



# Full wwPDB X-ray Structure Validation Report i

Feb 26, 2014 – 11:27 PM GMT

PDB ID : 2PMD  
Title : The structures of aIF2gamma subunit from the archaeon *Sulfolobus solfataricus* in the GDP-bound form.  
Authors : Nikonov, O.S.; Stolboushkina, E.A.; Nikulin, A.D.; Hasenohrl, D.; Blaes, U.; Manstein, D.J.; Fedorov, R.V.; Garber, M.B.; Nikonov, S.V  
Deposited on : 2007-04-21  
Resolution : 2.65 Å(reported)

This is a full wwPDB 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 <http://wwpdb.org/ValidationPDFNotes.html>

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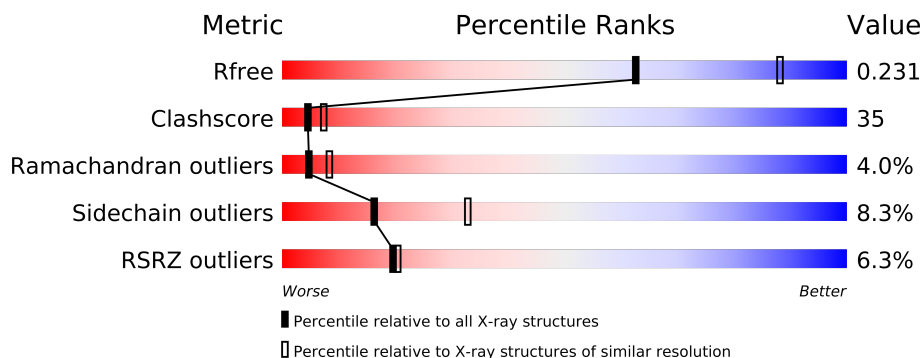
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.15 2013  
Xtriage (Phenix) : dev-1323  
EDS : stable22639  
Percentile statistics : 21963  
Refmac : 5.8.0049  
CCP4 : 6.3.0 (Settle)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)  
Validation Pipeline (wwPDB-VP) : stable22683

# 1 Overall quality at a glance

The reported resolution of this entry is 2.65 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))
$R_{free}$	66092	2232 (2.70-2.62)
Clashscore	79885	2700 (2.70-2.62)
Ramachandran outliers	78287	2657 (2.70-2.62)
Sidechain outliers	78261	2657 (2.70-2.62)
RSRZ outliers	66119	2234 (2.70-2.62)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	415	
1	B	415	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
4	PPV	A	418	-	X
4	PPV	A	419	-	X
4	PPV	A	420	-	X
4	PPV	B	417	-	X
4	PPV	B	418	-	X
4	PPV	B	419	-	X

## 2 Entry composition i

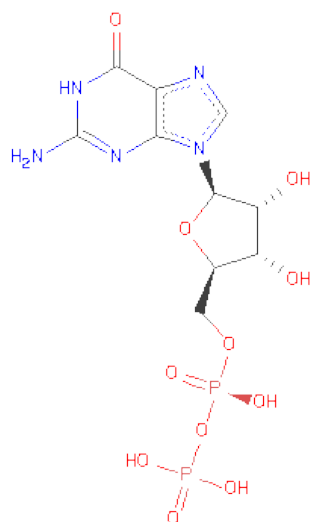
There are 5 unique types of molecules in this entry. The entry contains 6726 atoms, of which 0 are hydrogen and 0 are deuterium.

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 Translation initiation factor 2 gamma subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	414	Total	C	N	O	S	0	0	0
			3212	2058	548	594	12			
1	B	414	Total	C	N	O	S	0	0	0
			3212	2058	548	594	12			

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ).



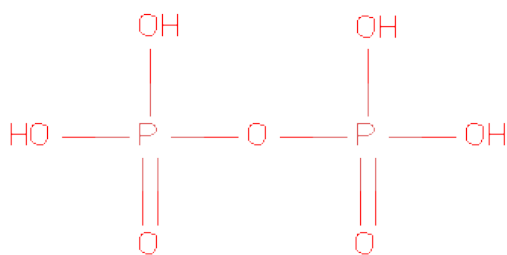
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 3 is PHOSPHOAMINOPHOSPHONICACID-GUANYLATE ESTER (three-letter code: GNP) (formula:  $C_{10}H_{17}N_6O_{13}P_3$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			32	10	6	13	3		

- Molecule 4 is PYROPHOSPHATE (three-letter code: PPV) (formula:  $\text{H}_4\text{O}_7\text{P}_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	O	P	0	0
			9	7	2		
4	A	1	Total	O	P	0	0
			9	7	2		
4	A	1	Total	O	P	0	0
			9	7	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	O	P	0	0
			9	7	2		
4	B	1	Total	O	P	0	0
			9	7	2		
4	A	1	Total	O	P	0	0
			9	7	2		

- Molecule 5 is water.

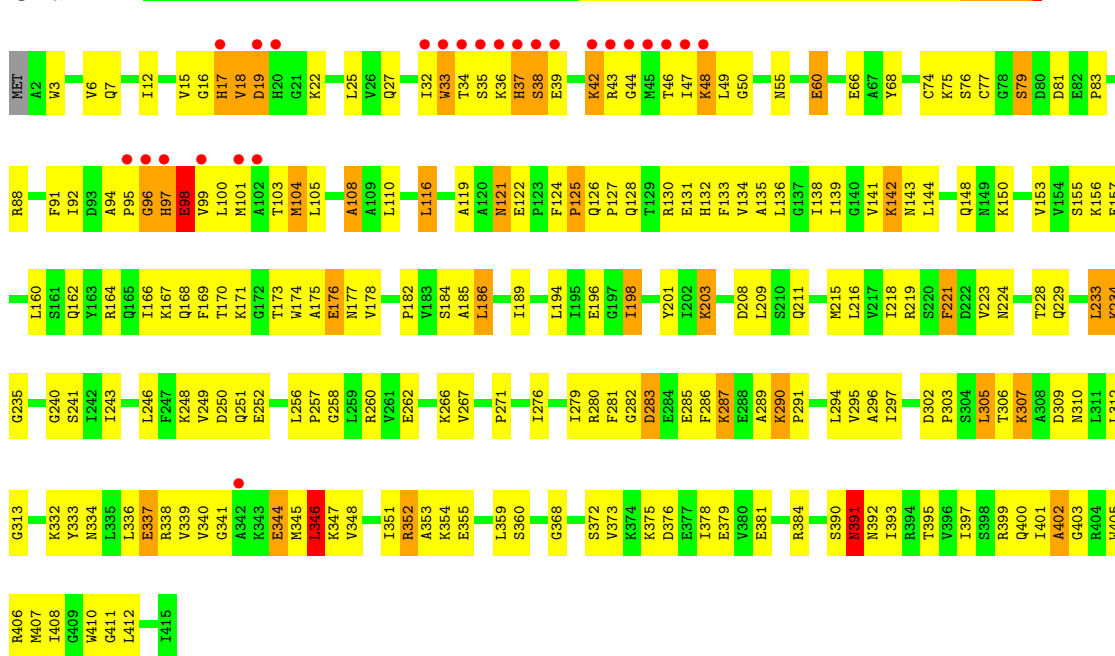
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	71	Total	O	0	0
			71	71		
5	B	89	Total	O	0	0
			89	89		

### 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 errors 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.

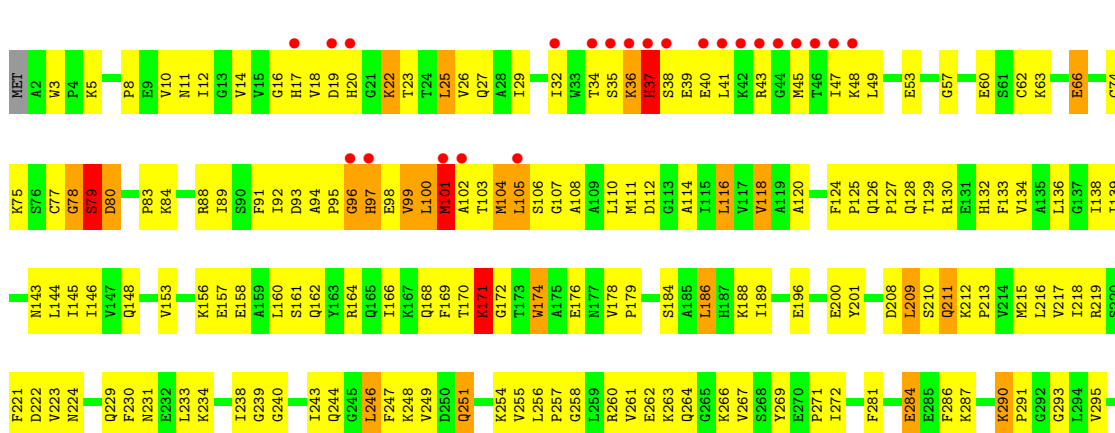
- Molecule 1: Translation initiation factor 2 gamma subunit

