
1:B:131:SER:HB3	1:B:138:ARG:HA	1.68	0.74
1:A:352:LYS:HD3	1:A:366:ALA:HB2	1.70	0.72
1:B:252:VAL:HG12	1:B:256:SER:HB3	1.71	0.72
1:B:66:LEU:HD13	1:B:102:VAL:HG22	1.71	0.72
1:B:220:SER:HA	1:B:406:ARG:CZ	2.20	0.71
1:B:51:ASN:HB2	1:B:122:THR:HG21	1.72	0.71
1:B:260:PHE:CD2	1:B:415:LEU:HD11	2.26	0.71
1:A:51:ASN:HB2	1:A:122:THR:HG21	1.73	0.71
1:A:34:LYS:HA	1:B:59:ASN:HA	1.73	0.70
1:A:261:LEU:HD21	1:A:412:SER:HA	1.73	0.70
1:A:183:PHE:HZ	1:A:370:ILE:HG21	1.57	0.70
1:A:407:PHE:O	1:A:411:MET:HG2	1.91	0.70
1:B:212:HIS:CD2	1:B:287:ASP:H	2.06	0.70
1:B:268:VAL:HG13	1:B:279:TYR:OH	1.91	0.70
1:A:128:ASN:HA	1:A:140:LEU:HD23	1.72	0.69
1:A:54:ILE:HG21	1:A:118:GLN:HB2	1.74	0.69
1:A:37:ARG:HB2	1:A:88:ASN:HB3	1.75	0.69
1:A:415:LEU:HD23	1:A:415:LEU:H	1.57	0.69
1:A:123:ARG:HD3	1:A:143:TYR:OH	1.92	0.68
1:B:400:PRO:HA	1:B:403:TYR:HB2	1.76	0.67
1:B:407:PHE:O	1:B:411:MET:HG2	1.94	0.67
1:B:243:PHE:CD1	1:B:248:GLN:HG3	2.29	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:157:VAL:HG21	1:B:197:TYR:HD2	1.60	0.66
1:B:222:VAL:HA	1:B:225:GLU:OE1	1.95	0.66
1:B:37:ARG:HB2	1:B:88:ASN:HB3	1.77	0.65
1:B:98:TYR:CD1	1:B:186:MET:HG2	2.31	0.65
1:A:98:TYR:CD1	1:A:186:MET:HG2	2.32	0.65
1:B:46:LEU:HD21	1:B:149:ILE:HD13	1.78	0.65
1:B:54:ILE:HG21	1:B:118:GLN:HB2	1.78	0.65
1:A:212:HIS:HD2	1:A:287:ASP:H	1.44	0.64
1:A:46:LEU:HD21	1:A:149:ILE:HD13	1.81	0.62
1:A:275:LYS:O	1:A:275:LYS:HG2	1.96	0.62
1:B:139:PHE:CE2	1:B:150:LYS:HD2	2.35	0.62
1:B:128:ASN:HA	1:B:140:LEU:HD23	1.82	0.62
1:A:168:HIS:O	1:A:172:VAL:HG23	2.00	0.61
1:A:243:PHE:HZ	1:A:414:ILE:HG23	1.63	0.61
1:B:221:THR:H	1:B:406:ARG:NH1	1.99	0.61
1:A:40:GLU:HB3	1:A:42:ILE:HD12	1.80	0.61
1:A:160:MET:HE1	1:A:164:LEU:HD13	1.82	0.61
1:A:160:MET:O	1:A:164:LEU:HB2	2.01	0.61
1:B:233:LYS:HG2	1:B:234:ASP:H	1.64	0.61
1:A:234:ASP:O	1:A:236:PRO:HD3	2.01	0.60
1:B:278:ASP:HA	1:B:403:TYR:CE2	2.36	0.60
1:A:243:PHE:CZ	1:A:414:ILE:HG23	2.36	0.60
1:B:212:HIS:HD2	1:B:287:ASP:N	1.94	0.60
1:B:139:PHE:CZ	1:B:150:LYS:HD2	2.36	0.60
1:A:272:ALA:HB2	1:A:404:SER:OG	2.02	0.59
1:A:301:ARG:HG2	1:A:301:ARG:HH11	1.67	0.59
1:B:168:HIS:O	1:B:172:VAL:HG23	2.02	0.59
