



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 07:42 AM UTC

PDB ID : 6NO7 / pdb_00006no7
Title : Crystal Structure of the full-length wild-type PKA RIa Holoenzyme
Authors : Lu, T.; Wu, J.; Taylor, S.S.
Deposited on : 2019-01-15
Resolution : 3.55 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 types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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Mol	Chain	Length	Quality of chain
2	D	380	
2	F	380	
2	H	380	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
1	SEP	C	338	-	-	X	-

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 20128 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 cAMP-dependent protein kinase catalytic subunit alpha.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	336	Total	C	N	O	P	S	0	0	0
			2746	1778	460	497	3	8			
1	C	340	Total	C	N	O	P	S	0	0	0
			2775	1794	465	505	3	8			
1	E	339	Total	C	N	O	P	S	0	0	0
			2766	1789	464	502	3	8			
1	G	337	Total	C	N	O	P	S	0	0	0
			2752	1781	461	499	3	8			

- Molecule 2 is a protein called cAMP-dependent protein kinase type I-alpha regulatory subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	285	Total	C	N	O	S	0	0	0
			2259	1428	392	431	8			
2	D	286	Total	C	N	O	S	0	0	0
			2268	1432	395	433	8			
2	F	284	Total	C	N	O	S	0	0	0
			2248	1422	388	430	8			
2	H	284	Total	C	N	O	S	0	0	0
			2248	1422	388	430	8			

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	E	2	Total	Mg	0	0
			2	2		
3	G	2	Total	Mg	0	0
			2	2		

- Molecule 4 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: C₁₀H₁₆N₅O₁₃P₃).

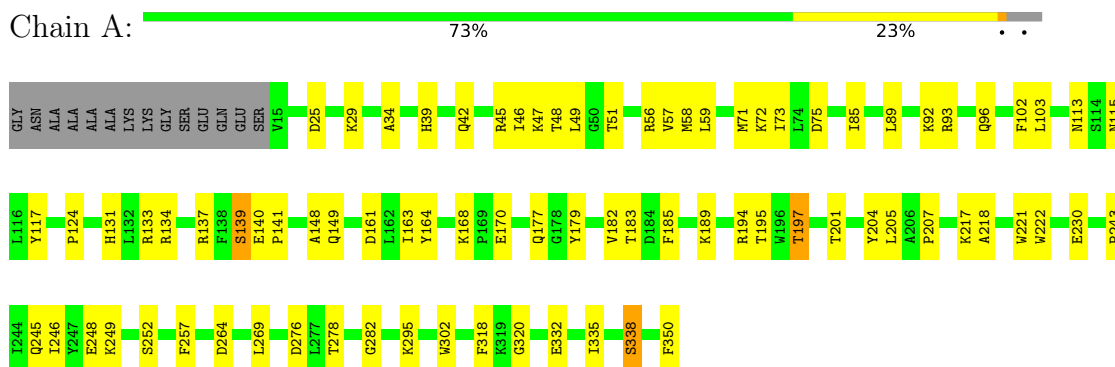


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	E	1	Total 31	C 10	N 5	O 13	P 3	0	0
4	G	1	Total 31	C 10	N 5	O 13	P 3	0	0

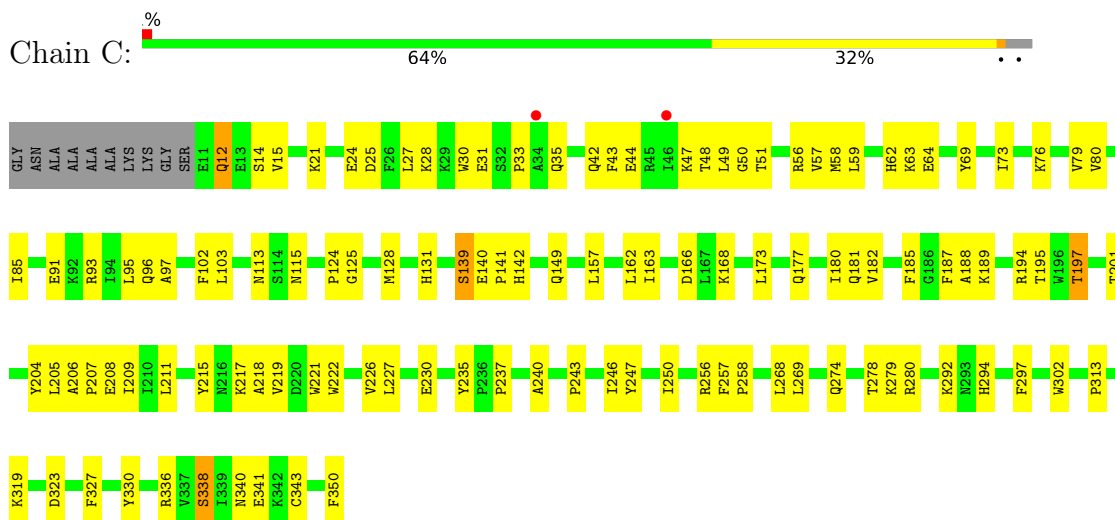
3 Residue-property plots

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

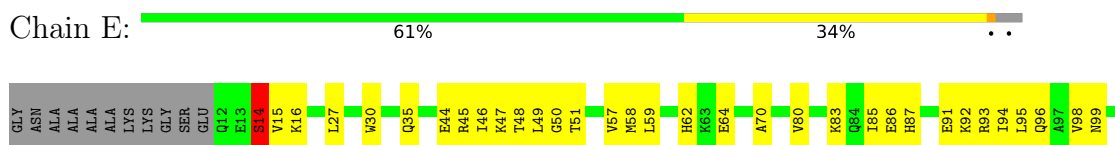
- Molecule 1: cAMP-dependent protein kinase catalytic subunit alpha

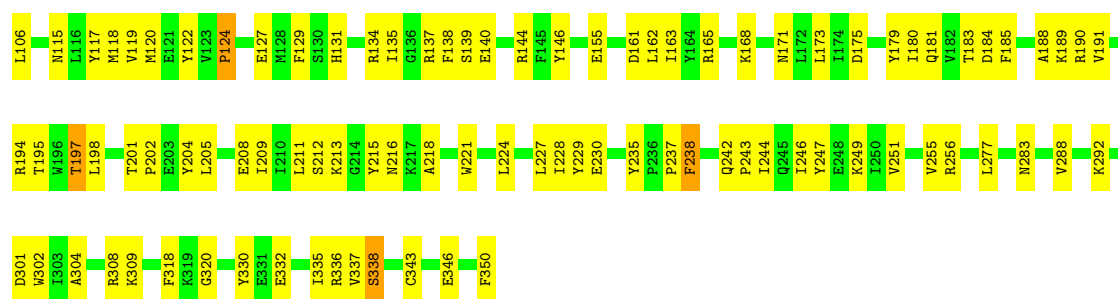


- Molecule 1: cAMP-dependent protein kinase catalytic subunit alpha

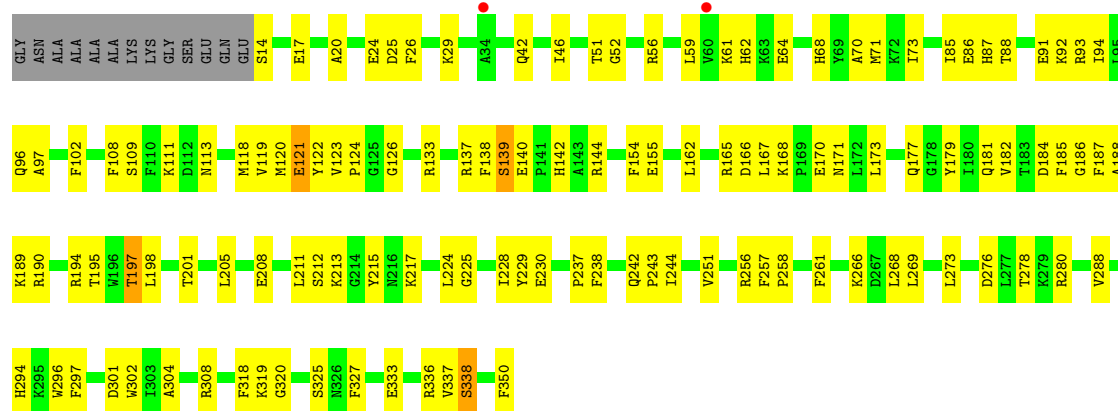


- Molecule 1: cAMP-dependent protein kinase catalytic subunit alpha

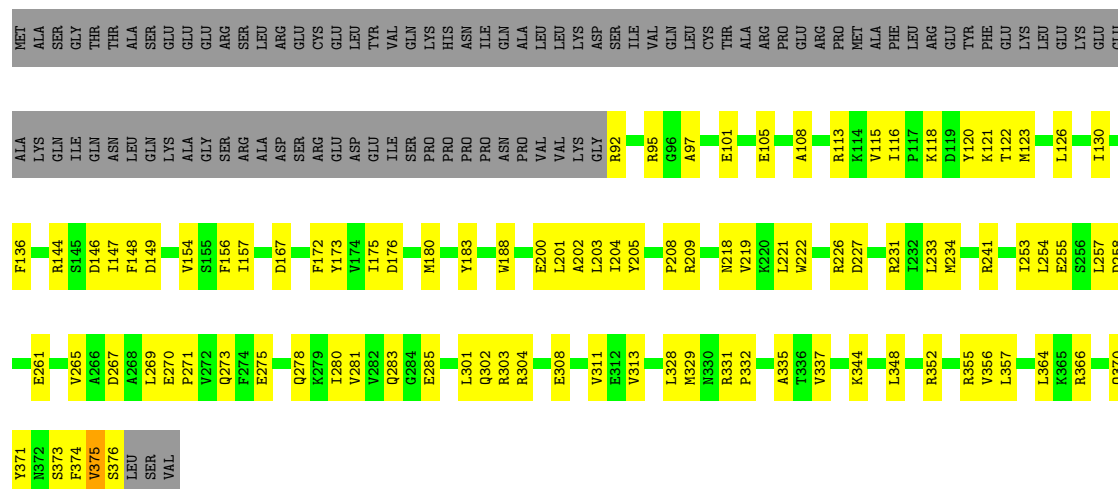




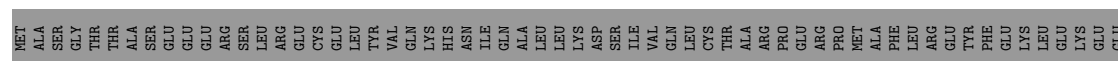
- Molecule 1: cAMP-dependent protein kinase catalytic subunit alpha

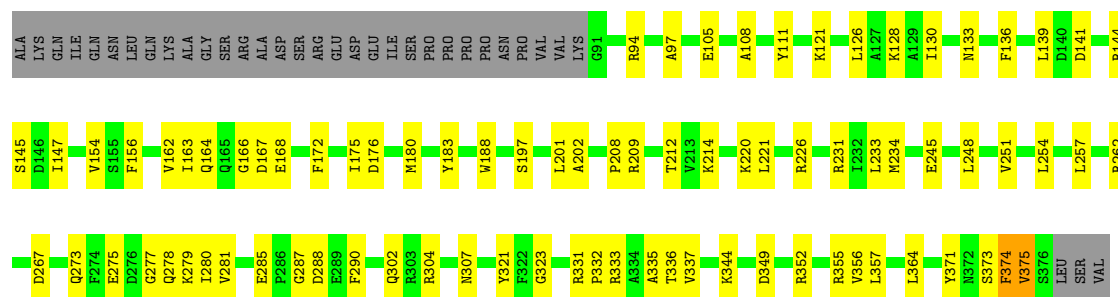


- Molecule 2: cAMP-dependent protein kinase type I-alpha regulatory subunit



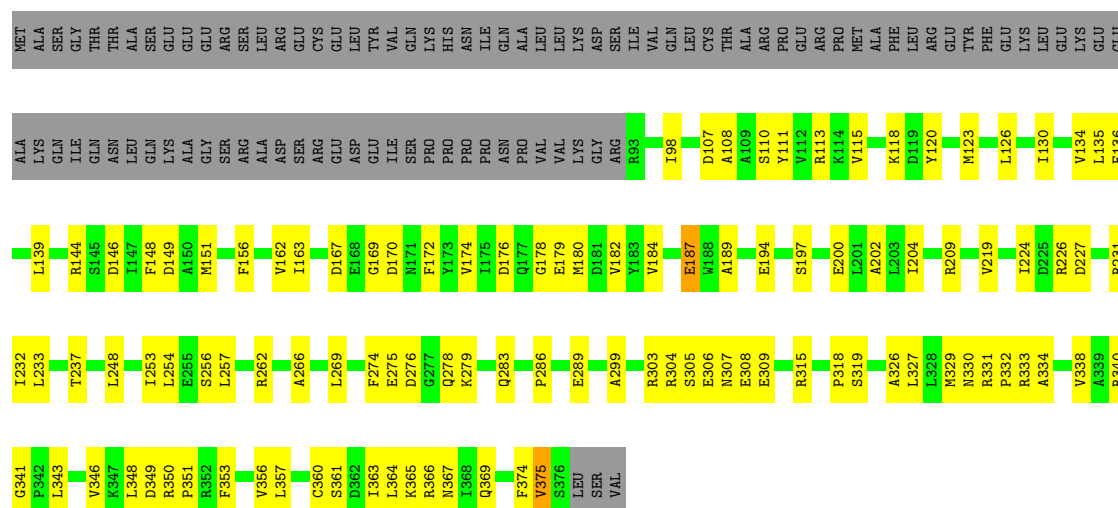
- Molecule 2: cAMP-dependent protein kinase type I-alpha regulatory subunit