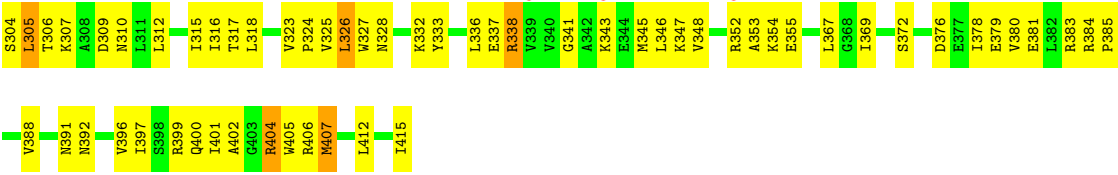
Chain A:



- Molecule 1: Translation initiation factor 2 gamma subunit

Chain B:





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	95.06Å 95.06Å 165.67Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.85 – 2.65 29.20 – 2.65	Depositor EDS
% Data completeness (in resolution range)	89.3 (19.85-2.65) 99.1 (29.20-2.65)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.62 (at 2.64Å)	Xtriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.220 , 0.275 0.232 , 0.231	Depositor DCC
$R_{free}$ test set	2423 reflections (5.07%)	DCC
Wilson B-factor (Å <sup>2</sup> )	51.2	Xtriage
Anisotropy	0.515	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 39.6	EDS
Estimated twinning fraction	0.021 for -h,-k,l 0.469 for h,-h-k,-l 0.023 for -k,-h,-l	Xtriage
L-test for twinning	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 47913 reflections	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	6726	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	63.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.82% of the height of the origin peak. No significant pseudotranslation is detected.*

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



## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GDP, GNP, PPV

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	0.45	0/3271	0.76	4/4430 (0.1%)
1	B	0.45	0/3271	0.76	5/4430 (0.1%)
All	All	0.45	0/6542	0.76	9/8860 (0.1%)

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	37	HIS	N-CA-CB	-7.39	97.30	110.60
1	B	80	ASP	CB-CA-C	-6.88	96.64	110.40
1	A	403	GLY	N-CA-C	-6.44	97.01	113.10
1	A	37	HIS	N-CA-C	6.16	127.62	111.00
1	B	37	HIS	CB-CA-C	-5.68	99.04	110.40
1	B	37	HIS	CA-CB-CG	-5.21	104.75	113.60
1	B	80	ASP	C-N-CA	-5.20	108.71	121.70
1	B	37	HIS	N-CA-C	5.08	124.71	111.00
1	A	98	GLU	N-CA-C	5.06	124.66	111.00

There are no chirality outliers.

There are no planarity outliers.

### 5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3212	0	3332	234	0
1	B	3212	0	3332	236	0
2	A	28	0	12	6	0
2	B	28	0	12	2	0
3	A	32	0	13	4	0
4	A	27	0	0	1	0
4	B	27	0	0	0	0
5	A	71	0	0	10	0
5	B	89	0	0	4	0
All	All	6726	0	6701	467	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 35.

All (467) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:94:ALA:HB3	1:A:98:GLU:HA	1.25	1.13
1:B:230:PHE:HA	1:B:233:LEU:HD23	1.38	1.04
1:B:108:ALA:HB1	1:B:139:ILE:HD12	1.46	0.98
1:B:5:LYS:HE2	1:B:284:GLU:HB3	1.48	0.95
1:B:17:HIS:HB2	1:B:129:THR:HG23	1.50	0.93
1:B:36:LYS:HG3	1:B:37:HIS:H	1.35	0.91
1:A:94:ALA:CB	1:A:98:GLU:HA	2.02	0.89
1:B:94:ALA:HB2	1:B:99:VAL:HG13	1.50	0.89
1:A:97:HIS:O	1:A:98:GLU:CB	2.20	0.88
1:B:372:SER:HB3	1:B:379:GLU:HB2	1.58	0.86
1:A:46:THR:HG22	1:A:47:ILE:H	1.39	0.86
1:B:352:ARG:HH21	1:B:355:GLU:HA	1.39	0.85
1:A:46:THR:HA	1:A:219:ARG:HG3	1.59	0.84
1:A:337:GLU:CD	1:A:337:GLU:H	1.80	0.84
1:B:260:ARG:NH2	1:B:267:VAL:HG11	1.93	0.84
1:A:392:ASN:HB3	1:A:412:LEU:HD12	1.57	0.83
1:A:219:ARG:HD3	1:A:309:ASP:OD1	1.80	0.82
1:A:173:THR:HG23	1:A:175:ALA:H	1.43	0.82
1:B:338:ARG:HE	1:B:347:LYS:HE3	1.45	0.82
1:A:99:VAL:HG23	1:A:100:LEU:H	1.45	0.81
1:B:17:HIS:ND1	1:B:128:GLN:HB2	1.95	0.81
1:B:148:GLN:HE21	1:B:162:GLN:HE21	1.28	0.80
1:A:142:LYS:HB3	5:A:428:HOH:O	1.82	0.80
1:B:171:LYS:HA	1:B:171:LYS:HE2	1.61	0.80
1:B:47:ILE:HD13	1:B:219:ARG:HG3	1.65	0.78
1:B:230:PHE:HA	1:B:233:LEU:CD2	2.12	0.77
1:A:97:HIS:O	1:A:98:GLU:HB2	1.82	0.77

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:367:LEU:HD23	1:B:383:ARG:HH21	1.49	0.76
1:A:74:CYS:SG	1:A:83:PRO:HB3	2.25	0.76
1:A:312:LEU:HD12	1:A:313:GLY:N	2.02	0.75
1:A:340:VAL:HB	1:A:406:ARG:HH22	1.52	0.75
1:B:247:PHE:HA	1:B:251:GLN:HE22	1.52	0.74
1:B:168:GLN:O	1:B:171:LYS:HB2	1.88	0.73
1:A:6:VAL:HG22	1:A:7:GLN:N	2.04	0.73
1:B:384:ARG:HG2	1:B:385:PRO:HD2	1.71	0.73
1:B:248:LYS:H	1:B:251:GLN:NE2	1.86	0.73
1:B:48:LYS:NZ	1:B:103:THR:HG21	2.04	0.73
1:A:18:VAL:HG12	1:A:128:GLN:HE22	1.54	0.73
1:B:156:LYS:O	1:B:160:LEU:HG	1.88	0.72
1:A:7:GLN:HE22	1:A:290:LYS:H	1.36	0.72
1:B:333:TYR:CE2	1:B:378:ILE:HG23	2.24	0.72
1:B:219:ARG:HD3	1:B:309:ASP:OD2	1.90	0.71
1:B:74:CYS:SG	1:B:83:PRO:HB3	2.29	0.71
1:A:46:THR:HG21	1:A:49:LEU:HD11	1.72	0.71
1:A:6:VAL:HG22	1:A:7:GLN:H	1.55	0.71
1:A:136:LEU:HB3	1:A:141:VAL:HG11	1.74	0.70
1:B:338:ARG:HA	1:B:347:LYS:HA	1.73	0.70
1:A:18:VAL:O	1:A:19:ASP:HB2	1.91	0.70
1:A:144:LEU:HD23	1:A:178:VAL:HG21	1.74	0.70
1:B:338:ARG:NE	1:B:347:LYS:HE3	2.06	0.70
1:B:209:LEU:H	1:B:209:LEU:HD12	1.56	0.70
1:B:218:ILE:HG12	1:B:240:GLY:HA2	1.73	0.69
1:B:230:PHE:CA	1:B:233:LEU:HD23	2.18	0.69
1:B:263:LYS:HD2	1:B:264:GLN:HG2	1.74	0.69
1:A:131:GLU:HA	1:A:134:VAL:HG22	1.76	0.68
1:A:249:VAL:O	1:A:250:ASP:HB2	1.92	0.68
1:B:36:LYS:HG3	1:B:37:HIS:N	2.07	0.67
1:B:260:ARG:HD2	1:B:269:TYR:OH	1.93	0.67
1:A:135:ALA:O	1:A:139:ILE:HG12	1.94	0.67
1:A:119:ALA:HB3	1:A:122:GLU:HG3	1.75	0.67
1:B:384:ARG:HD2	1:B:385:PRO:O	1.94	0.67
1:B:23:THR:O	1:B:27:GLN:HG3	1.95	0.67
1:B:209:LEU:HD12	1:B:209:LEU:N	2.10	0.67
1:A:37:HIS:O	1:A:38:SER:HB3	1.93	0.67
1:B:260:ARG:HH21	1:B:267:VAL:HG11	1.60	0.67
1:B:126:GLN:HB3	1:B:127:PRO:HD2	1.77	0.67
1:B:148:GLN:HE21	1:B:162:GLN:NE2	1.93	0.67
1:A:340:VAL:HA	1:A:345:MET:CE	2.25	0.67
1:A:150:LYS:O	1:A:153:VAL:HG22	1.95	0.67