1:B:236:PRO:HB2	1:B:238:PHE:CZ	2.37	0.59
1:B:123:ARG:HD3	1:B:143:TYR:OH	2.02	0.59
1:A:144:ASP:O	1:A:207:HIS:HB2	2.02	0.59
1:A:249:LYS:HE3	1:A:249:LYS:H	1.67	0.59
1:A:347:ASP:O	1:A:351:MET:HB3	2.02	0.59
1:A:250:LEU:HG	1:A:414:ILE:HG22	1.85	0.58
1:B:192:ASP:O	1:B:194:VAL:HG23	2.04	0.58
1:B:204:VAL:HA	1:B:352:LYS:HD2	1.83	0.58
1:B:109:ARG:NH1	1:B:172:VAL:HA	2.19	0.58
1:A:251:HIS:O	1:A:356:SER:HA	2.04	0.58
1:B:213:ARG:HD3	1:B:215:TYR:OH	2.04	0.58
1:B:109:ARG:NH1	1:B:172:VAL:HG22	2.18	0.58
1:B:351:MET:O	1:B:352:LYS:HB2	2.02	0.58
1:A:243:PHE:CD1	1:A:248:GLN:HG3	2.39	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:160:MET:CE	1:B:164:LEU:HD13	2.34	0.57
1:A:225:GLU:O	1:A:241:ASN:HB2	2.04	0.57
1:B:243:PHE:CZ	1:B:414:ILE:HG23	2.37	0.57
1:B:110:PHE:CE1	1:B:182:GLN:HB3	2.40	0.57
1:A:78:LYS:HB3	1:B:78:LYS:HB3	1.85	0.57
1:B:131:SER:CB	1:B:138:ARG:HA	2.33	0.57
1:A:213:ARG:HD3	1:A:215:TYR:OH	2.05	0.56
1:B:249:LYS:HE3	1:B:249:LYS:H	1.70	0.56
1:A:109:ARG:HH11	1:A:172:VAL:HA	1.71	0.56
1:A:160:MET:CE	1:A:164:LEU:HD13	2.36	0.56
1:B:112:ILE:HD12	1:B:184:LEU:HD22	1.87	0.56
1:B:357:SER:HB3	1:B:358:PRO:HD3	1.88	0.55
1:B:353:SER:HG	1:B:364:PHE:HE2	1.54	0.55
1:B:189:LEU:HD12	1:B:189:LEU:H	1.71	0.55
1:B:210:THR:O	1:B:286:HIS:HD2	1.89	0.55
1:A:222:VAL:HA	1:A:225:GLU:HG3	1.87	0.55
1:B:251:HIS:HB3	2:B:417:HOH:O	2.07	0.55
1:B:268:VAL:CG1	1:B:404:SER:HA	2.37	0.55
1:B:233:LYS:HG2	1:B:234:ASP:N	2.21	0.54
1:A:123:ARG:HB3	1:A:143:TYR:CE2	2.43	0.54
1:A:208:ARG:NH1	1:A:209:LEU:HD21	2.23	0.54
1:B:160:MET:O	1:B:164:LEU:HB2	2.08	0.54
1:B:166:LYS:HD3	1:B:273:GLN:HE22	1.73	0.53
1:B:242:ASP:O	1:B:246:GLU:HG3	2.08	0.53
1:B:278:ASP:HA	1:B:403:TYR:HE2	1.71	0.53
1:B:301:ARG:HH11	1:B:301:ARG:HG2	1.74	0.53
1:A:205:PHE:CG	1:A:211:VAL:HG21	2.44	0.53
1:A:192:ASP:O	1:A:194:VAL:HG23	2.08	0.53
1:A:60:VAL:O	1:A:104:ARG:NH2	2.42	0.53
1:A:189:LEU:HD12	1:A:189:LEU:H	1.73	0.53
1:B:110:PHE:CD1	1:B:182:GLN:HB3	2.42	0.53
1:A:210:THR:O	1:A:286:HIS:HD2	1.91	0.53
1:A:252:VAL:HG12	1:A:256:SER:HB3	1.90	0.53
1:A:112:ILE:HD12	1:A:184:LEU:HD22	1.89	0.53
1:B:79:VAL:O	1:B:92:ARG:HA	2.09	0.53