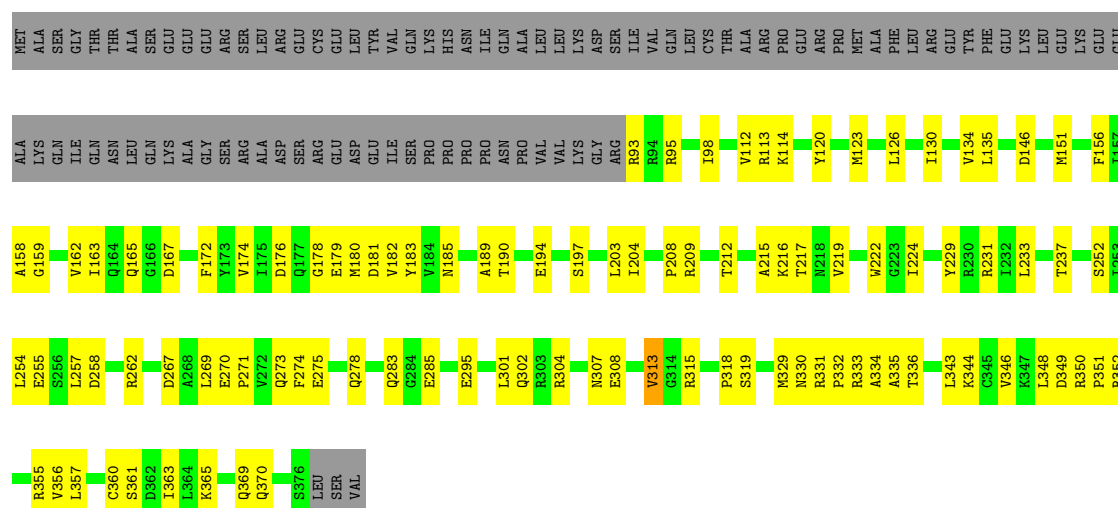
• Molecule 2: cAMP-dependent protein kinase type I-alpha regulatory subunit

Chain F: 46% 28% 25%



• Molecule 2: cAMP-dependent protein kinase type I-alpha regulatory subunit

Chain H: 48% 26% 25%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	139.78Å 184.81Å 183.41Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.63 – 3.55 47.63 – 3.55	Depositor EDS
% Data completeness (in resolution range)	87.0 (47.63-3.55) 84.8 (47.63-3.55)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.71 (at 3.57Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.256 , 0.269 0.253 , 0.261	Depositor DCC
R_{free} test set	2542 reflections (4.38%)	wwPDB-VP
Wilson B-factor (Å ²)	110.6	Xtriage
Anisotropy	0.435	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 168.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.39$, $\langle L^2 \rangle = 0.21$	Xtriage
Estimated twinning fraction	0.158 for -h,l,k	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	20128	wwPDB-VP
Average B, all atoms (Å ²)	147.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.48% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SEP, TPO, MG, ATP

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	0.21	0/2784	0.66	1/3756 (0.0%)
1	C	0.24	0/2813	0.72	2/3795 (0.1%)
1	E	0.23	0/2804	0.83	5/3783 (0.1%)
1	G	0.28	0/2790	0.81	3/3764 (0.1%)
2	B	0.21	0/2299	0.68	0/3101
2	D	0.22	0/2308	0.65	0/3112
2	F	0.25	0/2288	0.75	0/3087
2	H	0.27	0/2288	0.81	1/3087 (0.0%)
All	All	0.24	0/20374	0.74	12/27485 (0.0%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	124	PRO	N-CA-CB	7.09	109.94	103.20
1	G	124	PRO	N-CA-CB	6.93	109.79	103.20
1	C	124	PRO	N-CA-CB	6.78	109.64	103.20
1	E	124	PRO	N-CA-CB	6.78	109.64	103.20
1	C	12	GLN	CB-CG-CD	-6.49	101.57	112.60
2	H	313	VAL	CB-CA-C	-6.34	103.67	112.36
1	G	121	GLU	CB-CA-C	-5.54	101.26	109.90
1	E	238	PHE	N-CA-C	5.51	117.83	108.02
1	E	14	SER	CA-C-N	5.35	131.60	121.97
1	E	14	SER	C-N-CA	5.35	131.60	121.97
1	G	121	GLU	N-CA-C	5.09	117.68	110.10
1	E	119	VAL	N-CA-C	5.01	114.98	107.51

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2746	0	2680	63	0
1	C	2775	0	2702	88	0
1	E	2766	0	2694	98	0
1	G	2752	0	2684	102	0
2	B	2259	0	2238	91	0
2	D	2268	0	2252	67	0
2	F	2248	0	2225	103	0
2	H	2248	0	2225	95	0
3	E	2	0	0	0	0
3	G	2	0	0	0	0
4	E	31	0	12	4	0
4	G	31	0	12	6	0
All	All	20128	0	19724	655	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 16.