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:260:ARG:HB2	1:B:269:TYR:CE2	2.31	0.66
1:A:333:TYR:CE2	1:A:378:ILE:HG23	2.31	0.66
1:A:121:ASN:HD22	1:A:121:ASN:H	1.43	0.66
1:A:46:THR:HG22	1:A:47:ILE:N	2.09	0.66
1:B:37:HIS:ND1	1:B:37:HIS:O	2.29	0.66
1:A:110:LEU:HD22	1:A:241:SER:HB3	1.77	0.66
1:A:359:LEU:HD22	1:A:359:LEU:N	2.12	0.64
1:A:170:THR:HA	1:A:173:THR:HG22	1.80	0.64
1:A:266:LYS:NZ	1:A:266:LYS:HB2	2.12	0.64
1:A:400:GLN:HA	1:A:405:TRP:HA	1.78	0.64
1:A:401:ILE:HG23	1:A:402:ALA:N	2.13	0.63
1:B:392:ASN:HB3	1:B:412:LEU:HD13	1.79	0.63
1:B:99:VAL:HG11	1:B:104:MET:HG2	1.79	0.63
1:A:46:THR:C	1:A:219:ARG:HE	2.02	0.63
1:A:344:GLU:CD	1:A:345:MET:H	2.02	0.63
1:B:208:ASP:HB3	1:B:211:GLN:HG3	1.80	0.63
1:B:248:LYS:O	1:B:251:GLN:HB2	1.98	0.63
1:A:16:GLY:O	1:A:22:LYS:HD3	1.98	0.63
1:B:77:CYS:O	1:B:78:GLY:C	2.37	0.63
1:A:219:ARG:HD2	1:A:221:PHE:CE2	2.34	0.62
1:B:124:PHE:CE2	1:B:166:ILE:HA	2.35	0.62
1:A:173:THR:HG23	1:A:175:ALA:N	2.14	0.61
1:B:48:LYS:HZ2	1:B:103:THR:HG21	1.62	0.61
1:A:390:SER:H	1:A:393:ILE:HD11	1.64	0.61
1:B:262:GLU:HG2	1:B:267:VAL:HG12	1.82	0.61
1:B:102:ALA:O	1:B:106:SER:HB3	2.00	0.61
1:A:124:PHE:CE2	1:A:166:ILE:HA	2.35	0.61
1:B:105:LEU:N	1:B:105:LEU:CD2	2.64	0.61
1:B:246:LEU:C	1:B:246:LEU:HD12	2.21	0.61
1:B:148:GLN:HG3	1:B:162:GLN:NE2	2.15	0.61
1:B:171:LYS:HE2	1:B:171:LYS:CA	2.31	0.61
1:B:101:MET:CE	1:B:407:MET:SD	2.89	0.60
1:B:325:VAL:HG12	1:B:385:PRO:HB2	1.82	0.60
1:A:156:LYS:O	1:A:160:LEU:HD23	2.01	0.60
1:B:16:GLY:H	1:B:22:LYS:HD3	1.64	0.60
1:A:395:THR:HG22	1:A:411:GLY:O	2.01	0.60
1:A:216:LEU:HG	1:A:243:ILE:HG12	1.83	0.60
1:A:99:VAL:HG12	1:A:104:MET:HG3	1.84	0.60
1:B:105:LEU:HD12	1:B:396:VAL:HG21	1.83	0.60
1:B:17:HIS:HB2	1:B:129:THR:CG2	2.29	0.60
1:A:215:MET:HE1	1:A:297:ILE:HG13	1.82	0.60
1:B:144:LEU:HD23	1:B:178:VAL:HG21	1.84	0.59

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:373:VAL:HA	1:A:378:ILE:HG22	1.84	0.59
1:B:94:ALA:CB	1:B:99:VAL:HG13	2.28	0.59
1:A:353:ALA:O	1:A:354:LYS:HB2	2.01	0.59
1:B:254:LYS:HA	1:B:272:ILE:O	2.02	0.59
1:B:401:ILE:CG2	1:B:406:ARG:HD3	2.33	0.59
1:B:37:HIS:CG	1:B:37:HIS:O	2.52	0.58
1:A:91:PHE:C	1:A:92:ILE:HD12	2.24	0.58
1:B:148:GLN:HG3	1:B:162:GLN:HE21	1.68	0.58
1:A:340:VAL:HA	1:A:345:MET:HE1	1.84	0.58
1:A:401:ILE:HG23	1:A:402:ALA:H	1.68	0.58
1:A:224:ASN:HD21	1:A:234:LYS:H	1.51	0.58
1:B:354:LYS:HA	1:B:369:ILE:HD11	1.86	0.58
1:B:78:GLY:O	1:B:79:SER:CB	2.52	0.58
1:A:42:LYS:HG3	5:A:453:HOH:O	2.03	0.58
1:A:48:LYS:HE2	1:A:103:THR:OG1	2.03	0.58
1:B:27:GLN:HG2	1:B:32:ILE:O	2.04	0.58
1:B:399:ARG:O	1:B:405:TRP:HA	2.03	0.58
1:A:46:THR:HG22	1:A:47:ILE:HG22	1.86	0.57
1:B:337:GLU:N	1:B:337:GLU:CD	2.58	0.57
1:A:280:ARG:HB3	1:A:280:ARG:CZ	2.34	0.57
1:A:121:ASN:N	1:A:121:ASN:HD22	2.02	0.57
1:A:347:LYS:HB2	1:A:347:LYS:NZ	2.20	0.57
1:A:208:ASP:HB3	1:A:211:GLN:HG3	1.87	0.57
1:A:280:ARG:NH2	1:A:282:GLY:O	2.38	0.57
1:A:6:VAL:CG2	1:A:7:GLN:H	2.17	0.56
1:A:168:GLN:HA	1:A:171:LYS:HB2	1.87	0.56
1:A:97:HIS:O	1:A:98:GLU:HB3	2.02	0.56
1:B:138:ILE:CD1	1:B:407:MET:HB2	2.36	0.56
1:B:337:GLU:H	1:B:337:GLU:CD	2.09	0.56
1:B:8:PRO:HG2	1:B:293:GLY:HA3	1.86	0.56
1:B:397:ILE:HD12	1:B:397:ILE:N	2.21	0.56
1:B:133:PHE:O	1:B:174:TRP:HH2	1.89	0.56
1:A:68:TYR:CE1	1:A:196:GLU:HG3	2.40	0.56
1:A:141:VAL:HG13	1:A:141:VAL:O	2.05	0.56
1:B:148:GLN:NE2	1:B:162:GLN:HE21	2.01	0.56
1:B:338:ARG:HG3	1:B:338:ARG:HH11	1.71	0.55
1:B:120:ALA:HA	1:B:162:GLN:HE22	1.70	0.55
1:A:375:LYS:HG2	1:A:376:ASP:OD2	2.06	0.55
1:A:352:ARG:O	1:A:355:GLU:HG2	2.07	0.55
1:B:105:LEU:C	1:B:107:GLY:H	2.09	0.55
1:B:25:LEU:O	1:B:29:ILE:HG13	2.07	0.55
1:A:127:PRO:HA	1:A:130:ARG:HG3	1.89	0.55