1:B:281:LEU:HB2	1:B:407:PHE:CZ	2.42	0.53
1:B:408:ASN:O	1:B:412:SER:HB2	2.09	0.52
1:B:123:ARG:HB3	1:B:143:TYR:CE2	2.44	0.52
1:B:276:ILE:HD12	1:B:370:ILE:O	2.10	0.52
1:B:207:HIS:CE1	1:B:350:ALA:HB2	2.44	0.52
1:A:79:VAL:O	1:A:92:ARG:HA	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:160:MET:HE1	1:B:164:LEU:HD13	1.90	0.52
1:B:236:PRO:HB2	1:B:238:PHE:CE2	2.45	0.52
1:A:301:ARG:HG2	1:A:301:ARG:NH1	2.25	0.52
1:B:43:LEU:HD21	1:B:140:LEU:HD11	1.92	0.52
1:B:179:LEU:HB3	1:B:366:ALA:HA	1.91	0.51
1:A:279:TYR:HA	1:A:369:ASP:HB2	1.92	0.51
1:B:264:LEU:HD11	1:B:407:PHE:HE2	1.75	0.51
1:A:148:VAL:HG23	1:A:203:ASN:HB3	1.92	0.51
1:A:260:PHE:CE2	1:A:415:LEU:HD21	2.45	0.51
1:A:245:ASN:OD1	1:A:246:GLU:N	2.44	0.51
1:A:277:MET:HG2	1:A:403:TYR:HD2	1.74	0.51
1:B:217:LEU:HD23	1:B:240:ASP:HA	1.92	0.51
1:B:231:LYS:HG2	1:B:238:PHE:CE2	2.46	0.51
1:B:343:ASP:OD1	1:B:344:PRO:HD3	2.10	0.51
1:B:231:LYS:HG2	1:B:238:PHE:HE2	1.75	0.51
1:A:110:PHE:CE1	1:A:182:GLN:HB3	2.45	0.51
1:B:112:ILE:HD12	1:B:184:LEU:CD2	2.41	0.51
1:B:215:TYR:CD2	1:B:243:PHE:HB2	2.46	0.51
1:B:347:ASP:O	1:B:351:MET:HB3	2.11	0.50
1:A:408:ASN:O	1:A:412:SER:HB2	2.11	0.50
1:B:204:VAL:HA	1:B:352:LYS:CD	2.40	0.50
1:B:281:LEU:HB2	1:B:407:PHE:HZ	1.76	0.50
1:B:55:ASN:ND2	1:B:118:GLN:HE22	2.10	0.50
1:A:352:LYS:HD3	1:A:366:ALA:CB	2.38	0.49
1:B:48:TRP:CD1	1:B:89:LEU:HD11	2.46	0.49
1:A:204:VAL:HA	1:A:352:LYS:HD2	1.93	0.49
1:A:227:SER:HB3	1:A:230:GLU:HB2	1.93	0.49
1:A:157:VAL:HG21	1:A:197:TYR:HD2	1.74	0.49
1:A:167:TYR:O	1:A:171:ILE:HG12	2.13	0.49
1:A:346:VAL:HG12	1:A:348:VAL:CG1	2.42	0.49
1:B:265:LYS:O	1:B:269:GLU:HB2	2.12	0.49
1:B:221:THR:HG23	1:B:406:ARG:HH11	1.77	0.49
1:B:252:VAL:CG1	1:B:256:SER:HB3	2.42	0.49
1:A:222:VAL:HG13	1:A:241:ASN:HD21	1.78	0.49
1:A:265:LYS:O	1:A:269:GLU:HB2	2.12	0.49
1:B:51:ASN:HA	1:B:118:GLN:HE21	1.77	0.48
1:A:51:ASN:HA	1:A:118:GLN:HE21	1.78	0.48
1:B:188:ARG:HD2	1:B:195:GLU:OE2	2.14	0.48
1:A:179:LEU:HG	1:A:263:LYS:HG2	1.96	0.48
1:B:264:LEU:HD11	1:B:407:PHE:CE2	2.49	0.48
1:B:159:GLU:HB3	1:B:371:LEU:HD22	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:110:PHE:CE2	1:B:182:GLN:HG2	2.48	0.48