All (655) 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)
2:B:269:LEU:HD23	2:B:348:LEU:HG	1.30	1.09
2:F:274:PHE:HB3	2:F:278:GLN:HE21	1.18	1.01
2:D:356:VAL:HG12	2:D:357:LEU:HD22	1.44	1.00
2:F:275:GLU:N	2:F:278:GLN:HE22	1.58	0.99
2:B:157:ILE:HG22	2:H:112:VAL:HG23	1.42	0.99
2:H:269:LEU:HD23	2:H:348:LEU:HG	1.41	0.98
2:H:274:PHE:HB3	2:H:278:GLN:HE21	1.27	0.97
2:H:275:GLU:N	2:H:278:GLN:HE22	1.67	0.92
2:B:356:VAL:HG12	2:B:357:LEU:HD22	1.50	0.90
1:A:140:GLU:HG3	1:A:141:PRO:HD3	1.53	0.89
2:F:123:MET:HE2	2:H:120:TYR:HB2	1.55	0.88
2:F:275:GLU:H	2:F:278:GLN:HE22	1.15	0.87
2:B:157:ILE:HD13	2:H:231:ARG:NH1	1.90	0.87
2:F:135:LEU:HD12	2:F:200:GLU:HG2	1.58	0.86
2:F:274:PHE:HB3	2:F:278:GLN:NE2	1.90	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:269:LEU:CD2	2:B:348:LEU:HG	2.07	0.84
1:A:163:ILE:HD13	1:A:217:LYS:HA	1.61	0.82
1:A:93:ARG:HA	1:A:96:GLN:HE22	1.45	0.81
1:A:34:ALA:H	1:A:96:GLN:HG3	1.46	0.81
2:D:281:VAL:HG22	2:D:337:VAL:HG12	1.62	0.81
1:C:33:PRO:HB3	1:C:96:GLN:OE1	1.80	0.80
2:B:352:ARG:HA	2:B:355:ARG:HE	1.47	0.80
1:G:336:ARG:NH1	1:G:337:VAL:O	2.16	0.79
2:B:273:GLN:HB3	2:B:344:LYS:HD3	1.63	0.79
2:D:273:GLN:HB3	2:D:344:LYS:HD3	1.65	0.79
2:F:256:SER:HB3	2:F:366:ARG:HD2	1.65	0.79
2:D:154:VAL:HG23	2:D:221:LEU:HB2	1.65	0.78
1:E:336:ARG:NH1	1:E:337:VAL:O	2.16	0.78
1:E:242:GLN:HG2	1:E:244:ILE:HG12	1.65	0.77
1:C:140:GLU:HG3	1:C:141:PRO:HD3	1.67	0.77
2:H:275:GLU:H	2:H:278:GLN:HE22	1.31	0.76
2:F:289:GLU:H	2:F:333:ARG:HH22	1.31	0.76
2:F:269:LEU:HB3	2:F:346:VAL:HG11	1.66	0.76
2:H:179:GLU:HG2	2:H:216:LYS:HD3	1.67	0.74
2:B:374:PHE:O	2:B:376:SER:N	2.20	0.74
2:H:275:GLU:O	2:H:278:GLN:NE2	2.20	0.74
2:B:120:TYR:HE1	2:D:128:LYS:HZ2	1.36	0.74
2:D:352:ARG:HA	2:D:355:ARG:HE	1.53	0.73
2:H:274:PHE:HB3	2:H:278:GLN:NE2	2.04	0.72
1:C:218:ALA:HA	1:C:221:TRP:HD1	1.54	0.72
2:D:356:VAL:HG12	2:D:357:LEU:CD2	2.20	0.72
1:C:163:ILE:HD13	1:C:217:LYS:HA	1.72	0.71
2:F:115:VAL:HG12	2:F:149:ASP:HB3	1.73	0.71
1:A:96:GLN:OE1	1:A:96:GLN:N	2.24	0.71
2:H:302:GLN:HE21	2:H:313:VAL:HG11	1.55	0.71
1:C:201:THR:O	1:C:205:LEU:HD13	1.90	0.70
1:C:35:GLN:NE2	1:C:350:PHE:OXT	2.24	0.70
1:G:201:THR:C	1:G:205:LEU:HD13	2.17	0.70
2:F:286:PRO:HA	2:F:332:PRO:HA	1.74	0.69
1:G:256:ARG:NH1	1:G:257:PHE:O	2.25	0.69
1:E:229:TYR:CG	1:E:237:PRO:HG3	2.26	0.69
1:G:230:GLU:OE1	2:H:95:ARG:NH1	2.26	0.69
1:A:161:ASP:HA	1:A:217:LYS:HE2	1.73	0.68
1:G:201:THR:O	1:G:205:LEU:HD13	1.93	0.68
2:H:330:ASN:O	2:H:331:ARG:NH2	2.25	0.68
1:G:229:TYR:CG	1:G:237:PRO:HG3	2.28	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:120:TYR:HB2	2:H:123:MET:HE2	1.76	0.68
1:G:242:GLN:HG2	1:G:244:ILE:HG12	1.74	0.67
1:C:96:GLN:NE2	1:C:97:ALA:HB2	2.10	0.67
2:H:269:LEU:HB3	2:H:346:VAL:HG11	1.76	0.67
2:F:303:ARG:NH1	2:F:306:GLU:O	2.27	0.67
2:B:157:ILE:HD13	2:H:231:ARG:HH12	1.60	0.66
1:C:62:HIS:CE1	1:C:64:GLU:HB2	2.30	0.66
1:E:165:ARG:NH1	1:E:215:TYR:OH	2.28	0.66
1:A:189:LYS:NZ	1:A:197:TPO:O1P	2.25	0.66
2:B:281:VAL:HG22	2:B:337:VAL:HG12	1.76	0.66
2:F:299:ALA:HB2	2:F:340:ARG:HD3	1.77	0.66
2:F:275:GLU:H	2:F:278:GLN:NE2	1.92	0.65
1:G:51:THR:HA	1:G:56:ARG:HG2	1.77	0.65
1:C:103:LEU:HD22	1:C:185:PHE:HZ	1.60	0.65
2:F:330:ASN:OD1	2:F:350:ARG:NH1	2.29	0.65
1:C:189:LYS:NZ	1:C:197:TPO:O1P	2.26	0.65
2:F:169:GLY:O	2:F:226:ARG:NH1	2.27	0.65
2:H:330:ASN:OD1	2:H:350:ARG:NH1	2.29	0.65
2:B:120:TYR:HE1	2:D:128:LYS:NZ	1.94	0.65
2:D:231:ARG:HA	2:D:234:MET:HG2	1.78	0.65
2:F:356:VAL:C	2:F:357:LEU:HD22	2.23	0.64
1:G:29:LYS:HE2	1:G:97:ALA:HA	1.78	0.64
2:H:183:TYR:O	2:H:212:THR:N	2.23	0.64
2:D:280:ILE:HB	2:D:337:VAL:HG13	1.79	0.64
2:D:202:ALA:O	2:D:226:ARG:NH1	2.25	0.64
2:F:307:ASN:ND2	2:F:307:ASN:O	2.31	0.64
2:H:180:MET:HE2	2:H:219:VAL:HG11	1.78	0.64
1:E:91:GLU:HG3	1:E:185:PHE:HB2	1.78	0.63
2:F:274:PHE:CB	2:F:278:GLN:HE21	2.03	0.63
2:F:275:GLU:N	2:F:278:GLN:NE2	2.41	0.63
2:B:352:ARG:HA	2:B:355:ARG:NE	2.13	0.63
1:G:179:TYR:CZ	1:G:308:ARG:HG3	2.34	0.63
2:F:113:ARG:HD2	2:F:146:ASP:OD1	1.98	0.63
2:B:183:TYR:HD1	2:B:188:TRP:HA	1.62	0.63
2:B:147:ILE:HD11	2:B:233:LEU:HD11	1.79	0.63
2:D:352:ARG:HA	2:D:355:ARG:NE	2.13	0.63
2:F:360:CYS:O	2:F:363:ILE:HG22	1.99	0.62
2:F:279:LYS:HG2	2:F:338:VAL:HG22	1.82	0.62
2:F:167:ASP:O	2:F:209:ARG:N	2.31	0.62
2:B:101:GLU:OE1	2:B:101:GLU:N	2.28	0.62
1:C:338:SEP:O1P	1:C:340:ASN:ND2	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:307:ASN:O	2:H:307:ASN:ND2	2.33	0.62
1:G:165:ARG:NH1	1:G:215:TYR:OH	2.32	0.62
1:G:184:ASP:HB2	4:G:403:ATP:O2A	1.99	0.62
1:A:39:HIS:CE1	1:A:42:GLN:HE22	2.17	0.61
1:G:46:ILE:HD11	1:G:59:LEU:HG	1.81	0.61
2:B:154:VAL:HG23	2:B:221:LEU:HB2	1.81	0.61
1:G:93:ARG:HA	1:G:96:GLN:HE21	1.66	0.61
1:E:146:TYR:CD1	1:E:180:ILE:HG12	2.35	0.61
2:H:360:CYS:O	2:H:363:ILE:HG22	2.01	0.61
2:B:105:GLU:CD	2:B:105:GLU:H	2.07	0.61
1:C:49:LEU:N	1:C:57:VAL:O	2.31	0.61
1:C:336:ARG:HH12	1:C:338:SEP:HB3	1.66	0.61
1:A:264:ASP:OD1	1:A:295:LYS:NZ	2.30	0.61
1:A:243:PRO:HB2	2:B:201:LEU:HD21	1.83	0.60
1:A:45:ARG:HD3	1:A:335:ILE:HD12	1.82	0.60
2:F:227:ASP:OD1	2:F:231:ARG:NE	2.33	0.60
1:G:168:LYS:HE2	1:G:171:ASN:HD22	1.65	0.60
2:B:258:ASP:N	2:B:261:GLU:OE1	2.25	0.60
2:D:167:ASP:O	2:D:209:ARG:HG2	2.01	0.60
1:G:155:GLU:HG2	1:G:288:VAL:HG11	1.84	0.60
1:E:50:GLY:HA2	1:E:330:TYR:CZ	2.37	0.60
2:D:105:GLU:CD	2:D:105:GLU:H	2.10	0.60
1:G:140:GLU:OE2	1:G:296:TRP:NE1	2.35	0.60
2:B:257:LEU:HD22	2:B:261:GLU:HB3	1.84	0.59
1:E:91:GLU:HG3	1:E:185:PHE:CB	2.32	0.59
1:C:48:THR:HA	1:C:58:MET:HG2	1.84	0.59
2:H:178:GLY:HA3	2:H:219:VAL:HG12	1.84	0.59
1:E:168:LYS:HE2	1:E:171:ASN:HD22	1.66	0.59
2:B:356:VAL:HG12	2:B:357:LEU:CD2	2.26	0.59
1:G:212:SER:HB2	2:H:233:LEU:HD23	1.84	0.59
1:G:123:VAL:N	4:G:403:ATP:N1	2.50	0.59
1:A:139:SEP:OG	1:A:141:PRO:HD2	2.03	0.59
2:B:157:ILE:CG2	2:H:112:VAL:HG23	2.25	0.59
1:E:50:GLY:O	1:E:57:VAL:N	2.28	0.59
1:E:131:HIS:HA	1:E:134:ARG:HG2	1.83	0.59
2:D:277:GLY:O	2:D:279:LYS:NZ	2.35	0.58
1:C:218:ALA:HA	1:C:221:TRP:CD1	2.38	0.58
1:E:62:HIS:HE1	1:E:64:GLU:HB3	1.68	0.58
2:F:283:GLN:HG3	2:F:334:ALA:O	2.03	0.58
2:H:176:ASP:O	2:H:194:GLU:HG3	2.03	0.58
2:H:254:LEU:O	2:H:257:LEU:HG	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:133:ARG:HE	2:B:92:ARG:HB3	1.69	0.58
1:G:87:HIS:HB3	1:G:186:GLY:O	2.03	0.58
1:A:115:ASN:HB2	1:A:117:TYR:CZ	2.38	0.58
1:G:139:SEP:O2P	1:G:142:HIS:NE2	2.37	0.58
2:D:167:ASP:O	2:D:209:ARG:N	2.37	0.58
1:E:213:LYS:HB2	2:F:237:THR:HG21	1.85	0.58
1:G:140:GLU:OE2	1:G:144:ARG:NH1	2.32	0.58
1:G:301:ASP:OD2	1:G:304:ALA:HB3	2.04	0.58
1:E:96:GLN:HB2	1:E:106:LEU:HD23	1.85	0.58
2:B:157:ILE:HG22	2:H:112:VAL:CG2	2.28	0.57
2:F:269:LEU:HB3	2:F:346:VAL:CG1	2.34	0.57
2:F:289:GLU:H	2:F:333:ARG:NH2	2.00	0.57
1:E:140:GLU:OE2	1:E:144:ARG:NH1	2.30	0.57
1:A:85:ILE:HD12	1:A:85:ILE:H	1.68	0.57
2:F:107:ASP:HA	2:F:110:SER:HB3	1.86	0.57
1:C:330:TYR:OH	2:D:94:ARG:NH1	2.37	0.57
2:B:231:ARG:HA	2:B:234:MET:HG2	1.87	0.57
1:C:163:ILE:CD1	1:C:217:LYS:HA	2.34	0.57
2:F:303:ARG:NH1	2:F:305:SER:O	2.37	0.57
2:F:330:ASN:O	2:F:331:ARG:NH2	2.37	0.57
1:G:208:GLU:N	1:G:208:GLU:OE2	2.34	0.57
2:H:275:GLU:N	2:H:278:GLN:NE2	2.46	0.57
2:B:328:LEU:HD23	2:B:329:MET:HE3	1.86	0.57
2:F:275:GLU:O	2:F:278:GLN:NE2	2.38	0.57
2:H:126:LEU:O	2:H:130:ILE:HG13	2.04	0.57
1:G:20:ALA:O	1:G:24:GLU:HG3	2.04	0.57
1:G:337:VAL:HG12	1:G:338:SEP:N	2.19	0.57
2:H:275:GLU:H	2:H:278:GLN:NE2	2.02	0.57
1:A:201:THR:O	1:A:205:LEU:HD13	2.04	0.57
2:H:252:SER:O	2:H:255:GLU:HG2	2.05	0.57
1:E:92:LYS:HB2	1:E:118:MET:SD	2.45	0.57
2:B:118:LYS:NZ	2:B:148:PHE:O	2.33	0.56
1:C:85:ILE:H	1:C:85:ILE:HD12	1.69	0.56
1:G:92:LYS:HB2	1:G:118:MET:SD	2.45	0.56
2:H:113:ARG:HD2	2:H:146:ASP:OD1	2.04	0.56
1:C:201:THR:C	1:C:205:LEU:HD13	2.31	0.56
1:E:301:ASP:OD1	1:E:302:TRP:N	2.38	0.56
2:F:257:LEU:HD11	2:F:262:ARG:HE	1.69	0.56
1:A:113:ASN:CG	1:A:338:SEP:O	2.49	0.56
2:B:116:ILE:HG13	2:F:115:VAL:HG23	1.86	0.56
2:D:281:VAL:HB	2:D:333:ARG:HG3	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:149:GLN:HE22	1:A:179:TYR:HA	1.71	0.56
2:D:287:GLY:HA3	2:D:333:ARG:NE	2.21	0.56
1:E:229:TYR:OH	1:E:256:ARG:O	2.21	0.56
1:G:25:ASP:OD2	1:G:26:PHE:N	2.39	0.56
1:E:194:ARG:HG2	1:E:216:ASN:HB3	1.87	0.55
1:C:76:LYS:O	1:C:79:VAL:HG12	2.06	0.55
2:B:126:LEU:O	2:B:130:ILE:HG13	2.05	0.55
1:G:189:LYS:NZ	1:G:197:TPO:O3P	2.26	0.55
1:C:56:ARG:O	1:C:73:ILE:HG22	2.06	0.55
2:F:304:ARG:HB2	2:F:308:GLU:OE1	2.07	0.55
1:A:164:TYR:OH	1:A:183:THR:O	2.24	0.55
2:H:167:ASP:O	2:H:209:ARG:N	2.40	0.55
2:F:254:LEU:O	2:F:257:LEU:HG	2.06	0.55
1:E:155:GLU:HG2	1:E:288:VAL:HG21	1.88	0.55
1:E:209:ILE:HG12	1:E:215:TYR:CG	2.42	0.55
1:A:131:HIS:HD2	1:A:134:ARG:HH12	1.53	0.55
1:E:161:ASP:HB3	1:E:191:VAL:O	2.07	0.55
2:H:176:ASP:HB2	2:H:222:TRP:CD1	2.42	0.55
1:A:92:LYS:NZ	1:A:350:PHE:OXT	2.40	0.54
1:E:204:TYR:HE2	1:E:227:LEU:HD12	1.72	0.54
1:C:73:ILE:HD11	1:C:115:ASN:HB3	1.89	0.54
1:G:198:LEU:HD13	2:H:204:ILE:HG22	1.88	0.54
1:C:173:LEU:O	1:C:181:GLN:N	2.29	0.54
2:D:245:GLU:OE1	2:D:262:ARG:HB3	2.06	0.54
1:G:194:ARG:NH1	2:H:267:ASP:OD2	2.41	0.54
2:D:287:GLY:HA3	2:D:333:ARG:HE	1.73	0.54
1:E:46:ILE:HD11	1:E:59:LEU:HG	1.89	0.54
1:G:111:LYS:HD3	1:G:350:PHE:HE2	1.72	0.54
1:A:131:HIS:CD2	1:A:134:ARG:HH12	2.26	0.54
1:C:194:ARG:NE	2:D:267:ASP:OD2	2.29	0.54
2:B:136:PHE:O	2:B:144:ARG:NH1	2.41	0.54
1:C:31:GLU:OE1	1:C:31:GLU:N	2.41	0.54
2:B:269:LEU:HA	2:B:348:LEU:CD2	2.38	0.54
1:E:230:GLU:HA	1:E:235:TYR:O	2.08	0.54
1:E:163:ILE:O	1:E:188:ALA:HA	2.08	0.54
1:G:205:LEU:HD21	2:H:98:ILE:HD11	1.88	0.54
2:F:180:MET:HE2	2:F:219:VAL:HG11	1.90	0.54
1:A:42:GLN:N	1:A:42:GLN:OE1	2.41	0.53
1:A:245:GLN:O	1:A:249:LYS:HD3	2.08	0.53
1:C:51:THR:HA	1:C:56:ARG:HA	1.90	0.53
1:C:197:TPO:O	1:C:215:TYR:OH	2.23	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:269:LEU:HD23	2:B:348:LEU:CG	2.20	0.53