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:167:LYS:HE2	5:A:486:HOH:O	2.06	0.55
1:A:312:LEU:HD12	1:A:313:GLY:H	1.68	0.55
1:A:95:PRO:O	1:A:97:HIS:N	2.40	0.54
1:B:346:LEU:HD23	1:B:346:LEU:N	2.21	0.54
1:A:260:ARG:HB3	4:A:418:PPV:O11	2.06	0.54
1:A:42:LYS:HA	5:A:453:HOH:O	2.08	0.54
1:B:153:VAL:O	1:B:153:VAL:HG12	2.07	0.54
1:B:224:ASN:HD21	1:B:234:LYS:H	1.53	0.54
1:B:263:LYS:CD	1:B:264:GLN:HE21	2.20	0.54
1:B:284:GLU:HB2	1:B:286:PHE:CE1	2.43	0.54
1:B:26:VAL:HG11	1:B:34:THR:HG21	1.90	0.54
1:A:352:ARG:HE	1:A:355:GLU:HB3	1.72	0.54
1:B:184:SER:HB3	1:B:189:ILE:HB	1.89	0.54
1:A:279:ILE:HG21	1:A:289:ALA:HB2	1.90	0.54
1:A:108:ALA:HB1	1:A:139:ILE:HG23	1.89	0.53
1:B:406:ARG:HG2	1:B:406:ARG:HH11	1.73	0.53
1:A:39:GLU:HG2	1:A:43:ARG:HB2	1.88	0.53
1:B:337:GLU:N	1:B:337:GLU:OE2	2.35	0.53
1:A:280:ARG:HH21	3:A:417:GNP:H2'	1.73	0.53
1:A:6:VAL:CG2	1:A:7:GLN:N	2.70	0.53
1:B:111:MET:CE	1:B:114:ALA:HB2	2.39	0.53
1:A:12:ILE:O	1:A:91:PHE:HA	2.08	0.53
1:A:249:VAL:HG23	1:A:287:LYS:O	2.08	0.53
1:A:194:LEU:O	1:A:198:ILE:HG23	2.08	0.53
1:A:338:ARG:HB2	1:A:346:LEU:O	2.08	0.53
1:A:209:LEU:HD22	1:A:246:LEU:HD23	1.91	0.53
1:B:345:MET:HG3	1:B:345:MET:O	2.08	0.53
1:A:138:ILE:HG21	1:A:407:MET:HE2	1.91	0.53
1:B:108:ALA:HB1	1:B:139:ILE:CD1	2.27	0.52
1:A:218:ILE:HA	1:A:312:LEU:HD13	1.91	0.52
1:A:340:VAL:HA	1:A:345:MET:HE2	1.90	0.52
1:A:281:PHE:HB2	1:A:286:PHE:CE1	2.44	0.52
1:A:280:ARG:HH12	1:A:283:ASP:C	2.13	0.52
1:B:37:HIS:C	1:B:37:HIS:HD1	2.13	0.52
1:B:105:LEU:N	1:B:105:LEU:HD22	2.24	0.52
1:A:39:GLU:CG	1:A:43:ARG:HB2	2.40	0.52
1:B:94:ALA:CB	1:B:99:VAL:HG22	2.40	0.52
1:A:130:ARG:HB3	5:A:441:HOH:O	2.08	0.52
1:A:160:LEU:O	1:A:164:ARG:HG2	2.10	0.52
1:A:42:LYS:O	1:A:42:LYS:HG2	2.10	0.52
1:B:63:LYS:O	1:B:66:GLU:HG2	2.10	0.52
1:A:136:LEU:HB3	1:A:141:VAL:CG1	2.40	0.52

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:246:LEU:HD12	1:A:246:LEU:C	2.30	0.52
1:A:391:ASN:HD22	1:A:391:ASN:C	2.14	0.52
1:A:79:SER:HB3	1:A:81:ASP:HB2	1.93	0.51
1:B:125:PRO:HG3	1:B:169:PHE:CE2	2.45	0.51
1:B:338:ARG:CA	1:B:347:LYS:HA	2.39	0.51
1:B:146:ILE:HG13	1:B:178:VAL:HG11	1.91	0.51
1:A:168:GLN:HG2	1:A:168:GLN:O	2.11	0.51
1:A:119:ALA:CB	1:A:122:GLU:HG3	2.39	0.51
1:A:260:ARG:HH22	1:A:267:VAL:CG1	2.24	0.51
1:A:88:ARG:HG3	1:A:88:ARG:NH1	2.25	0.51
1:B:317:THR:HG21	1:B:323:VAL:HG21	1.91	0.51
1:B:229:GLN:HG2	5:B:459:HOH:O	2.10	0.51
1:B:324:PRO:HD2	1:B:388:VAL:O	2.11	0.51
1:B:88:ARG:HH11	1:B:88:ARG:HG3	1.76	0.51
1:A:258:GLY:HA3	1:A:271:PRO:HA	1.93	0.51
1:A:235:GLY:HA2	1:B:230:PHE:CE1	2.46	0.51
1:B:337:GLU:O	1:B:347:LYS:HB3	2.11	0.51
1:A:3:TRP:CZ2	1:A:83:PRO:HG2	2.46	0.51
1:B:160:LEU:O	1:B:164:ARG:HG2	2.10	0.51
1:A:345:MET:HE2	1:A:345:MET:HA	1.92	0.51
1:B:116:LEU:HB2	1:B:144:LEU:HD11	1.93	0.51
1:B:130:ARG:O	1:B:134:VAL:HG23	2.11	0.51
1:A:397:ILE:HD12	1:A:410:TRP:HA	1.93	0.50
1:A:229:GLN:HG2	5:A:474:HOH:O	2.12	0.50
1:B:48:LYS:HZ3	1:B:103:THR:HG21	1.76	0.50
1:A:101:MET:O	1:A:105:LEU:CD1	2.59	0.50
1:B:216:LEU:CD1	1:B:243:ILE:HD11	2.42	0.50
1:A:18:VAL:HG13	1:A:18:VAL:O	2.11	0.50
1:B:16:GLY:N	1:B:22:LYS:HD3	2.25	0.50
1:B:388:VAL:HG11	1:B:415:ILE:HG21	1.94	0.50
1:B:263:LYS:HD3	1:B:264:GLN:HE21	1.77	0.49
1:A:98:GLU:HG2	1:A:132:HIS:NE2	2.27	0.49
1:A:228:THR:HG21	1:A:233:LEU:HB3	1.94	0.49
1:B:404:ARG:HG2	1:B:404:ARG:HH11	1.76	0.49
1:A:406:ARG:HH11	1:A:406:ARG:HG2	1.76	0.49
1:A:127:PRO:O	1:A:130:ARG:HG3	2.12	0.49
1:A:99:VAL:HG23	1:A:100:LEU:N	2.21	0.49
1:B:218:ILE:O	1:B:312:LEU:HD13	2.12	0.49
1:B:37:HIS:C	1:B:37:HIS:ND1	2.65	0.49
1:B:217:VAL:HG13	1:B:238:ILE:HG23	1.95	0.49
1:B:258:GLY:HA3	1:B:271:PRO:HA	1.94	0.49
1:A:22:LYS:HB2	1:A:22:LYS:NZ	2.28	0.49