1:B:220:SER:HA	1:B:406:ARG:NE	2.27	0.48
1:B:167:TYR:O	1:B:171:ILE:HG12	2.13	0.48
1:A:60:VAL:O	1:A:60:VAL:HG22	2.13	0.48
1:A:282:LEU:O	1:A:365:MET:HA	2.14	0.48
1:B:74:TYR:CD1	1:B:96:LYS:HE3	2.49	0.48
1:A:218:LYS:CE	1:A:239:LYS:HD3	2.44	0.47
1:A:74:TYR:CD1	1:A:96:LYS:HE3	2.50	0.47
1:B:42:ILE:HD11	1:B:196:THR:HG21	1.96	0.47
1:A:221:THR:HG23	1:A:406:ARG:HH11	1.79	0.47
1:A:346:VAL:HG12	1:A:348:VAL:HG12	1.96	0.47
1:B:50:VAL:O	1:B:54:ILE:HB	2.14	0.47
1:B:230:GLU:O	1:B:236:PRO:HG3	2.15	0.47
1:B:275:LYS:O	1:B:275:LYS:HG2	2.14	0.47
1:B:57:LEU:HA	1:B:60:VAL:HG13	1.97	0.47
1:B:250:LEU:HD22	1:B:363:TYR:CE2	2.50	0.47
1:B:274:LEU:O	1:B:276:ILE:HG12	2.15	0.46
1:B:84:PHE:CE2	1:B:85:ASN:HB2	2.50	0.46
1:B:346:VAL:O	1:B:348:VAL:N	2.48	0.46
1:A:57:LEU:HA	1:A:60:VAL:HG13	1.97	0.46
1:B:130:ASP:O	1:B:132:GLN:NE2	2.48	0.46
1:A:34:LYS:O	1:A:35:LEU:HD23	2.16	0.46
1:A:50:VAL:O	1:A:54:ILE:HB	2.15	0.46
1:B:207:HIS:ND1	1:B:350:ALA:HB2	2.30	0.46
1:A:110:PHE:CD1	1:A:182:GLN:HB3	2.51	0.46
1:B:205:PHE:CG	1:B:211:VAL:HG21	2.51	0.46
1:A:103:PHE:HZ	1:A:160:MET:HE2	1.81	0.46
1:A:370:ILE:HG12	1:A:370:ILE:O	2.16	0.46
1:B:301:ARG:HG2	1:B:301:ARG:NH1	2.30	0.45
1:A:190:THR:HG22	1:A:195:GLU:HA	1.97	0.45
1:B:246:GLU:HB2	1:B:248:GLN:HG2	1.97	0.45
1:A:131:SER:HA	1:A:139:PHE:HB2	1.99	0.45
1:A:223:ALA:N	1:A:225:GLU:HG2	2.19	0.45
1:A:277:MET:HG2	1:A:403:TYR:CD2	2.51	0.45
1:B:144:ASP:O	1:B:207:HIS:HB2	2.16	0.45
1:B:276:ILE:HD13	1:B:276:ILE:HA	1.86	0.45
1:B:276:ILE:HG22	1:B:279:TYR:HD2	1.81	0.45
1:B:67:MET:CE	1:B:67:MET:HA	2.46	0.45
1:B:181:PRO:HG2	1:B:370:ILE:HG22	1.98	0.45
1:A:165:LYS:HA	1:A:165:LYS:HD2	1.73	0.44
1:A:55:ASN:ND2	1:A:118:GLN:HE22	2.14	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:38:ALA:HB2	1:A:125:ALA:CB	2.47	0.44
1:B:67:MET:SD	1:B:68:PRO:HD2	2.57	0.44
1:A:220:SER:HA	1:A:406:ARG:CZ	2.47	0.44
1:B:270:PHE:O	1:B:273:GLN:HB3	2.17	0.44
1:A:94:LYS:HB2	1:A:190:THR:OG1	2.17	0.44
1:A:148:VAL:CG2	1:A:203:ASN:HB3	2.48	0.44
1:A:360:LYS:O	1:A:360:LYS:HG2	2.17	0.44
1:A:354:HIS:ND1	1:A:365:MET:CE	2.81	0.44
1:B:260:PHE:CE2	1:B:415:LEU:HD11	2.52	0.44