1:A:221:TRP:CD1	1:A:282:GLY:HA3	2.44	0.53
2:B:115:VAL:HG23	2:B:149:ASP:HB3	1.90	0.53
1:E:127:GLU:OE2	4:E:403:ATP:O2'	2.20	0.53
2:F:308:GLU:HG2	2:F:309:GLU:H	1.73	0.53
2:H:255:GLU:OE2	2:H:370:GLN:NE2	2.34	0.53
2:F:120:TYR:HB2	2:H:123:MET:CE	2.39	0.53
2:F:318:PRO:O	2:F:319:SER:HB3	2.07	0.53
1:E:242:GLN:HG3	1:E:243:PRO:HD2	1.90	0.53
1:E:332:GLU:N	1:E:332:GLU:OE1	2.42	0.53
2:F:364:LEU:HD11	2:F:374:PHE:CE1	2.44	0.53
1:E:155:GLU:OE2	1:E:292:LYS:HD2	2.08	0.53
1:G:177:GLN:HG2	1:G:308:ARG:NH2	2.24	0.53
1:C:42:GLN:HB3	1:C:62:HIS:NE2	2.24	0.52
1:C:166:ASP:HB2	1:C:187:PHE:HD2	1.74	0.52
1:G:94:ILE:HD11	1:G:185:PHE:HD2	1.74	0.52
1:A:71:MET:HE3	1:A:73:ILE:HG12	1.92	0.52
2:F:367:ASN:OD1	2:F:369:GLN:HG3	2.09	0.52
1:C:177:GLN:N	1:C:177:GLN:OE1	2.42	0.52
2:D:164:GLN:OE1	2:D:212:THR:OG1	2.20	0.52
2:F:179:GLU:OE1	2:H:315:ARG:NH1	2.42	0.52
2:H:283:GLN:HG3	2:H:334:ALA:O	2.10	0.52
2:H:361:SER:O	2:H:365:LYS:HD2	2.10	0.52
2:F:361:SER:O	2:F:365:LYS:HD2	2.09	0.52
1:C:243:PRO:O	1:C:246:ILE:HG12	2.09	0.52
1:E:283:ASN:O	1:E:283:ASN:ND2	2.42	0.52
2:F:202:ALA:O	2:F:226:ARG:HD3	2.10	0.52
1:G:126:GLY:HA2	1:G:327:PHE:HZ	1.75	0.52
1:E:122:TYR:CZ	1:E:124:PRO:HA	2.45	0.52
2:F:327:LEU:HD21	2:F:348:LEU:HD22	1.92	0.52
1:G:276:ASP:OD1	2:H:352:ARG:NH1	2.31	0.52
2:H:318:PRO:O	2:H:319:SER:HB3	2.10	0.52
2:B:108:ALA:HB2	2:B:234:MET:SD	2.50	0.51
1:E:195:THR:OG1	1:E:197:TPO:O1P	2.21	0.51
2:F:126:LEU:HD22	2:F:151:MET:HE1	1.90	0.51
1:G:154:PHE:HZ	1:G:167:LEU:HD13	1.75	0.51
2:F:170:ASP:HA	2:F:226:ARG:HH12	1.75	0.51
1:G:42:GLN:HB3	1:G:62:HIS:CD2	2.45	0.51
1:C:274:GLN:HG2	1:C:279:LYS:HB2	1.92	0.51
1:G:121:GLU:O	4:G:403:ATP:N6	2.42	0.51
1:E:48:THR:HA	1:E:58:MET:HA	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:177:GLN:N	1:A:177:GLN:OE1	2.43	0.51
1:E:50:GLY:HA3	4:E:403:ATP:H1'	1.93	0.51
2:F:170:ASP:OD2	2:F:226:ARG:NH2	2.42	0.51
1:G:225:GLY:HA3	1:G:273:LEU:HD21	1.93	0.51
2:H:356:VAL:C	2:H:357:LEU:HD22	2.36	0.51
1:C:204:TYR:HE1	1:C:227:LEU:HB2	1.76	0.51
2:F:348:LEU:HD23	2:F:349:ASP:O	2.10	0.51
2:H:167:ASP:O	2:H:209:ARG:HG2	2.11	0.51
1:A:57:VAL:HG22	1:A:72:LYS:HG3	1.92	0.51
2:B:255:GLU:OE1	2:B:370:GLN:NE2	2.43	0.51
2:D:147:ILE:HD11	2:D:233:LEU:HD11	1.93	0.51
2:H:302:GLN:NE2	2:H:313:VAL:HG11	2.24	0.51
2:H:304:ARG:HH12	2:H:308:GLU:CD	2.18	0.51
1:E:251:VAL:HG21	2:F:134:VAL:CG2	2.41	0.51
1:G:14:SER:O	1:G:17:GLU:HG2	2.11	0.51
1:E:251:VAL:HG21	2:F:134:VAL:HG23	1.93	0.51
2:H:182:VAL:HG22	2:H:190:THR:O	2.11	0.51
2:H:258:ASP:O	2:H:262:ARG:HB2	2.11	0.51
1:E:134:ARG:HG3	1:E:135:ILE:HG13	1.92	0.50
1:C:47:LYS:O	1:C:59:LEU:N	2.44	0.50
2:H:285:GLU:O	2:H:332:PRO:HA	2.11	0.50
2:B:285:GLU:O	2:B:332:PRO:HA	2.12	0.50
2:D:172:PHE:CZ	2:D:197:SER:HB2	2.47	0.50
2:F:176:ASP:O	2:F:194:GLU:HG3	2.11	0.50
1:A:201:THR:C	1:A:205:LEU:HD13	2.37	0.50
1:C:42:GLN:HB3	1:C:62:HIS:CD2	2.47	0.50
1:C:226:VAL:HG13	1:C:237:PRO:HD2	1.94	0.50
1:E:51:THR:HG22	1:E:330:TYR:CE1	2.46	0.50
2:F:349:ASP:OD2	2:F:351:PRO:HG2	2.11	0.50
2:B:257:LEU:HD22	2:B:261:GLU:CB	2.42	0.50
2:F:184:VAL:O	2:F:187:GLU:CD	2.55	0.50
2:F:266:ALA:HA	2:F:269:LEU:HD12	1.94	0.50
2:B:374:PHE:CG	2:B:375:VAL:N	2.80	0.50
1:E:115:ASN:HB2	1:E:117:TYR:CZ	2.46	0.50
1:G:208:GLU:H	1:G:208:GLU:CD	2.20	0.50
2:D:331:ARG:HG3	2:D:332:PRO:O	2.12	0.50
1:E:120:MET:SD	1:E:120:MET:N	2.75	0.50
1:C:139:SEP:OG	1:C:141:PRO:HD2	2.10	0.49
1:E:146:TYR:HD1	1:E:180:ILE:HG12	1.77	0.49
2:F:167:ASP:O	2:F:209:ARG:HG2	2.12	0.49
1:E:35:GLN:HB3	1:E:350:PHE:CZ	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:182:VAL:HG23	2:F:189:ALA:HB3	1.94	0.49
1:G:102:PHE:O	1:G:182:VAL:HG22	2.12	0.49
1:A:168:LYS:HZ2	2:B:97:ALA:HB2	1.78	0.49
1:A:243:PRO:O	1:A:246:ILE:HG12	2.12	0.49
2:D:275:GLU:N	2:D:278:GLN:OE1	2.31	0.49
2:F:326:ALA:HB2	2:F:333:ARG:HH21	1.76	0.49
1:G:173:LEU:HD11	4:G:403:ATP:H2'	1.95	0.49
2:H:304:ARG:NH1	2:H:308:GLU:OE1	2.45	0.49
1:E:137:ARG:HG2	1:E:138:PHE:H	1.78	0.49
1:G:166:ASP:HB2	1:G:187:PHE:CD2	2.48	0.49
2:H:156:PHE:CD2	2:H:162:VAL:HG12	2.47	0.49
2:H:182:VAL:HG22	2:H:190:THR:H	1.77	0.49
2:D:108:ALA:HB2	2:D:234:MET:SD	2.52	0.49
2:D:302:GLN:HG2	2:D:335:ALA:HB2	1.95	0.49
1:E:218:ALA:HA	1:E:221:TRP:HD1	1.77	0.49
1:C:96:GLN:HE21	1:C:97:ALA:HB2	1.77	0.49
1:C:166:ASP:HB2	1:C:187:PHE:CD2	2.47	0.49
1:E:194:ARG:HG3	1:E:194:ARG:HH11	1.78	0.49
1:C:44:GLU:HB3	1:C:63:LYS:HE2	1.94	0.49
1:E:229:TYR:CD2	1:E:237:PRO:HG3	2.47	0.49
2:F:289:GLU:O	2:F:333:ARG:NH2	2.46	0.49
1:G:137:ARG:HG2	1:G:138:PHE:H	1.77	0.49
2:H:126:LEU:HD23	2:H:174:VAL:HG11	1.95	0.49
2:H:333:ARG:HG3	2:H:333:ARG:HH11	1.77	0.49
2:B:280:ILE:HB	2:B:337:VAL:HG13	1.94	0.49
1:E:14:SER:O	1:E:16:LYS:N	2.46	0.49
1:C:49:LEU:HB3	1:C:327:PHE:CE1	2.48	0.48
1:E:51:THR:HG22	1:E:330:TYR:HE1	1.78	0.48
1:E:318:PHE:HD1	1:E:320:GLY:H	1.60	0.48
1:E:337:VAL:HG12	1:E:338:SEP:N	2.28	0.48
2:F:257:LEU:CD1	2:F:262:ARG:HE	2.26	0.48
1:G:318:PHE:HD1	1:G:320:GLY:H	1.61	0.48
2:H:233:LEU:HA	2:H:233:LEU:HD12	1.69	0.48
1:A:25:ASP:O	1:A:29:LYS:HG3	2.13	0.48
1:A:218:ALA:HA	1:A:221:TRP:HD1	1.79	0.48
2:F:126:LEU:HD23	2:F:174:VAL:HG11	1.94	0.48
2:F:329:MET:HA	2:F:350:ARG:NH1	2.29	0.48
1:G:113:ASN:ND2	1:G:338:SEP:O	2.46	0.48
2:H:151:MET:HG2	2:H:224:ILE:HB	1.95	0.48
2:H:302:GLN:HB3	2:H:335:ALA:HB2	1.95	0.48
1:G:224:LEU:O	1:G:228:ILE:HD13	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:162:LEU:HD23	1:E:190:ARG:HA	1.94	0.48
1:G:70:ALA:HB2	1:G:122:TYR:CD1	2.49	0.48
2:F:184:VAL:HB	2:F:187:GLU:OE2	2.14	0.48
1:G:70:ALA:HB2	1:G:122:TYR:HD1	1.79	0.48
2:B:167:ASP:O	2:B:209:ARG:N	2.39	0.48
2:D:156:PHE:CE2	2:D:162:VAL:HG13	2.49	0.48
1:G:297:PHE:HB3	1:G:302:TRP:CZ2	2.49	0.48
2:H:295:GLU:HB2	2:H:344:LYS:HB2	1.96	0.48
2:H:301:LEU:O	2:H:336:THR:N	2.46	0.48
2:D:141:ASP:O	2:D:145:SER:OG	2.26	0.48
1:E:94:ILE:HG13	1:E:95:LEU:N	2.29	0.48
1:E:179:TYR:CZ	1:E:308:ARG:HG3	2.49	0.48
2:F:172:PHE:CZ	2:F:197:SER:HB2	2.49	0.48
2:F:348:LEU:HD21	2:F:353:PHE:HB2	1.96	0.48
1:E:173:LEU:HD11	4:E:403:ATP:C6	2.49	0.48
1:G:93:ARG:HA	1:G:96:GLN:NE2	2.27	0.48
2:B:275:GLU:N	2:B:278:GLN:OE1	2.31	0.47
1:C:21:LYS:HA	1:C:24:GLU:HG2	1.96	0.47
2:D:166:GLY:N	2:D:209:ARG:O	2.33	0.47
1:E:238:PHE:HZ	1:E:255:VAL:HA	1.79	0.47
1:C:168:LYS:NZ	2:D:97:ALA:HB2	2.29	0.47
1:E:201:THR:O	1:E:205:LEU:HD13	2.14	0.47
2:F:257:LEU:HD13	2:F:262:ARG:HB2	1.97	0.47
2:D:136:PHE:O	2:D:144:ARG:NH1	2.47	0.47
2:F:115:VAL:HG12	2:F:149:ASP:CB	2.43	0.47
1:C:48:THR:HA	1:C:58:MET:HA	1.96	0.47
1:C:278:THR:O	2:D:355:ARG:HD2	2.15	0.47
2:H:349:ASP:OD2	2:H:351:PRO:HG2	2.15	0.47
1:A:89:LEU:O	1:A:93:ARG:HB2	2.13	0.47
1:G:123:VAL:HG21	1:G:181:GLN:HG3	1.96	0.47
2:B:121:LYS:HG2	2:D:121:LYS:HG2	1.97	0.47
1:C:50:GLY:O	1:C:57:VAL:N	2.33	0.47
1:C:209:ILE:HD11	1:C:219:VAL:HB	1.97	0.47
2:F:170:ASP:HA	2:F:226:ARG:NH1	2.30	0.47
2:B:176:ASP:HB2	2:B:222:TRP:CD1	2.50	0.47
2:B:218:ASN:CG	2:H:112:VAL:HG21	2.40	0.47
2:B:255:GLU:HB3	2:B:370:GLN:HE22	1.79	0.47
1:C:93:ARG:O	1:C:96:GLN:HG3	2.15	0.47
1:G:166:ASP:HB2	1:G:187:PHE:HD2	1.78	0.47
1:G:251:VAL:HG21	2:H:134:VAL:HG23	1.97	0.47
2:H:135:LEU:HD21	2:H:204:ILE:HD11	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:30:TRP:HB3	1:C:31:GLU:OE1	2.15	0.47
2:D:183:TYR:HD1	2:D:188:TRP:N	2.13	0.47
2:H:159:GLY:N	2:H:215:ALA:O	2.41	0.47
2:D:139:LEU:O	2:D:144:ARG:NH2	2.48	0.47
1:E:189:LYS:NZ	1:E:197:TPO:O3P	2.39	0.47
1:C:157:LEU:HB3	1:C:162:LEU:HB2	1.97	0.47
1:E:87:HIS:NE2	1:E:197:TPO:HG21	2.30	0.47
1:G:108:PHE:HB2	1:G:119:VAL:CG1	2.45	0.47
1:G:336:ARG:CZ	1:G:336:ARG:HB3	2.45	0.47
2:D:126:LEU:O	2:D:130:ILE:HG13	2.16	0.46
2:F:274:PHE:HB2	2:F:343:LEU:HB3	1.97	0.46
1:G:213:LYS:HB2	2:H:237:THR:HG21	1.97	0.46
2:H:182:VAL:HG23	2:H:189:ALA:HB3	1.97	0.46
2:B:283:GLN:HE22	2:B:303:ARG:H	1.63	0.46
1:C:91:GLU:O	1:C:95:LEU:HB2	2.16	0.46
1:C:113:ASN:HA	1:C:341:GLU:HA	1.98	0.46
1:C:292:LYS:HA	1:C:302:TRP:CZ2	2.50	0.46
2:D:130:ILE:HA	2:D:133:ASN:OD1	2.16	0.46
1:E:224:LEU:O	1:E:228:ILE:HD13	2.15	0.46
2:F:340:ARG:NH1	2:H:179:GLU:OE1	2.30	0.46
1:G:109:SER:HA	1:G:118:MET:HA	1.97	0.46
2:H:126:LEU:HD22	2:H:151:MET:HE1	1.98	0.46
2:H:329:MET:HA	2:H:350:ARG:NH1	2.30	0.46
1:G:238:PHE:HD1	1:G:238:PHE:O	1.98	0.46
2:B:120:TYR:OH	2:D:128:LYS:HG2	2.16	0.46
2:B:175:ILE:HG12	2:B:180:MET:HE1	1.97	0.46
2:F:253:ILE:HG13	2:F:374:PHE:CZ	2.50	0.46
1:G:94:ILE:HD11	1:G:188:ALA:HB1	1.96	0.46
1:C:42:GLN:OE1	1:C:42:GLN:N	2.49	0.46
2:F:283:GLN:HE22	2:F:303:ARG:HB2	1.81	0.46
2:D:285:GLU:O	2:D:332:PRO:HA	2.15	0.46
1:G:70:ALA:N	1:G:122:TYR:HB2	2.30	0.46
1:G:91:GLU:HG3	1:G:185:PHE:CB	2.45	0.46
1:A:48:THR:OG1	1:A:332:GLU:OE1	2.34	0.46
1:C:49:LEU:HB3	1:C:327:PHE:HE1	1.81	0.46
1:E:45:ARG:HD3	1:E:335:ILE:HD12	1.98	0.46
2:H:172:PHE:HB2	2:H:203:LEU:HG	1.97	0.46
1:A:230:GLU:OE1	2:B:95:ARG:NH1	2.45	0.46
2:B:241:ARG:NE	2:B:267:ASP:OD1	2.24	0.46
1:C:113:ASN:OD1	1:C:341:GLU:HG2	2.16	0.46
1:C:243:PRO:HB2	2:D:201:LEU:HD21	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:251:VAL:HG22	2:D:321:TYR:CD2	2.51	0.46
1:E:94:ILE:HD11	1:E:185:PHE:HD2	1.80	0.46
1:G:85:ILE:HG23	1:G:86:GLU:H	1.81	0.46
2:B:180:MET:HE2	2:B:219:VAL:HG21	1.98	0.46
1:C:256:ARG:O	1:C:256:ARG:HG2	2.13	0.46
1:C:257:PHE:CE1	1:C:269:LEU:HD23	2.50	0.46
2:D:374:PHE:CG	2:D:375:VAL:N	2.83	0.46
1:E:179:TYR:CB	1:E:308:ARG:HE	2.29	0.46
1:E:183:THR:HG21	4:E:403:ATP:N7	2.31	0.46
1:G:230:GLU:CD	2:H:95:ARG:HH12	2.22	0.46
1:E:95:LEU:HA	1:E:98:VAL:HG12	1.98	0.45
1:E:181:GLN:HA	1:E:181:GLN:OE1	2.15	0.45
2:H:274:PHE:HB2	2:H:343:LEU:HB3	1.99	0.45
2:B:156:PHE:HD1	2:H:114:LYS:HE2	1.81	0.45
2:B:203:LEU:O	2:B:226:ARG:HG3	2.16	0.45
1:E:85:ILE:HG23	1:E:86:GLU:H	1.80	0.45
1:G:42:GLN:HB3	1:G:62:HIS:NE2	2.31	0.45
1:A:207:PRO:HD3	1:A:222:TRP:CE2	2.51	0.45
2:D:175:ILE:HG12	2:D:180:MET:HE1	1.97	0.45