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:260:ARG:HH22	1:A:267:VAL:HG11	1.77	0.49
1:A:125:PRO:HG3	1:A:169:PHE:CE2	2.48	0.49
1:B:188:LYS:HD2	1:B:188:LYS:N	2.28	0.49
1:A:198:ILE:HG13	1:A:198:ILE:O	2.12	0.49
1:A:266:LYS:HB2	1:A:266:LYS:HZ2	1.77	0.49
1:B:352:ARG:HG2	1:B:353:ALA:N	2.28	0.48
1:A:170:THR:CA	1:A:173:THR:HG22	2.43	0.48
1:A:44:GLY:HA2	3:A:417:GNP:O3'	2.12	0.48
1:B:18:VAL:HG21	1:B:97:HIS:CG	2.47	0.48
1:B:105:LEU:HD11	1:B:396:VAL:HG11	1.95	0.48
1:B:127:PRO:HA	5:B:467:HOH:O	2.12	0.48
1:A:184:SER:HB3	1:A:189:ILE:HB	1.95	0.48
1:A:12:ILE:CD1	1:A:198:ILE:HD12	2.43	0.48
1:B:338:ARG:HB2	1:B:346:LEU:O	2.12	0.48
1:A:347:LYS:HB2	1:A:347:LYS:HZ3	1.78	0.48
1:A:121:ASN:H	1:A:121:ASN:ND2	2.09	0.48
1:B:10:VAL:HG23	1:B:112:ASP:HB2	1.94	0.48
1:B:157:GLU:HG2	1:B:158:GLU:N	2.29	0.48
1:B:260:ARG:HH12	1:B:262:GLU:CD	2.17	0.48
1:A:27:GLN:HA	1:A:32:ILE:O	2.14	0.48
1:B:352:ARG:HE	1:B:355:GLU:HB2	1.78	0.48
1:A:34:THR:HB	1:A:50:GLY:HA3	1.94	0.48
1:B:401:ILE:O	1:B:401:ILE:HG23	2.14	0.48
1:B:96:GLY:O	1:B:97:HIS:CB	2.62	0.47
1:B:262:GLU:HG2	1:B:267:VAL:CG1	2.44	0.47
1:A:136:LEU:O	1:A:141:VAL:HG12	2.13	0.47
1:A:148:GLN:NE2	1:A:162:GLN:HB3	2.28	0.47
1:B:132:HIS:O	1:B:136:LEU:HG	2.14	0.47
1:B:18:VAL:HG12	1:B:128:GLN:HE22	1.79	0.47
1:B:407:MET:H	1:B:407:MET:HG2	1.38	0.47
1:A:256:LEU:HA	1:A:257:PRO:C	2.34	0.47
1:A:46:THR:CG2	1:A:47:ILE:H	2.19	0.47
1:A:185:ALA:N	2:A:416:GDP:O6	2.45	0.47
1:B:14:VAL:HB	1:B:93:ASP:HB3	1.97	0.47
1:A:341:GLY:HA3	1:A:345:MET:O	2.14	0.47
1:A:334:ASN:ND2	5:A:478:HOH:O	2.47	0.47
1:B:3:TRP:CZ2	1:B:83:PRO:HG2	2.49	0.47
1:B:209:LEU:H	1:B:209:LEU:CD1	2.14	0.47
1:B:88:ARG:HG3	1:B:88:ARG:NH1	2.30	0.47
1:B:326:LEU:O	1:B:385:PRO:HA	2.15	0.47
1:A:15:VAL:HG23	1:A:116:LEU:HD23	1.96	0.47
1:B:5:LYS:CE	1:B:284:GLU:HB3	2.33	0.47

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:138:ILE:HD12	1:B:407:MET:HE2	1.97	0.47
1:B:12:ILE:HD13	1:B:89:ILE:HD12	1.95	0.47
1:A:224:ASN:HD22	1:A:228:THR:HG21	1.80	0.47
1:B:22:LYS:HB2	2:B:416:GDP:O1B	2.15	0.46
1:A:175:ALA:HA	1:A:178:VAL:HG23	1.97	0.46
1:B:94:ALA:HB1	1:B:99:VAL:HG22	1.98	0.46
1:A:88:ARG:HG3	1:A:88:ARG:HH11	1.79	0.46
1:B:95:PRO:O	1:B:97:HIS:N	2.48	0.46
1:A:46:THR:CA	1:A:219:ARG:HG3	2.37	0.46
1:B:120:ALA:HA	1:B:162:GLN:NE2	2.28	0.46
1:B:75:LYS:O	1:B:77:CYS:O	2.32	0.46
1:A:224:ASN:ND2	1:A:228:THR:HG21	2.30	0.46
1:A:295:VAL:HG22	1:A:296:ALA:N	2.29	0.46
1:A:305:LEU:O	1:A:310:ASN:HB3	2.16	0.46
1:A:175:ALA:O	1:A:176:GLU:C	2.54	0.46
1:A:341:GLY:H	1:A:345:MET:HA	1.80	0.46
1:A:203:LYS:HB3	1:A:203:LYS:HZ2	1.80	0.46
1:A:194:LEU:O	1:A:198:ILE:CG2	2.63	0.46
1:A:218:ILE:HG12	1:A:240:GLY:HA2	1.97	0.46
1:B:400:GLN:OE1	1:B:400:GLN:HA	2.15	0.46
1:B:11:ASN:OD1	1:B:293:GLY:N	2.37	0.46
1:A:302:ASP:OD1	1:B:222:ASP:OD2	2.34	0.46
1:A:290:LYS:HB3	1:A:291:PRO:CD	2.46	0.46
1:A:280:ARG:HH21	3:A:417:GNP:C2'	2.29	0.46
1:B:328:ASN:HA	1:B:380:VAL:O	2.16	0.46
1:A:32:ILE:CG2	1:A:37:HIS:CE1	2.99	0.46
1:B:105:LEU:CD1	1:B:396:VAL:HG11	2.46	0.46
1:B:105:LEU:HD23	1:B:105:LEU:H	1.81	0.46
1:B:284:GLU:HB2	1:B:286:PHE:HE1	1.79	0.46
1:A:17:HIS:C	1:A:17:HIS:CD2	2.89	0.46
1:A:336:LEU:O	1:A:348:VAL:HG21	2.16	0.46
1:B:281:PHE:O	1:B:284:GLU:HG3	2.16	0.45
1:A:27:GLN:CD	1:A:33:TRP:HD1	2.20	0.45
1:B:196:GLU:O	1:B:200:GLU:HG3	2.17	0.45
1:B:179:PRO:HG3	1:B:201:TYR:CD2	2.51	0.45
1:B:336:LEU:O	1:B:348:VAL:HB	2.15	0.45
1:A:75:LYS:O	1:A:77:CYS:N	2.50	0.45
1:A:248:LYS:O	1:A:251:GLN:HG3	2.16	0.45
1:B:338:ARG:CB	1:B:347:LYS:HA	2.47	0.45
1:B:210:SER:O	1:B:211:GLN:C	2.55	0.45
1:A:280:ARG:HH12	1:A:283:ASP:CA	2.28	0.45
1:B:255:VAL:HG22	1:B:316:ILE:HD13	1.98	0.45