1:A:84:PHE:CE2	1:A:85:ASN:HB2	2.53	0.44
1:B:177:ASN:HD21	1:B:263:LYS:HE2	1.83	0.44
1:A:103:PHE:HZ	1:A:160:MET:CE	2.30	0.43
1:A:245:ASN:OD1	1:A:246:GLU:HG3	2.18	0.43
1:A:112:ILE:HD12	1:A:184:LEU:CD2	2.47	0.43
1:A:399:ASN:ND2	1:A:402:GLN:H	2.16	0.43
1:B:160:MET:HG3	1:B:186:MET:HE3	2.00	0.43
1:B:288:VAL:O	1:B:291:ALA:HB3	2.19	0.43
1:A:48:TRP:CD1	1:A:89:LEU:HD11	2.54	0.43
1:A:250:LEU:HG	1:A:414:ILE:CG2	2.47	0.43
1:B:249:LYS:HB3	1:B:251:HIS:HE1	1.75	0.43
1:B:60:VAL:O	1:B:104:ARG:NH2	2.50	0.43
1:B:60:VAL:O	1:B:60:VAL:HG22	2.17	0.43
1:B:288:VAL:HB	1:B:360:LYS:HB3	1.99	0.43
1:A:215:TYR:O	1:A:282:LEU:HD23	2.18	0.43
1:A:415:LEU:HD23	1:A:415:LEU:N	2.29	0.43
1:A:188:ARG:HD2	1:A:195:GLU:OE2	2.19	0.42
1:B:160:MET:HE3	1:B:164:LEU:HD13	2.00	0.42
1:A:49:GLY:HA3	1:A:95:PHE:CZ	2.55	0.42
1:A:109:ARG:HH12	1:A:172:VAL:HG13	1.85	0.42
1:A:277:MET:HG3	1:A:400:PRO:HA	2.00	0.42
1:A:60:VAL:HA	1:A:61:PRO:HD2	1.82	0.42
1:B:271:LEU:HB3	1:B:276:ILE:HB	2.01	0.42
1:B:94:LYS:HB2	1:B:190:THR:OG1	2.20	0.42
1:B:205:PHE:CD1	1:B:211:VAL:HG21	2.54	0.42
1:B:169:GLN:O	1:B:172:VAL:HB	2.20	0.42
1:B:190:THR:HG22	1:B:195:GLU:HA	2.02	0.42
1:B:217:LEU:CD2	1:B:240:ASP:HA	2.50	0.42
1:A:234:ASP:HB3	1:A:235:LEU:H	1.77	0.42
1:A:169:GLN:O	1:A:172:VAL:HB	2.19	0.41
1:A:182:GLN:NE2	1:A:352:LYS:NZ	2.68	0.41
1:A:250:LEU:O	1:A:415:LEU:HA	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:245:ASN:OD1	1:B:246:GLU:N	2.53	0.41
1:B:257:LYS:HE3	1:B:415:LEU:HB2	2.01	0.41
1:A:278:ASP:N	1:A:403:TYR:HE2	2.17	0.41
1:B:215:TYR:CE2	1:B:243:PHE:HB2	2.55	0.41
1:A:157:VAL:HA	1:A:186:MET:CE	2.42	0.41
1:A:398:VAL:HG21	1:A:406:ARG:NH1	2.36	0.41
1:B:42:ILE:CD1	1:B:196:THR:HG21	2.50	0.41
1:A:353:SER:HA	1:A:363:TYR:O	2.21	0.41
1:A:208:ARG:HH22	1:A:345:SER:HA	1.85	0.41
1:A:278:ASP:N	1:A:403:TYR:CE2	2.89	0.41
1:A:399:ASN:HB2	1:A:400:PRO:HD2	2.02	0.41
1:B:41:PRO:HB3	1:B:90:PRO:HG3	2.02	0.41
1:B:47:MET:HG2	1:B:121:VAL:O	2.21	0.41
1:A:222:VAL:HA	1:A:225:GLU:CG	2.51	0.41
1:A:288:VAL:O	1:A:291:ALA:HB3	2.21	0.41
1:B:210:THR:O	1:B:286:HIS:CD2	2.71	0.41
1:B:152:VAL:HB	1:B:156:ASP:HB2	2.02	0.41
1:B:215:TYR:HA	1:B:238:PHE:O	2.21	0.40