2:D:183:TYR:HE2	2:D:214:LYS:HD2	1.80	0.45
2:B:304:ARG:HG3	2:B:304:ARG:HH11	1.80	0.45
2:D:254:LEU:HD23	2:D:257:LEU:HD11	1.99	0.45
2:B:136:PHE:HE1	2:B:147:ILE:HG21	1.82	0.45
2:F:135:LEU:HD11	2:F:204:ILE:HD11	1.99	0.45
2:F:248:LEU:HD11	2:F:269:LEU:HD11	1.97	0.45
1:G:62:HIS:HE1	1:G:64:GLU:HB3	1.82	0.45
1:G:88:THR:O	1:G:91:GLU:HB3	2.17	0.45
1:A:46:ILE:O	1:A:47:LYS:HG2	2.17	0.45
1:C:49:LEU:HD21	1:C:59:LEU:HB2	1.98	0.45
1:C:207:PRO:HD3	1:C:222:TRP:CE2	2.52	0.45
2:D:176:ASP:OD1	2:D:220:LYS:HD3	2.16	0.45
2:D:302:GLN:HG2	2:D:335:ALA:CB	2.47	0.45
1:E:49:LEU:N	1:E:57:VAL:O	2.46	0.45
1:E:70:ALA:HB2	1:E:122:TYR:CD1	2.51	0.45
1:G:56:ARG:HH22	1:G:333:GLU:CB	2.29	0.45
2:F:361:SER:C	2:F:365:LYS:HD2	2.42	0.45
1:A:89:LEU:HD23	1:A:350:PHE:HD2	1.81	0.45
2:B:157:ILE:HD13	2:H:231:ARG:CZ	2.47	0.45
1:C:336:ARG:HH22	1:C:338:SEP:P	2.40	0.45
1:E:70:ALA:N	1:E:122:TYR:HB2	2.32	0.45
1:G:120:MET:HG2	4:G:403:ATP:HN61	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:318:PHE:HD1	1:G:320:GLY:N	2.15	0.45
2:H:369:GLN:NE2	2:H:370:GLN:OE1	2.50	0.45
2:B:283:GLN:HE21	2:B:335:ALA:HA	1.81	0.45
2:D:111:TYR:HB2	2:D:231:ARG:HD2	1.98	0.45
1:E:44:GLU:OE1	1:E:45:ARG:N	2.50	0.45
1:E:171:ASN:HD21	1:E:184:ASP:HB3	1.82	0.45
1:E:208:GLU:HG3	1:E:215:TYR:HB3	1.98	0.45
2:B:269:LEU:HA	2:B:348:LEU:HD23	1.98	0.44
2:B:261:GLU:O	2:B:265:VAL:HG22	2.17	0.44
1:C:297:PHE:HB3	1:C:302:TRP:HZ2	1.82	0.44
2:F:326:ALA:O	2:F:350:ARG:HB2	2.16	0.44
2:H:158:ALA:HB2	2:H:217:THR:C	2.42	0.44
2:F:333:ARG:HH11	2:F:333:ARG:HG3	1.80	0.44
2:B:304:ARG:NH1	2:B:308:GLU:OE2	2.50	0.44
1:E:238:PHE:CZ	1:E:255:VAL:HA	2.52	0.44
1:G:229:TYR:HD1	1:G:269:LEU:HD21	1.81	0.44
1:E:209:ILE:HG12	1:E:215:TYR:CD2	2.52	0.44
2:F:156:PHE:CD2	2:F:162:VAL:HG12	2.53	0.44
1:G:229:TYR:CD2	1:G:237:PRO:HG3	2.53	0.44
1:A:48:THR:HA	1:A:58:MET:HA	2.00	0.44
1:E:48:THR:HA	1:E:58:MET:HG2	1.98	0.44
2:B:302:GLN:HG3	2:B:335:ALA:HB2	2.00	0.44
2:D:167:ASP:O	2:D:208:PRO:HA	2.18	0.44
1:E:179:TYR:CE2	1:E:308:ARG:HG3	2.53	0.44
1:E:212:SER:HB2	2:F:233:LEU:HD23	1.99	0.44
1:E:163:ILE:CD1	1:E:191:VAL:HG21	2.48	0.44
2:F:130:ILE:HD13	2:F:136:PHE:HB3	1.99	0.44
2:B:311:VAL:HG23	2:B:313:VAL:HG22	2.00	0.43
1:C:240:ALA:HB3	1:C:246:ILE:HG23	1.98	0.43
2:B:283:GLN:NE2	2:B:302:GLN:HA	2.33	0.43
1:E:99:ASN:OD1	1:E:99:ASN:C	2.61	0.43
2:F:108:ALA:O	2:F:111:TYR:HB3	2.19	0.43
2:F:276:ASP:HB2	2:F:341:GLY:HA2	2.00	0.43
2:B:118:LYS:HB2	2:B:123:MET:HE2	2.01	0.43
2:B:227:ASP:O	2:B:231:ARG:HG3	2.18	0.43
1:G:242:GLN:HG3	1:G:243:PRO:HD2	2.00	0.43
2:H:181:ASP:N	2:H:216:LYS:HG3	2.34	0.43
1:A:103:LEU:HD22	1:A:185:PHE:HZ	1.84	0.43
1:A:170:GLU:OE1	1:A:170:GLU:N	2.45	0.43
2:F:305:SER:HB3	2:F:308:GLU:HB2	2.00	0.43
1:A:51:THR:HA	1:A:56:ARG:HA	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:163:ILE:CD1	1:A:217:LYS:HA	2.41	0.43
2:D:281:VAL:O	2:D:336:THR:HG23	2.18	0.43
1:G:126:GLY:HA2	1:G:327:PHE:CZ	2.52	0.43
2:B:255:GLU:CD	2:B:370:GLN:HE22	2.27	0.43
2:B:364:LEU:HD23	2:B:371:TYR:HD1	1.83	0.43
1:C:208:GLU:OE1	1:C:280:ARG:NH2	2.29	0.43
2:D:373:SER:O	2:D:375:VAL:HG22	2.19	0.43
1:E:80:VAL:HG21	1:E:343:CYS:SG	2.58	0.43
1:A:148:ALA:HA	1:A:302:TRP:HZ3	1.84	0.43
1:A:195:THR:OG1	1:A:197:TPO:O2P	2.29	0.43
2:B:204:ILE:HG13	2:B:205:TYR:CD2	2.54	0.43
1:E:47:LYS:HA	1:E:47:LYS:HD2	1.88	0.43
1:G:29:LYS:HG3	1:G:97:ALA:HB1	1.99	0.43
1:G:133:ARG:HB3	2:H:93:ARG:HH21	1.84	0.43
1:A:248:GLU:O	1:A:252:SER:HB3	2.18	0.43
2:F:136:PHE:O	2:F:144:ARG:NH1	2.52	0.43
1:G:91:GLU:HG3	1:G:185:PHE:HB2	2.01	0.43
2:H:229:TYR:C	2:H:229:TYR:CD2	2.97	0.43
1:C:103:LEU:HD23	1:C:182:VAL:CG2	2.49	0.43
1:E:127:GLU:OE1	1:E:129:PHE:HB3	2.18	0.43
2:H:270:GLU:HA	2:H:271:PRO:HD3	1.87	0.43
1:C:125:GLY:O	1:C:131:HIS:NE2	2.48	0.43
1:G:229:TYR:CD1	1:G:269:LEU:HD21	2.54	0.43
2:H:162:VAL:HG23	2:H:163:ILE:N	2.34	0.43
1:A:230:GLU:CD	2:B:95:ARG:HH12	2.25	0.42
1:C:59:LEU:HD12	1:C:69:TYR:O	2.19	0.42
1:E:202:PRO:HD3	2:F:98:ILE:HG12	2.00	0.42
1:E:243:PRO:O	1:E:246:ILE:HB	2.19	0.42
2:F:151:MET:HG2	2:F:224:ILE:HB	2.01	0.42
2:F:327:LEU:CD2	2:F:348:LEU:HD22	2.48	0.42
2:F:340:ARG:HH22	2:H:179:GLU:CD	2.27	0.42
1:G:208:GLU:CD	1:G:280:ARG:HH12	2.26	0.42
2:H:167:ASP:O	2:H:208:PRO:HA	2.19	0.42
1:A:75:ASP:HA	1:A:115:ASN:OD1	2.19	0.42
1:A:194:ARG:NH2	2:B:267:ASP:OD2	2.43	0.42
2:B:113:ARG:NH2	2:B:146:ASP:OD1	2.52	0.42
2:B:167:ASP:O	2:B:208:PRO:HA	2.19	0.42
2:B:301:LEU:HA	2:B:311:VAL:O	2.19	0.42
2:F:118:LYS:NZ	2:F:148:PHE:O	2.33	0.42
1:G:189:LYS:HZ3	1:G:195:THR:HG1	1.56	0.42
1:A:276:ASP:OD1	2:B:352:ARG:NH2	2.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:204:TYR:OH	1:A:230:GLU:OE2	2.25	0.42
1:A:257:PHE:HE1	1:A:269:LEU:HD23	1.83	0.42
2:B:254:LEU:O	2:B:257:LEU:HB2	2.20	0.42
1:C:43:PHE:O	1:C:63:LYS:HE3	2.19	0.42
1:C:230:GLU:HA	1:C:235:TYR:O	2.19	0.42
2:D:371:TYR:O	2:D:374:PHE:HB3	2.19	0.42
1:E:242:GLN:HG3	1:E:243:PRO:CD	2.50	0.42
2:F:139:LEU:HB2	2:F:144:ARG:NH1	2.35	0.42
1:G:258:PRO:HD2	1:G:261:PHE:CD1	2.54	0.42
1:A:278:THR:O	2:B:355:ARG:HD2	2.19	0.42
2:B:331:ARG:HG3	2:B:332:PRO:O	2.20	0.42
1:E:247:TYR:O	1:E:251:VAL:HG22	2.19	0.42
1:C:235:TYR:OH	1:C:258:PRO:HG3	2.19	0.42
1:C:247:TYR:HD1	1:C:250:ILE:HD12	1.84	0.42
1:E:80:VAL:O	1:E:83:LYS:HD3	2.20	0.42
1:E:208:GLU:HG3	1:E:215:TYR:CB	2.50	0.42
2:F:162:VAL:HG23	2:F:163:ILE:N	2.34	0.42
1:G:61:LYS:HG3	1:G:68:HIS:CD2	2.54	0.42
2:B:234:MET:HB2	2:B:234:MET:HE3	1.68	0.42
1:C:128:MET:HE2	1:C:128:MET:HB3	1.88	0.42
2:D:168:GLU:OE1	2:D:168:GLU:N	2.45	0.42
1:G:257:PHE:CD2	1:G:266:LYS:HG3	2.55	0.42
1:C:268:LEU:HB2	1:C:294:HIS:CE1	2.55	0.42
2:D:172:PHE:HZ	2:D:197:SER:HB2	1.85	0.42
1:E:208:GLU:OE1	1:E:277:LEU:HD12	2.20	0.42
1:E:304:ALA:HA	1:E:309:LYS:HZ2	1.85	0.42
1:G:71:MET:HE3	1:G:73:ILE:HG12	2.01	0.42
1:C:163:ILE:O	1:C:188:ALA:HA	2.20	0.42
1:C:336:ARG:NH2	1:C:338:SEP:O2P	2.49	0.42
2:D:166:GLY:HA2	2:D:208:PRO:HB2	2.01	0.42
1:E:27:LEU:HA	1:E:30:TRP:HB3	2.01	0.42
1:G:52:GLY:HA3	4:G:403:ATP:O1B	2.19	0.42
2:H:165:GLN:OE1	2:H:185:ASN:N	2.53	0.42
2:B:172:PHE:CE1	2:B:200:GLU:HG3	2.54	0.42
1:C:80:VAL:HG21	1:C:343:CYS:SG	2.60	0.42
2:D:248:LEU:HD23	2:D:248:LEU:HA	1.93	0.42
1:E:211:LEU:HA	1:E:211:LEU:HD23	1.83	0.42
1:E:346:GLU:OE1	1:E:346:GLU:N	2.50	0.42
1:G:318:PHE:HB2	1:G:319:LYS:H	1.66	0.42
2:D:288:ASP:O	2:D:349:ASP:HA	2.20	0.41
1:G:140:GLU:HG3	1:G:296:TRP:CZ2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:363:ILE:HD12	2:H:363:ILE:HA	1.98	0.41
2:B:173:TYR:HB3	2:B:221:LEU:HD13	2.01	0.41
1:C:142:HIS:CD2	1:C:313:PRO:HG2	2.54	0.41
1:E:198:LEU:HD12	1:E:209:ILE:O	2.20	0.41
2:F:227:ASP:O	2:F:231:ARG:HG3	2.21	0.41
2:F:364:LEU:HD11	2:F:374:PHE:HE1	1.83	0.41
2:H:163:ILE:HD12	2:H:209:ARG:HD2	2.01	0.41
2:H:273:GLN:HB3	2:H:344:LYS:HD2	2.01	0.41
1:A:34:ALA:N	1:A:96:GLN:HG3	2.25	0.41
1:A:49:LEU:N	1:A:57:VAL:O	2.51	0.41
2:B:270:GLU:HA	2:B:271:PRO:HD3	1.95	0.41
1:C:149:GLN:OE1	1:C:180:ILE:HB	2.21	0.41
1:G:166:ASP:OD2	1:G:171:ASN:ND2	2.53	0.41
1:G:197:TPO:O	1:G:215:TYR:OH	2.32	0.41
1:G:268:LEU:HD13	1:G:294:HIS:CE1	2.56	0.41
2:B:253:ILE:HD12	2:B:253:ILE:HA	1.93	0.41
2:D:163:ILE:HD12	2:D:209:ARG:HD2	2.01	0.41
1:E:249:LYS:HA	1:E:249:LYS:HD3	1.87	0.41
2:F:202:ALA:HB2	2:F:209:ARG:HH12	1.86	0.41
2:F:283:GLN:NE2	2:F:303:ARG:HB2	2.35	0.41
1:G:92:LYS:NZ	1:G:350:PHE:HB3	2.34	0.41
1:A:47:LYS:O	1:A:59:LEU:N	2.54	0.41
2:B:167:ASP:O	2:B:209:ARG:HG2	2.20	0.41
2:B:261:GLU:OE2	2:B:366:ARG:NH2	2.45	0.41
2:F:111:TYR:OH	2:F:232:ILE:HA	2.20	0.41
1:G:211:LEU:HD23	1:G:211:LEU:HA	1.88	0.41
1:A:318:PHE:CE1	1:A:320:GLY:O	2.74	0.41
2:B:202:ALA:O	2:B:226:ARG:HD3	2.20	0.41
2:B:370:GLN:O	2:B:373:SER:OG	2.32	0.41
1:C:27:LEU:HA	1:C:27:LEU:HD23	1.77	0.41
1:A:137:ARG:NH2	2:D:307:ASN:OD1	2.52	0.41
2:B:218:ASN:ND2	2:H:112:VAL:HG21	2.35	0.41
1:C:195:THR:OG1	1:C:197:TPO:O2P	2.31	0.41
1:C:207:PRO:HD3	1:C:222:TRP:CZ2	2.55	0.41
2:D:290:PHE:HD1	2:D:323:GLY:C	2.28	0.41
1:A:140:GLU:CG	1:A:141:PRO:HD3	2.38	0.41
2:B:156:PHE:CD1	2:H:114:LYS:HE2	2.55	0.41
2:H:329:MET:HE2	2:H:329:MET:HB2	1.90	0.41
1:C:12:GLN:HE21	1:C:12:GLN:HB3	1.18	0.41
2:F:178:GLY:HA3	2:F:219:VAL:HG12	2.03	0.41
2:F:374:PHE:O	2:F:375:VAL:C	2.64	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:42:GLN:O	1:G:62:HIS:HA	2.21	0.41
1:G:181:GLN:HA	1:G:181:GLN:OE1	2.21	0.41
2:H:172:PHE:CZ	2:H:197:SER:HB2	2.56	0.41
1:A:218:ALA:HA	1:A:221:TRP:CD1	2.55	0.41
1:C:25:ASP:O	1:C:28:LYS:HB2	2.21	0.41
1:C:206:ALA:HB3	1:C:209:ILE:HG13	2.02	0.41
2:F:315:ARG:HD2	2:F:340:ARG:NE	2.36	0.41
1:G:278:THR:OG1	2:H:355:ARG:NH2	2.54	0.41
1:C:102:PHE:O	1:C:182:VAL:HG22	2.21	0.40
1:C:211:LEU:HD23	1:C:211:LEU:HA	1.80	0.40
1:G:170:GLU:OE1	1:G:170:GLU:N	2.44	0.40
1:A:102:PHE:O	1:A:182:VAL:HG22	2.21	0.40
1:G:162:LEU:HD23	1:G:190:ARG:HA	2.03	0.40
1:G:217:LYS:HD3	1:G:217:LYS:N	2.36	0.40
1:E:175:ASP:N	1:E:179:TYR:O	2.27	0.40
2:F:274:PHE:CB	2:F:278:GLN:NE2	2.73	0.40
1:G:242:GLN:HG3	1:G:243:PRO:CD	2.51	0.40
1:A:243:PRO:HA	1:A:246:ILE:HG12	2.04	0.40
2:B:122:THR:HA	2:D:121:LYS:HE3	2.03	0.40
1:C:319:LYS:N	1:C:323:ASP:OD2	2.54	0.40
2:D:304:ARG:HG3	2:D:304:ARG:HH11	1.86	0.40
2:H:307:ASN:O	2:H:308:GLU:HG3	2.21	0.40
2:D:130:ILE:C	2:D:130:ILE:HD12	2.46	0.40
2:D:364:LEU:HD12	2:D:364:LEU:HA	1.90	0.40
1:E:30:TRP:CE3	1:E:93:ARG:NH1	2.90	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	331/350 (95%)	322 (97%)	9 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	335/350 (96%)	320 (96%)	13 (4%)	2 (1%)	21	54
1	E	334/350 (95%)	311 (93%)	21 (6%)	2 (1%)	21	54
1	G	332/350 (95%)	311 (94%)	20 (6%)	1 (0%)	36	65
2	B	283/380 (74%)	275 (97%)	7 (2%)	1 (0%)	30	61
2	D	284/380 (75%)	274 (96%)	8 (3%)	2 (1%)	18	51
2	F	282/380 (74%)	270 (96%)	11 (4%)	1 (0%)	30	61
2	H	282/380 (74%)	271 (96%)	11 (4%)	0	100	100
All	All	2463/2920 (84%)	2354 (96%)	100 (4%)	9 (0%)	30	61