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:105:LEU:CD2	1:B:105:LEU:H	2.30	0.45
1:A:306:THR:O	1:A:307:LYS:C	2.54	0.45
1:B:37:HIS:O	1:B:41:LEU:HD12	2.16	0.45
1:B:101:MET:HE1	1:B:407:MET:HG2	1.98	0.45
1:A:399:ARG:HB2	1:A:408:ILE:HD13	1.98	0.45
1:A:223:VAL:N	5:A:472:HOH:O	2.48	0.45
1:A:170:THR:HB	1:A:175:ALA:HB3	1.98	0.45
1:A:332:LYS:HA	1:A:376:ASP:O	2.16	0.45
1:A:12:ILE:HD13	1:A:198:ILE:HD12	1.98	0.45
1:B:105:LEU:CD1	1:B:396:VAL:HG21	2.47	0.45
1:B:369:ILE:HG23	1:B:381:GLU:HB3	1.98	0.44
1:B:260:ARG:HD2	1:B:269:TYR:CZ	2.52	0.44
1:B:43:ARG:HA	1:B:43:ARG:NE	2.32	0.44
1:B:224:ASN:HA	5:B:501:HOH:O	2.17	0.44
1:B:186:LEU:HB2	2:B:416:GDP:C5	2.52	0.44
1:B:144:LEU:HG	1:B:145:ILE:N	2.32	0.44
1:B:255:VAL:HG22	1:B:316:ILE:CD1	2.47	0.44
1:B:266:LYS:HD2	1:B:266:LYS:H	1.83	0.44
1:B:346:LEU:H	1:B:346:LEU:HD23	1.83	0.44
1:B:306:THR:O	1:B:307:LYS:C	2.56	0.44
1:B:108:ALA:CB	1:B:139:ILE:HD12	2.31	0.44
1:B:261:VAL:O	1:B:261:VAL:HG23	2.18	0.44
1:B:16:GLY:O	1:B:17:HIS:C	2.55	0.44
1:A:92:ILE:HD12	1:A:92:ILE:N	2.32	0.44
1:A:99:VAL:O	1:A:103:THR:HB	2.18	0.44
1:A:74:CYS:HB2	1:A:79:SER:HB2	2.00	0.44
1:A:406:ARG:HG2	1:A:406:ARG:NH1	2.32	0.44
1:A:105:LEU:HD13	1:A:360:SER:OG	2.18	0.44
1:A:203:LYS:NZ	1:A:203:LYS:HB3	2.33	0.44
1:B:266:LYS:HD2	1:B:266:LYS:N	2.32	0.44
1:B:290:LYS:HB3	1:B:291:PRO:CD	2.47	0.44
1:A:216:LEU:HG	1:A:243:ILE:CG1	2.48	0.44
1:A:218:ILE:HD11	1:A:294:LEU:HD22	2.00	0.43
1:A:130:ARG:O	1:A:133:PHE:HB3	2.18	0.43
1:B:171:LYS:O	1:B:176:GLU:HG3	2.18	0.43
1:A:18:VAL:O	1:A:19:ASP:CB	2.62	0.43
1:A:110:LEU:CD2	1:A:241:SER:HB3	2.47	0.43
1:A:55:ASN:HA	1:A:88:ARG:HA	2.00	0.43
1:B:60:GLU:OE2	1:B:84:LYS:HE3	2.18	0.43
1:B:94:ALA:HB2	1:B:99:VAL:CG1	2.35	0.43
1:A:16:GLY:O	1:A:17:HIS:C	2.55	0.43
1:B:401:ILE:O	1:B:401:ILE:CG2	2.66	0.43

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:11:ASN:HB3	1:B:92:ILE:HD11	1.99	0.43
1:B:346:LEU:H	1:B:346:LEU:CD2	2.30	0.43
1:A:186:LEU:HB2	2:A:416:GDP:C5	2.52	0.43
1:A:260:ARG:NH2	1:A:267:VAL:HG12	2.34	0.43
1:B:224:ASN:HD21	1:B:234:LYS:N	2.16	0.43
1:A:32:ILE:HG23	1:A:37:HIS:NE2	2.34	0.43
1:B:399:ARG:HG2	1:B:400:GLN:N	2.33	0.43
1:B:231:ASN:ND2	5:B:444:HOH:O	2.52	0.43
1:B:327:TRP:CH2	1:B:385:PRO:HD3	2.54	0.43
1:A:333:TYR:HE2	1:A:378:ILE:HG23	1.77	0.43
1:B:146:ILE:HG13	1:B:178:VAL:CG1	2.49	0.43
1:B:286:PHE:CD1	1:B:286:PHE:N	2.87	0.43
1:A:48:LYS:CE	1:A:103:THR:OG1	2.67	0.43
1:B:305:LEU:O	1:B:310:ASN:HB3	2.19	0.43
1:A:143:ASN:HB3	1:A:201:TYR:O	2.19	0.43
1:A:124:PHE:CZ	1:A:166:ILE:HA	2.53	0.43
1:A:126:GLN:HB3	1:A:127:PRO:HD2	2.01	0.43
1:B:98:GLU:HB3	1:B:99:VAL:H	1.76	0.43
1:A:351:ILE:O	1:A:373:VAL:HG21	2.19	0.43
1:A:359:LEU:HD22	1:A:359:LEU:H	1.80	0.43
1:A:372:SER:HB3	1:A:379:GLU:HG3	2.00	0.43
1:A:60:GLU:OE1	1:A:60:GLU:HA	2.18	0.43
1:B:213:PRO:HG2	1:B:318:LEU:HD11	2.01	0.43
1:A:303:PRO:HB2	1:B:304:SER:OG	2.19	0.43
1:B:332:LYS:HA	1:B:376:ASP:O	2.19	0.42
1:B:18:VAL:O	1:B:19:ASP:HB2	2.19	0.42
1:A:96:GLY:HA2	2:A:416:GDP:O3B	2.19	0.42
1:A:39:GLU:OE2	1:A:43:ARG:HB2	2.20	0.42
1:B:89:ILE:HD11	1:B:91:PHE:CZ	2.54	0.42
1:A:401:ILE:CG2	1:A:402:ALA:N	2.80	0.42
1:A:392:ASN:HB3	1:A:412:LEU:CD1	2.40	0.42
1:B:341:GLY:HA3	1:B:346:LEU:HD21	2.01	0.42
1:A:142:LYS:HG2	1:A:143:ASN:N	2.34	0.42
1:B:246:LEU:HD12	1:B:247:PHE:N	2.34	0.42
1:A:42:LYS:HE2	1:A:280:ARG:NH1	2.35	0.42
1:B:343:LYS:O	1:B:343:LYS:HG2	2.19	0.42
1:B:40:GLU:HA	1:B:40:GLU:OE1	2.18	0.42
1:B:367:LEU:HD23	1:B:383:ARG:NH2	2.26	0.42
1:A:18:VAL:HA	2:A:416:GDP:O2B	2.19	0.42
1:A:224:ASN:HD21	1:A:233:LEU:HA	1.83	0.42
1:A:280:ARG:HH12	1:A:283:ASP:HA	1.85	0.42
1:B:353:ALA:O	1:B:354:LYS:HB2	2.19	0.42