1:B:226:ALA:HA	1:B:242:ASP:OD2	2.21	0.40
1:A:188:ARG:HA	1:A:196:THR:O	2.21	0.40
1:B:353:SER:OG	1:B:364:PHE:HE2	2.03	0.40
1:B:49:GLY:HA3	1:B:95:PHE:CZ	2.56	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	318/416 (76%)	268 (84%)	39 (12%)	11 (4%)	3	20
1	B	312/416 (75%)	266 (85%)	34 (11%)	12 (4%)	3	18
All	All	630/832 (76%)	534 (85%)	73 (12%)	23 (4%)	3	19

All (23) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	222	VAL
1	A	232	ALA
1	A	396	SER
1	B	222	VAL
1	B	275	LYS
1	B	347	ASP
1	B	350	ALA
1	B	358	PRO
1	B	360	LYS
1	A	223	ALA
1	A	228	ASP
1	A	234	ASP
1	A	275	LYS
1	B	130	ASP
1	B	278	ASP
1	A	343	ASP
1	B	225	GLU
1	B	344	PRO
1	B	400	PRO
1	A	233	LYS
1	A	274	LEU
1	A	352	LYS
1	B	248	GLN

### 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	302/374 (81%)	283 (94%)	19 (6%)	18	51
1	B	295/374 (79%)	271 (92%)	24 (8%)	11	40
All	All	597/748 (80%)	554 (93%)	43 (7%)	14	45

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	LYS
1	A	54	ILE
1	A	60	VAL
1	A	85	ASN
1	A	86	LYS
1	A	109	ARG
1	A	165	LYS
1	A	189	LEU
1	A	210	THR
1	A	227	SER
1	A	249	LYS
1	A	250	LEU
1	A	251	HIS
1	A	266	ARG
1	A	282	LEU
1	A	304	ASP
1	A	351	MET
1	A	354	HIS
1	A	415	LEU
1	B	54	ILE
1	B	60	VAL
1	B	85	ASN
1	B	86	LYS
1	B	109	ARG
1	B	134	ARG
1	B	189	LEU
1	B	210	THR
1	B	234	ASP
1	B	249	LYS
1	B	250	LEU
1	B	251	HIS
1	B	266	ARG
1	B	274	LEU
1	B	282	LEU
1	B	343	ASP
1	B	344	PRO
1	B	354	HIS
1	B	368	ILE
1	B	369	ASP
1	B	370	ILE
1	B	399	ASN
1	B	400	PRO
1	B	409	GLU



Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	51	ASN
1	A	55	ASN
1	A	81	ASN
1	A	85	ASN
1	A	118	GLN
1	A	119	ASN
1	A	169	GLN
1	A	212	HIS
1	A	241	ASN
1	A	259	ASN
1	A	286	HIS
1	A	399	ASN
1	B	51	ASN
1	B	55	ASN
1	B	81	ASN
1	B	85	ASN
1	B	118	GLN
1	B	119	ASN
1	B	132	GLN
1	B	212	HIS
1	B	251	HIS
1	B	273	GLN
1	B	286	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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 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](#)

EDS was not executed - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

### 6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.