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	375	VAL
1	E	15	VAL
1	G	325	SER
2	D	375	VAL
1	E	14	SER
2	F	375	VAL
1	C	14	SER
2	D	374	PHE
1	C	15	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	284/302 (94%)	284 (100%)	0	100	100
1	C	287/302 (95%)	287 (100%)	0	100	100
1	E	286/302 (95%)	286 (100%)	0	100	100
1	G	285/302 (94%)	285 (100%)	0	100	100
2	B	239/325 (74%)	239 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	D	241/325 (74%)	241 (100%)	0	100	100
2	F	238/325 (73%)	237 (100%)	1 (0%)	84	80
2	H	238/325 (73%)	238 (100%)	0	100	100
All	All	2098/2508 (84%)	2097 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	F	187	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	HIS
1	A	131	HIS
1	A	171	ASN
1	A	307	GLN
2	B	330	ASN
2	B	370	GLN
1	C	12	GLN
1	C	77	GLN
1	C	96	GLN
1	C	326	ASN
2	D	330	ASN
2	D	370	GLN
1	E	115	ASN
2	F	278	GLN
2	F	370	GLN
1	G	96	GLN
1	G	260	HIS
2	H	278	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

12 non-standard protein/DNA/RNA residues 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
1	TPO	A	197	1	8,10,11	1.57	1 (12%)	10,14,16	2.36	2 (20%)
1	SEP	E	139	1	8,9,10	1.62	1 (12%)	7,12,14	1.64	1 (14%)
1	TPO	G	197	1	8,10,11	1.61	1 (12%)	10,14,16	2.35	2 (20%)
1	TPO	E	197	1	8,10,11	1.70	2 (25%)	10,14,16	2.43	2 (20%)
1	SEP	A	338	1	8,9,10	1.68	1 (12%)	7,12,14	1.86	1 (14%)
1	TPO	C	197	1	8,10,11	1.62	1 (12%)	10,14,16	2.51	2 (20%)
1	SEP	G	139	1	8,9,10	1.60	1 (12%)	7,12,14	2.21	1 (14%)
1	SEP	C	338	1	8,9,10	1.59	1 (12%)	7,12,14	1.00	0
1	SEP	A	139	1	8,9,10	1.62	1 (12%)	7,12,14	2.07	1 (14%)
1	SEP	C	139	1	8,9,10	1.63	1 (12%)	7,12,14	2.80	1 (14%)
1	SEP	E	338	1	8,9,10	1.58	1 (12%)	7,12,14	1.20	1 (14%)
1	SEP	G	338	1	8,9,10	1.61	1 (12%)	7,12,14	1.53	1 (14%)