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:170:THR:HA	1:A:173:THR:CG2	2.46	0.42
1:A:99:VAL:HA	1:A:104:MET:HG3	2.01	0.42
1:A:339:VAL:HG12	1:A:346:LEU:HB3	2.01	0.42
1:A:46:THR:HG21	1:A:49:LEU:CD1	2.44	0.42
1:A:110:LEU:HD22	1:A:241:SER:CB	2.48	0.42
1:A:280:ARG:HG2	1:A:285:GLU:HG2	2.00	0.42
1:B:212:LYS:HG2	1:B:244:GLN:NE2	2.35	0.42
1:A:49:LEU:HD13	1:A:92:ILE:HG23	2.01	0.42
1:B:47:ILE:HG22	1:B:49:LEU:H	1.84	0.42
1:A:186:LEU:HA	1:A:186:LEU:HD23	1.81	0.42
1:A:305:LEU:HA	1:A:305:LEU:HD12	1.80	0.42
1:A:160:LEU:HA	1:A:160:LEU:HD13	1.93	0.41
1:A:399:ARG:HB3	1:A:408:ILE:HG21	2.01	0.41
1:B:158:GLU:O	1:B:161:SER:HB3	2.20	0.41
1:B:98:GLU:HG3	1:B:100:LEU:CD1	2.49	0.41
1:B:3:TRP:CZ2	1:B:57:GLY:HA3	2.56	0.41
1:A:384:ARG:HD3	5:A:483:HOH:O	2.20	0.41
1:B:166:ILE:O	1:B:170:THR:HG23	2.20	0.41
1:A:276:ILE:HG23	1:A:297:ILE:HG23	2.02	0.41
1:A:302:ASP:C	1:A:302:ASP:OD2	2.57	0.41
1:B:249:VAL:HG23	1:B:287:LYS:O	2.21	0.41
1:B:125:PRO:HG3	1:B:169:PHE:CD2	2.56	0.41
1:B:170:THR:O	1:B:176:GLU:HA	2.21	0.41
1:B:101:MET:HE3	1:B:407:MET:SD	2.60	0.41
1:B:215:MET:HG2	1:B:216:LEU:N	2.36	0.41
1:A:148:GLN:O	1:A:182:PRO:HA	2.19	0.41
1:B:18:VAL:HG23	1:B:97:HIS:HB2	2.03	0.41
1:B:352:ARG:NH2	1:B:355:GLU:HA	2.19	0.41
1:A:175:ALA:O	1:A:177:ASN:N	2.53	0.41
1:A:22:LYS:HE3	2:A:416:GDP:O2B	2.20	0.41
1:B:164:ARG:HH11	1:B:164:ARG:HG3	1.86	0.41
1:B:18:VAL:HG12	1:B:128:GLN:NE2	2.36	0.41
1:A:186:LEU:HG	2:A:416:GDP:H2'	2.03	0.41
1:A:243:ILE:HA	1:A:243:ILE:HD13	1.86	0.41
1:A:368:GLY:CA	1:A:381:GLU:O	2.69	0.41
1:B:108:ALA:CB	1:B:139:ILE:CD1	2.97	0.41
1:B:346:LEU:CD2	1:B:346:LEU:N	2.83	0.41
1:B:124:PHE:CE1	1:B:125:PRO:HB3	2.56	0.41
1:B:168:GLN:HA	1:B:168:GLN:OE1	2.20	0.41
1:A:401:ILE:CG2	1:A:402:ALA:H	2.32	0.41
1:B:256:LEU:HA	1:B:257:PRO:C	2.41	0.41
1:B:98:GLU:HG3	1:B:100:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:296:ALA:O	3:A:417:GNP:N2	2.51	0.41
1:B:239:GLY:HA2	1:B:295:VAL:O	2.21	0.40
1:B:338:ARG:HG3	1:B:338:ARG:NH1	2.36	0.40
1:A:25:LEU:HA	1:A:185:ALA:HB1	2.03	0.40
1:A:32:ILE:CG2	1:A:37:HIS:NE2	2.84	0.40
1:A:348:VAL:HA	5:A:424:HOH:O	2.21	0.40
1:A:75:LYS:C	1:A:77:CYS:H	2.25	0.40
1:A:221:PHE:CD1	1:A:221:PHE:N	2.87	0.40
1:B:105:LEU:HD11	1:B:407:MET:SD	2.62	0.40
1:A:336:LEU:O	1:A:348:VAL:CG2	2.70	0.40
1:A:155:SER:OG	1:A:157:GLU:HG2	2.22	0.40
1:B:18:VAL:CG1	1:B:128:GLN:HE22	2.35	0.40
1:B:43:ARG:CA	1:B:43:ARG:NE	2.85	0.40
1:B:20:HIS:ND1	1:B:118:VAL:HA	2.36	0.40
1:B:352:ARG:HH21	1:B:355:GLU:CA	2.22	0.40
1:B:172:GLY:HA2	1:B:176:GLU:CD	2.42	0.40
1:A:68:TYR:HE1	1:A:196:GLU:HG3	1.84	0.40
1:B:323:VAL:HA	1:B:324:PRO:HD3	1.77	0.40
1:A:75:LYS:C	1:A:77:CYS:N	2.75	0.40
1:B:315:ILE:HG13	1:B:315:ILE:O	2.21	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	412/415 (99%)	351 (85%)	44 (11%)	17 (4%)	4	8
1	B	412/415 (99%)	356 (86%)	40 (10%)	16 (4%)	5	9
All	All	824/830 (99%)	707 (86%)	84 (10%)	33 (4%)	5	8

All (33) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	19	ASP
1	A	38	SER
1	A	48	LYS
1	A	98	GLU
1	B	78	GLY
1	B	80	ASP
1	B	96	GLY
1	B	97	HIS
1	B	101	MET
1	B	402	ALA
1	A	42	LYS
1	A	96	GLY
1	A	142	LYS
1	A	176	GLU
1	A	391	ASN
1	B	22	LYS
1	B	35	SER
1	B	45	MET
1	B	171	LYS
1	A	76	SER
1	A	108	ALA
1	A	307	LYS
1	B	100	LEU
1	B	211	GLN
1	A	97	HIS
1	B	143	ASN
1	B	62	CYS
1	A	35	SER
1	A	346	LEU
1	A	402	ALA
1	B	79	SER
1	B	391	ASN
1	A	18	VAL

### 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	356/357 (100%)	327 (92%)	29 (8%)	17	34

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	356/357 (100%)	326 (92%)	30 (8%)	16	32
All	All	712/714 (100%)	653 (92%)	59 (8%)	16	33

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	HIS
1	A	33	TRP
1	A	36	LYS
1	A	60	GLU
1	A	66	GLU
1	A	79	SER
1	A	98	GLU
1	A	104	MET
1	A	116	LEU
1	A	121	ASN
1	A	125	PRO
1	A	174	TRP
1	A	186	LEU
1	A	198	ILE
1	A	203	LYS
1	A	221	PHE
1	A	233	LEU
1	A	234	LYS
1	A	252	GLU
1	A	262	GLU
1	A	283	ASP
1	A	287	LYS
1	A	290	LYS
1	A	305	LEU
1	A	337	GLU
1	A	344	GLU
1	A	346	LEU
1	A	352	ARG
1	A	391	ASN
1	B	25	LEU
1	B	36	LYS
1	B	37	HIS
1	B	38	SER
1	B	39	GLU
1	B	53	GLU
1	B	66	GLU

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Mol	Chain	Res	Type
1	B	79	SER
1	B	99	VAL
1	B	101	MET
1	B	104	MET
1	B	105	LEU
1	B	110	LEU
1	B	116	LEU
1	B	118	VAL
1	B	171	LYS
1	B	174	TRP
1	B	186	LEU
1	B	209	LEU
1	B	221	PHE
1	B	223	VAL
1	B	246	LEU
1	B	251	GLN
1	B	284	GLU
1	B	290	LYS
1	B	305	LEU
1	B	326	LEU
1	B	338	ARG
1	B	404	ARG
1	B	407	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	7	GLN
1	A	17	HIS
1	A	27	GLN
1	A	121	ASN
1	A	128	GLN
1	A	224	ASN
1	A	391	ASN
1	B	128	GLN
1	B	162	GLN
1	B	224	ASN
1	B	231	ASN
1	B	251	GLN
1	B	264	GLN
1	B	310	ASN
1	B	334	ASN



### 5.3.3 RNA ⓘ

There are no RNA chains 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 ⓘ

9 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	GDP	A	416	-	30,30,30	1.42	3 (10%)	44,47,47	2.05	8 (18%)
3	GNP	A	417	-	34,34,34	4.61	12 (35%)	50,54,54	2.55	10 (20%)
4	PPV	A	418	-	8,8,8	2.19	2 (25%)	13,13,13	2.08	1 (7%)
4	PPV	A	419	-	8,8,8	2.27	4 (50%)	13,13,13	2.05	1 (7%)
4	PPV	A	420	-	8,8,8	2.24	5 (62%)	13,13,13	2.07	1 (7%)
2	GDP	B	416	-	30,30,30	1.40	6 (20%)	44,47,47	2.17	8 (18%)
4	PPV	B	417	-	8,8,8	2.21	3 (37%)	13,13,13	2.08	1 (7%)
4	PPV	B	418	-	8,8,8	2.30	5 (62%)	13,13,13	2.04	1 (7%)
4	PPV	B	419	-	8,8,8	2.21	3 (37%)	13,13,13	2.07	1 (7%)

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	GDP	A	416	-	-	0/16/32/32	0/1/3/3
3	GNP	A	417	-	-	0/18/38/38	0/1/3/3
4	PPV	A	418	-	-	0/6/6/6	0/0/0/0
4	PPV	A	419	-	-	0/6/6/6	0/0/0/0
4	PPV	A	420	-	-	0/6/6/6	0/0/0/0
2	GDP	B	416	-	-	0/16/32/32	0/1/3/3
4	PPV	B	417	-	-	0/6/6/6	0/0/0/0
4	PPV	B	418	-	-	0/6/6/6	0/0/0/0
4	PPV	B	419	-	-	0/6/6/6	0/0/0/0