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
1	TPO	A	197	1	-	1/9/11/13	-
1	SEP	E	139	1	-	1/6/8/10	-
1	TPO	G	197	1	-	0/9/11/13	-
1	TPO	E	197	1	-	0/9/11/13	-
1	SEP	A	338	1	-	3/6/8/10	-
1	TPO	C	197	1	-	1/9/11/13	-
1	SEP	G	139	1	-	2/6/8/10	-
1	SEP	C	338	1	-	3/6/8/10	-
1	SEP	A	139	1	-	5/6/8/10	-
1	SEP	C	139	1	-	4/6/8/10	-
1	SEP	E	338	1	-	5/6/8/10	-
1	SEP	G	338	1	-	4/6/8/10	-

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	139	SEP	P-O1P	3.54	1.61	1.50
1	C	139	SEP	P-O1P	3.53	1.61	1.50
1	C	338	SEP	P-O1P	3.51	1.61	1.50
1	A	338	SEP	P-O1P	3.51	1.61	1.50
1	G	338	SEP	P-O1P	3.51	1.61	1.50
1	A	139	SEP	P-O1P	3.50	1.61	1.50
1	G	139	SEP	P-O1P	3.49	1.61	1.50
1	E	338	SEP	P-O1P	3.47	1.61	1.50
1	C	197	TPO	P-O1P	3.41	1.61	1.50
1	E	197	TPO	P-O1P	3.40	1.61	1.50
1	G	197	TPO	P-O1P	3.39	1.61	1.50
1	A	197	TPO	P-O1P	3.34	1.60	1.50
1	E	197	TPO	CB-CA	-2.01	1.49	1.53

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	139	SEP	OG-CB-CA	7.06	115.02	108.14
1	C	197	TPO	P-OG1-CB	-6.93	104.51	123.33
1	E	197	TPO	P-OG1-CB	-6.55	105.54	123.33
1	A	197	TPO	P-OG1-CB	-6.25	106.35	123.33
1	G	197	TPO	P-OG1-CB	-6.14	106.63	123.33
1	G	139	SEP	OG-CB-CA	5.42	113.42	108.14
1	A	139	SEP	OG-CB-CA	5.08	113.09	108.14
1	A	338	SEP	OG-CB-CA	4.31	112.34	108.14
1	E	139	SEP	OG-CB-CA	3.88	111.92	108.14
1	G	197	TPO	CG2-CB-CA	-3.87	105.72	113.26
1	E	197	TPO	CG2-CB-CA	-3.47	106.49	113.26
1	G	338	SEP	OG-CB-CA	3.37	111.42	108.14
1	A	197	TPO	CG2-CB-CA	-3.35	106.74	113.26
1	C	197	TPO	CG2-CB-CA	-3.30	106.83	113.26
1	E	338	SEP	OG-CB-CA	2.45	110.53	108.14

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	139	SEP	C-CA-CB-OG
1	A	139	SEP	CB-OG-P-O1P
1	A	139	SEP	CB-OG-P-O2P
1	A	139	SEP	CB-OG-P-O3P

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Mol	Chain	Res	Type	Atoms
1	A	197	TPO	O-C-CA-CB
1	A	338	SEP	C-CA-CB-OG
1	C	139	SEP	CB-OG-P-O1P
1	C	139	SEP	CB-OG-P-O2P
1	C	139	SEP	CB-OG-P-O3P
1	C	338	SEP	C-CA-CB-OG
1	E	338	SEP	C-CA-CB-OG
1	E	338	SEP	CB-OG-P-O1P
1	E	338	SEP	CB-OG-P-O2P
1	E	338	SEP	CB-OG-P-O3P
1	G	338	SEP	CB-OG-P-O1P
1	G	338	SEP	CB-OG-P-O2P
1	G	338	SEP	CB-OG-P-O3P
1	G	139	SEP	CB-OG-P-O1P
1	A	338	SEP	CA-CB-OG-P
1	C	338	SEP	CA-CB-OG-P
1	A	139	SEP	N-CA-CB-OG
1	A	338	SEP	N-CA-CB-OG
1	C	139	SEP	N-CA-CB-OG
1	C	338	SEP	N-CA-CB-OG
1	E	338	SEP	N-CA-CB-OG
1	G	338	SEP	N-CA-CB-OG
1	E	139	SEP	CB-OG-P-O2P
1	G	139	SEP	CB-OG-P-O2P
1	C	197	TPO	O-C-CA-CB

There are no ring outliers.

11 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	197	TPO	2	0
1	G	197	TPO	2	0
1	E	197	TPO	3	0
1	A	338	SEP	1	0
1	C	197	TPO	3	0
1	G	139	SEP	1	0
1	C	338	SEP	4	0
1	A	139	SEP	1	0
1	C	139	SEP	1	0
1	E	338	SEP	1	0
1	G	338	SEP	2	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 for Mogul analysis.

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	$\# Z > 2$
4	ATP	E	403	3	32,33,33	1.41	4 (12%)	48,52,52	1.82	9 (18%)
4	ATP	G	403	3	32,33,33	1.36	5 (15%)	48,52,52	1.70	9 (18%)

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
4	ATP	E	403	3	-	4/22/38/38	0/3/3/3
4	ATP	G	403	3	-	4/22/38/38	0/3/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	403	ATP	C5-C4	4.73	1.47	1.39
4	G	403	ATP	C5-C4	4.49	1.47	1.39
4	E	403	ATP	C5-C6	2.68	1.48	1.41
4	G	403	ATP	C5-C6	2.54	1.48	1.41
4	E	403	ATP	C5-N7	-2.49	1.34	1.39
4	G	403	ATP	C8-N7	2.32	1.36	1.31
4	G	403	ATP	C5-N7	-2.30	1.34	1.39
4	E	403	ATP	C8-N7	2.16	1.35	1.31
4	G	403	ATP	C4-N9	-2.14	1.33	1.37

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	403	ATP	C5-C4-N3	-6.00	118.45	126.72
4	G	403	ATP	C5-C4-N3	-5.41	119.27	126.72
4	E	403	ATP	N3-C4-N9	4.98	135.64	127.17
4	G	403	ATP	N3-C4-N9	4.34	134.55	127.17
4	E	403	ATP	C2-N3-C4	3.68	120.81	111.83
4	G	403	ATP	C2-N3-C4	3.52	120.43	111.83
4	E	403	ATP	C4-C5-N7	-3.40	106.69	110.58
4	G	403	ATP	C4-C5-N7	-3.22	106.90	110.58
4	E	403	ATP	N3-C2-N1	-3.13	123.84	128.58
4	G	403	ATP	N3-C2-N1	-3.10	123.89	128.58
4	G	403	ATP	C4-N9-C8	2.87	108.76	105.74
4	E	403	ATP	C4-N9-C8	2.75	108.63	105.74
4	E	403	ATP	C5-N7-C8	2.73	107.74	103.45
4	E	403	ATP	C3'-C2'-C1'	2.63	106.44	101.46
4	G	403	ATP	C5-N7-C8	2.34	107.12	103.45
4	G	403	ATP	C6-C5-N7	2.12	136.18	132.09
4	E	403	ATP	N9-C8-N7	-2.05	111.02	113.94
4	G	403	ATP	N9-C8-N7	-2.04	111.05	113.94

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	E	403	ATP	O4'-C4'-C5'-O5'
4	E	403	ATP	C3'-C4'-C5'-O5'
4	G	403	ATP	O4'-C4'-C5'-O5'
4	G	403	ATP	C3'-C4'-C5'-O5'
4	E	403	ATP	PB-O3A-PA-O1A
4	G	403	ATP	PB-O3A-PA-O2A
4	E	403	ATP	PB-O3A-PA-O2A
4	G	403	ATP	PB-O3A-PA-O1A

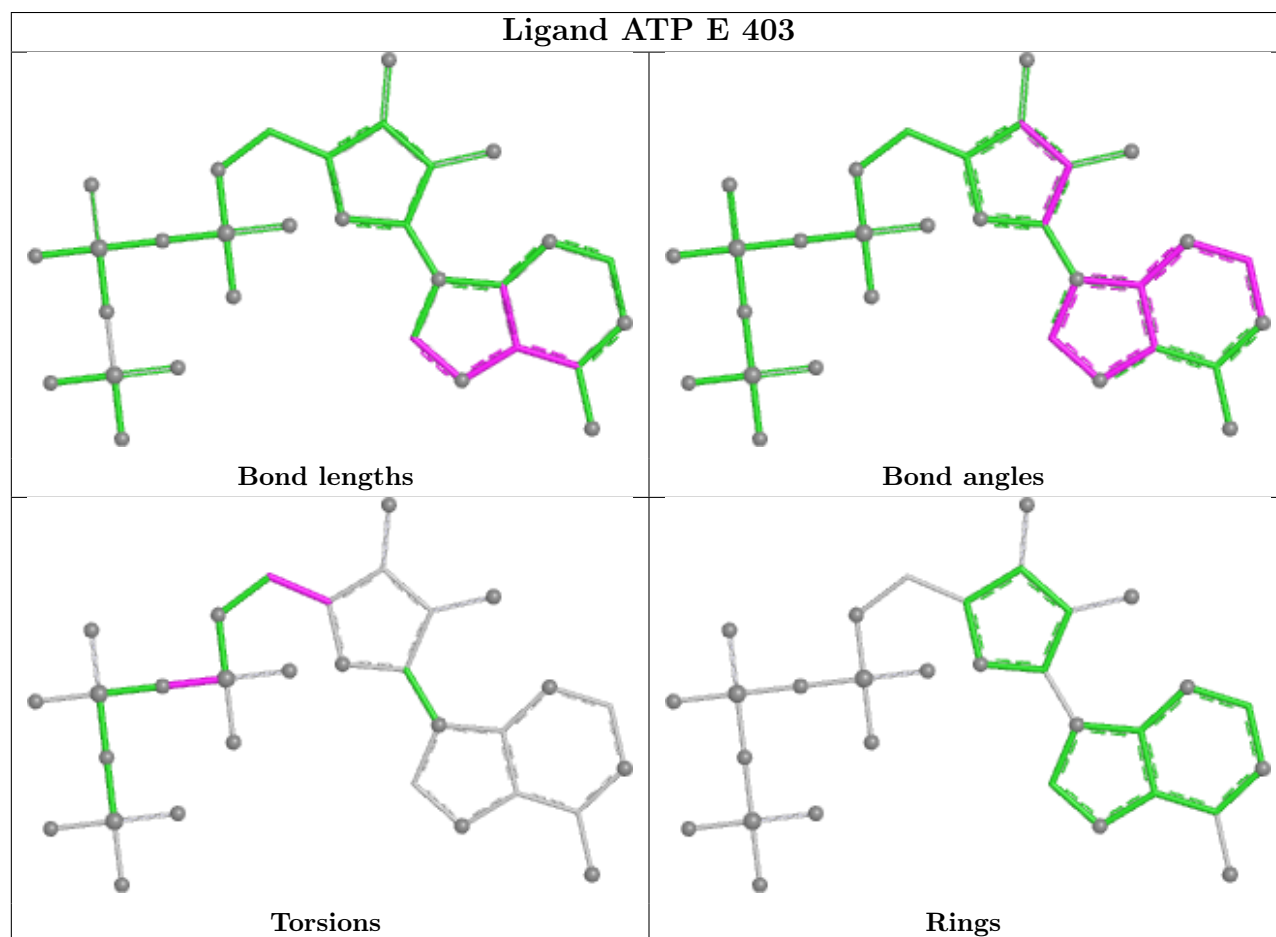
There are no ring outliers.

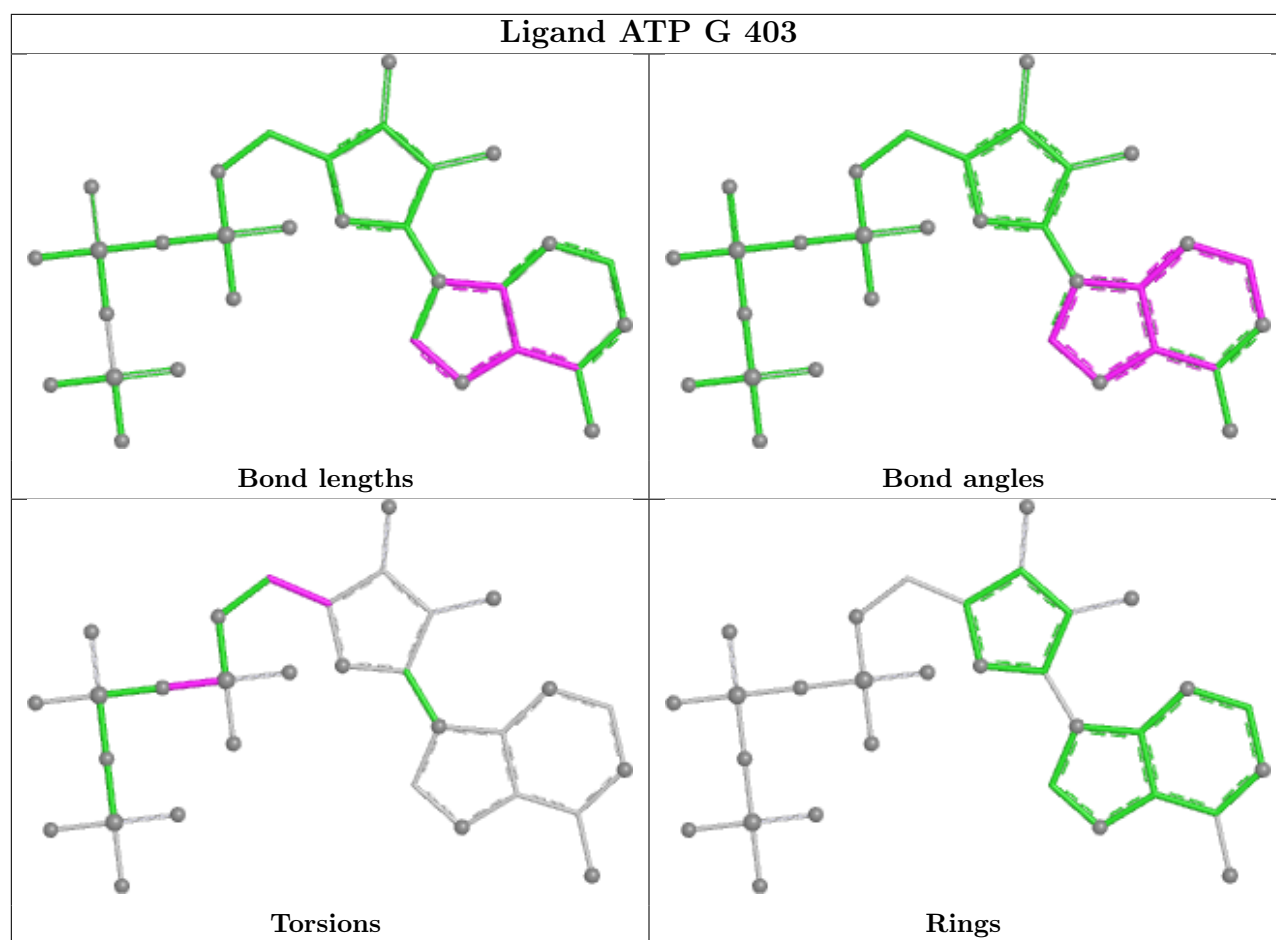
2 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	403	ATP	4	0
4	G	403	ATP	6	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	333/350 (95%)	-0.51	0 100 100	79, 133, 183, 214	0
1	C	337/350 (96%)	-0.31	2 (0%) 85 63	102, 153, 242, 338	0
1	E	336/350 (96%)	-0.24	0 100 100	92, 169, 224, 256	0
1	G	334/350 (95%)	-0.21	2 (0%) 85 63	98, 180, 247, 387	0
2	B	285/380 (75%)	-0.53	0 100 100	65, 118, 161, 195	0
2	D	286/380 (75%)	-0.48	0 100 100	79, 131, 182, 215	0
2	F	284/380 (74%)	-0.54	0 100 100	76, 124, 173, 227	0
2	H	284/380 (74%)	-0.57	0 100 100	70, 130, 178, 207	0
All	All	2479/2920 (84%)	-0.42	4 (0%) 91 80	65, 142, 217, 387	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	60	VAL	2.8
1	G	34	ALA	2.7
1	C	34	ALA	2.6
1	C	46	ILE	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [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(Å ²)	Q<0.9
1	SEP	C	338	10/11	0.94	0.07	173,178,194,208	0
1	SEP	E	139	10/11	0.96	0.07	161,175,186,215	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
1	SEP	E	338	10/11	0.96	0.07	152,155,171,181	0
1	SEP	C	139	10/11	0.97	0.09	142,153,176,212	0
1	SEP	A	338	10/11	0.97	0.08	134,136,142,147	0
1	SEP	G	139	10/11	0.97	0.08	177,191,214,244	0
1	TPO	G	197	11/12	0.98	0.06	108,111,127,128	0
1	SEP	G	338	10/11	0.98	0.04	162,173,186,195	0
1	TPO	C	197	11/12	0.99	0.06	120,136,158,184	0
1	SEP	A	139	10/11	0.99	0.06	105,128,150,187	0
1	TPO	A	197	11/12	0.99	0.05	79,92,126,210	0
1	TPO	E	197	11/12	0.99	0.05	105,108,115,122	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

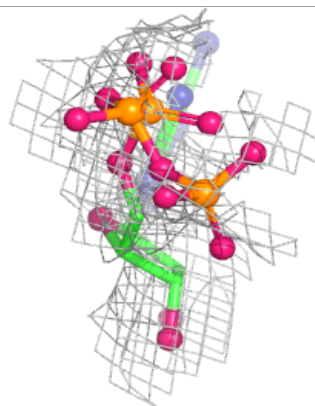
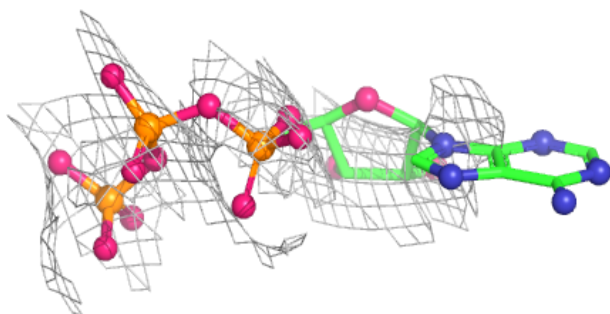
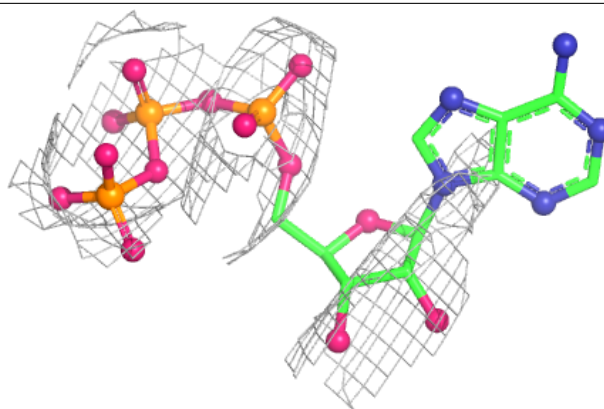
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	MG	E	401	1/1	0.94	0.09	188,188,188,188	0
3	MG	G	401	1/1	0.97	0.05	203,203,203,203	0
4	ATP	E	403	31/31	0.97	0.09	98,233,316,427	0
4	ATP	G	403	31/31	0.97	0.08	109,231,305,390	0
3	MG	G	402	1/1	0.98	0.09	212,212,212,212	0
3	MG	E	402	1/1	0.99	0.06	202,202,202,202	0

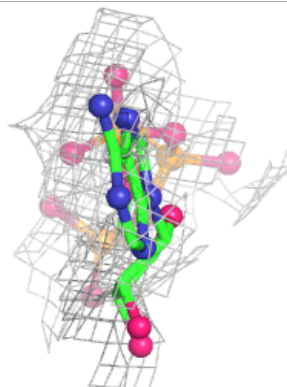
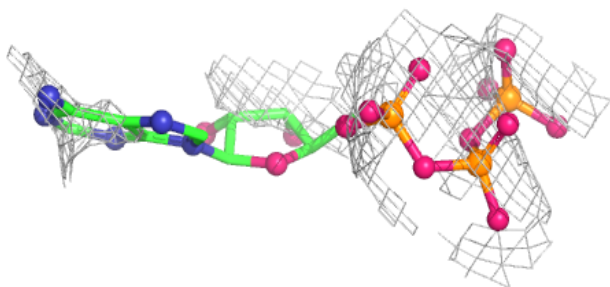
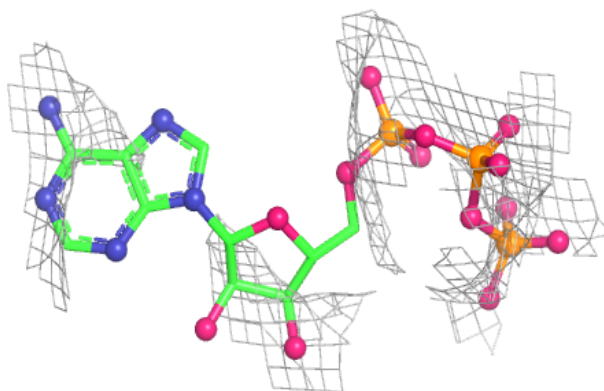
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around ATP E 403:

$2mF_o - DF_c$ (at 0.7 rmsd) in gray
 $mF_o - DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around ATP G 403:**

$2mF_o - DF_c$ (at 0.7 rmsd) in gray
 $mF_o - DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.