All (43) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	417	GNP	PB-O1B	12.42	1.61	1.46
3	A	417	GNP	PG-N3B	11.36	1.74	1.64
3	A	417	GNP	PB-N3B	10.70	1.73	1.64
3	A	417	GNP	PG-O1G	10.04	1.58	1.46
3	A	417	GNP	PB-O3A	9.05	1.71	1.59
3	A	417	GNP	PG-O2G	5.70	1.72	1.55
3	A	417	GNP	PG-O3G	5.62	1.71	1.55
3	A	417	GNP	PB-O2B	5.49	1.71	1.55
2	A	416	GDP	O4'-C1'	3.36	1.46	1.41
3	A	417	GNP	C2-N2	3.30	1.37	1.32
2	B	416	GDP	O4'-C1'	3.25	1.46	1.41
2	B	416	GDP	C2-N2	3.19	1.37	1.32
3	A	417	GNP	PA-O3A	3.16	1.65	1.59
2	A	416	GDP	C2-N2	3.13	1.37	1.32
4	B	418	PPV	P1-O31	3.12	1.61	1.51
4	B	418	PPV	P2-O22	3.12	1.61	1.51
4	A	419	PPV	P2-O22	3.10	1.61	1.51
4	A	418	PPV	P2-O22	3.07	1.61	1.51
4	A	419	PPV	P1-O31	3.06	1.61	1.51
4	B	419	PPV	P2-O22	3.05	1.61	1.51
4	A	420	PPV	P1-O31	3.03	1.61	1.51
4	B	417	PPV	P1-O31	3.03	1.61	1.51
4	B	419	PPV	P1-O31	3.00	1.61	1.51
4	A	418	PPV	P1-O31	2.98	1.61	1.51
4	A	420	PPV	P2-O22	2.95	1.61	1.51
4	B	417	PPV	P2-O22	2.94	1.61	1.51
3	A	417	GNP	C8-N7	-2.53	1.29	1.34
2	A	416	GDP	PA-O3A	2.43	1.64	1.59
4	A	419	PPV	P1-OPP	2.25	1.64	1.60
4	B	418	PPV	P1-OPP	2.24	1.64	1.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	416	GDP	PA-O3A	2.19	1.63	1.59
4	A	419	PPV	P2-OPP	2.15	1.63	1.60
4	B	418	PPV	P2-OPP	2.13	1.63	1.60
2	B	416	GDP	C6-C5	2.11	1.44	1.41
4	A	420	PPV	P1-OPP	2.09	1.63	1.60
4	B	419	PPV	P2-OPP	2.09	1.63	1.60
4	A	420	PPV	P2-OPP	2.09	1.63	1.60
3	A	417	GNP	O4'-C1'	2.06	1.44	1.41
4	B	417	PPV	P1-OPP	2.05	1.63	1.60
2	B	416	GDP	PB-O2B	2.03	1.62	1.54
2	B	416	GDP	PB-O3B	2.01	1.62	1.54
4	A	420	PPV	P1-O21	2.01	1.62	1.54
4	B	418	PPV	P1-O21	2.01	1.62	1.54

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	417	GNP	PB-N3B-PG	-12.74	108.64	130.07
4	A	418	PPV	P2-OPP-P1	-7.22	110.50	131.68
4	B	417	PPV	P2-OPP-P1	-7.20	110.58	131.68
4	B	419	PPV	P2-OPP-P1	-7.16	110.67	131.68
4	A	420	PPV	P2-OPP-P1	-7.16	110.68	131.68
4	A	419	PPV	P2-OPP-P1	-7.08	110.92	131.68
4	B	418	PPV	P2-OPP-P1	-7.08	110.93	131.68
2	A	416	GDP	PA-O3A-PB	-6.96	111.27	131.68
2	B	416	GDP	PA-O3A-PB	-6.96	111.29	131.68
2	B	416	GDP	C6-C5-N7	6.30	134.99	134.14
3	A	417	GNP	N3-C4-N9	5.44	134.89	126.91
2	A	416	GDP	N3-C4-N9	5.15	134.47	126.91
2	B	416	GDP	N3-C4-N9	5.04	134.30	126.91
2	B	416	GDP	C2-N3-C4	4.65	121.62	115.09
2	A	416	GDP	C2-N3-C4	4.53	121.46	115.09
3	A	417	GNP	PA-O3A-PB	-4.46	116.58	131.81
2	A	416	GDP	C5-C4-N3	-4.37	119.61	125.94
3	A	417	GNP	C2-N3-C4	4.37	121.23	115.09
2	B	416	GDP	C5-C4-N3	-4.24	119.80	125.94
3	A	417	GNP	C5-C4-N3	-4.23	119.82	125.94
3	A	417	GNP	C4'-O4'-C1'	-3.76	105.67	109.75
2	A	416	GDP	C3'-C2'-C1'	3.73	106.75	100.91
2	A	416	GDP	C6-C5-N7	3.69	134.64	134.14
2	B	416	GDP	C3'-C2'-C1'	3.34	106.14	100.91
2	A	416	GDP	O4'-C1'-N9	2.84	111.08	108.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	416	GDP	O4'-C1'-N9	2.73	110.98	108.44
3	A	417	GNP	O4'-C1'-N9	2.66	110.92	108.44
2	B	416	GDP	C4-C5-N7	-2.55	107.33	109.52
2	A	416	GDP	C4-C5-N7	-2.54	107.34	109.52
3	A	417	GNP	C3'-C2'-C1'	2.53	104.87	100.91
3	A	417	GNP	O1G-PG-N3B	-2.32	108.33	111.83
3	A	417	GNP	C4-C5-N7	-2.10	107.73	109.52

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues

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, 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	414/415 (99%)	0.43	25 (6%) 21 22	31, 53, 122, 162	0
1	B	414/415 (99%)	0.46	26 (6%) 19 20	31, 54, 121, 165	0
All	All	828/830 (99%)	0.45	51 (6%) 19 21	31, 54, 122, 165	0

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	45	MET	6.6
1	B	44	GLY	6.3
1	B	37	HIS	6.1
1	A	46	THR	5.6
1	B	38	SER	5.1
1	B	34	THR	5.0
1	B	46	THR	5.0
1	A	43	ARG	4.8
1	B	47	ILE	4.7
1	B	41	LEU	4.7
1	A	99	VAL	4.3
1	B	101	MET	4.1
1	B	97	HIS	4.0
1	A	44	GLY	3.9
1	B	48	LYS	3.7
1	A	35	SER	3.7
1	B	20	HIS	3.6
1	A	33	TRP	3.6
1	A	20	HIS	3.4
1	A	37	HIS	3.2
1	A	42	LYS	3.2
1	A	95	PRO	3.1
1	B	36	LYS	3.1
1	A	97	HIS	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	17	HIS	3.0
1	A	96	GLY	2.9
1	A	47	ILE	2.9
1	B	343	LYS	2.9
1	B	43	ARG	2.9
1	A	34	THR	2.8
1	B	352	ARG	2.8
1	B	96	GLY	2.7
1	B	105	LEU	2.6
1	A	102	ALA	2.6
1	A	38	SER	2.6
1	B	45	MET	2.5
1	B	40	GLU	2.5
1	B	19	ASP	2.5
1	A	32	ILE	2.5
1	B	17	HIS	2.4
1	B	42	LYS	2.4
1	B	32	ILE	2.3
1	B	102	ALA	2.3
1	A	19	ASP	2.3
1	A	101	MET	2.3
1	B	339	VAL	2.3
1	B	35	SER	2.2
1	A	342	ALA	2.1
1	A	39	GLU	2.1
1	A	36	LYS	2.1
1	A	48	LYS	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

## 6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 6.4 Ligands ⓘ

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	RSR	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
4	PPV	A	419	9/9	0.64	28.56	197,197,198,198	0
4	PPV	B	419	9/9	0.40	17.13	173,174,175,175	0
4	PPV	B	418	9/9	0.70	14.57	197,198,198,198	0
4	PPV	A	420	9/9	0.40	8.69	166,167,168,168	0
4	PPV	A	418	9/9	0.45	7.29	183,184,184,184	0
4	PPV	B	417	9/9	0.38	6.12	182,183,186,186	0
2	GDP	B	416	28/28	0.25	-0.02	127,136,145,146	0
2	GDP	A	416	28/28	0.23	-0.23	118,131,142,143	0
3	GNP	A	417	32/32	0.22	-0.33	16,156,168,168	0

## 6.5 Other polymers ⓘ

There are no such residues in this entry.