



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 06:26 AM GMT

PDB ID : 2WZJ
Title : CATALYTIC AND UBA DOMAIN OF KINASE MARK2/(PAR-1) K82R,
T208E DOUBLE MUTANT
Authors : Panneerselvam, S.; Marx, A.; Mandelkow, E.-M.; Mandelkow, E.
Deposited on : 2009-11-30
Resolution : 2.79 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

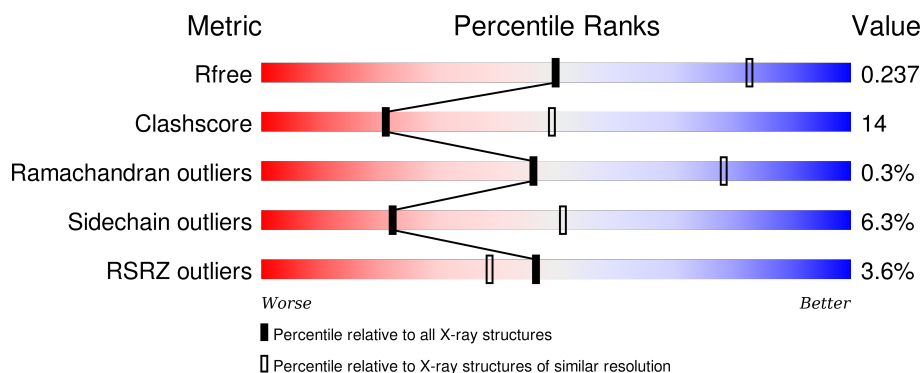
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.79 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}	91344	3004 (2.80-2.76)
Clashscore	102246	3480 (2.80-2.76)
Ramachandran outliers	100387	3423 (2.80-2.76)
Sidechain outliers	100360	3425 (2.80-2.76)
RSRZ outliers	91569	3016 (2.80-2.76)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	327	<div> <div> <div></div> <div>67%</div> <div>24%</div> <div>5%</div> </div> </div>
1	B	327	<div> <div> <div></div> <div>69%</div> <div>23%</div> <div>5%</div> </div> </div>
1	C	327	<div> <div> <div></div> <div>66%</div> <div>25%</div> <div>5%</div> </div> </div>
1	D	327	<div> <div> <div></div> <div>67%</div> <div>26%</div> <div>5%</div> </div> </div>
1	E	327	<div> <div> <div></div> <div>64%</div> <div>29%</div> <div>5%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	327	<div><div></div><div>9%</div><div>60%</div><div>32%</div><div>• 5%</div></div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 15326 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 SERINE/THREONINE-PROTEIN KINASE MARK2.

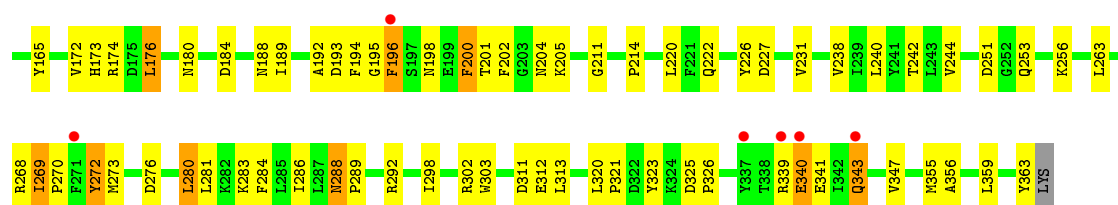
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	310	Total	C	N	O	S	0	0	0
			2531	1627	432	459	13			
1	B	310	Total	C	N	O	S	0	0	0
			2531	1627	432	459	13			
1	C	310	Total	C	N	O	S	0	0	0
			2531	1627	432	459	13			
1	D	313	Total	C	N	O	S	0	0	0
			2556	1642	436	465	13			
1	E	310	Total	C	N	O	S	0	0	0
			2531	1627	432	459	13			
1	F	310	Total	C	N	O	S	0	0	0
			2531	1627	432	459	13			

There are 12 discrepancies between the modelled and reference sequences:

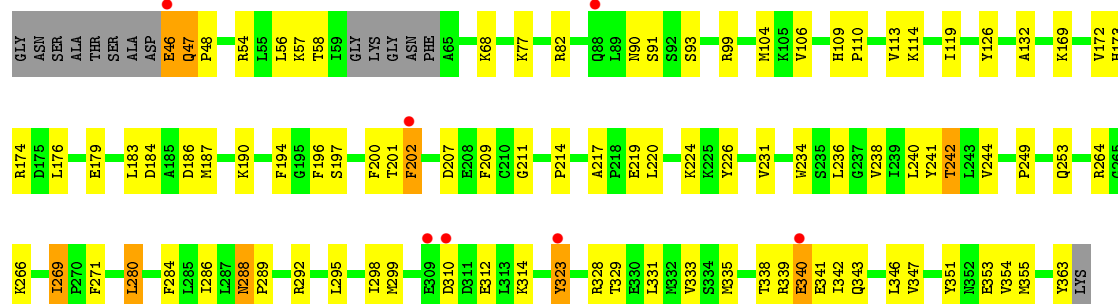
Chain	Residue	Modelled	Actual	Comment	Reference
A	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
A	208	GLU	THR	ENGINEERED MUTATION	UNP O08679
B	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
B	208	GLU	THR	ENGINEERED MUTATION	UNP O08679
C	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
C	208	GLU	THR	ENGINEERED MUTATION	UNP O08679
D	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
D	208	GLU	THR	ENGINEERED MUTATION	UNP O08679
E	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
E	208	GLU	THR	ENGINEERED MUTATION	UNP O08679
F	82	ARG	LYS	ENGINEERED MUTATION	UNP O08679
F	208	GLU	THR	ENGINEERED MUTATION	UNP O08679

- Molecule 2 is water.

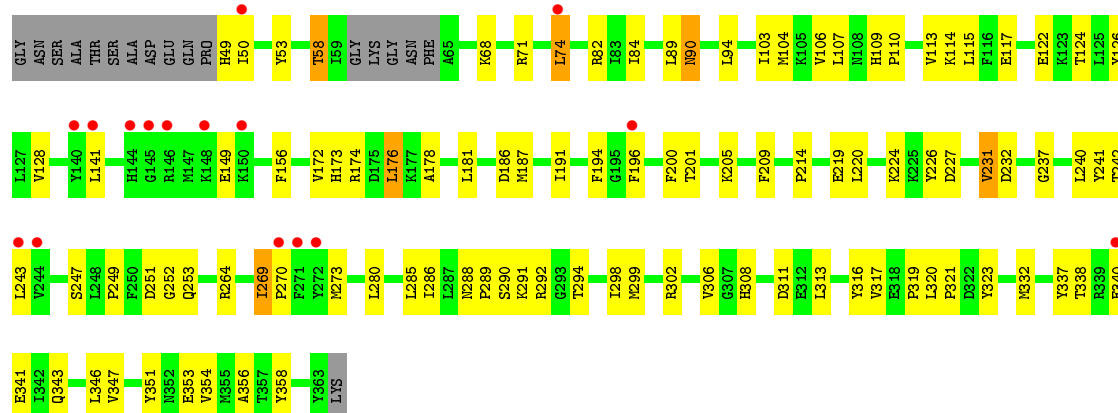
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	36	Total 36	O 36	0	0
2	B	31	Total 31	O 31	0	0
2	C	13	Total 13	O 13	0	0
2	D	24	Total 24	O 24	0	0
2	E	3	Total 3	O 3	0	0
2	F	8	Total 8	O 8	0	0



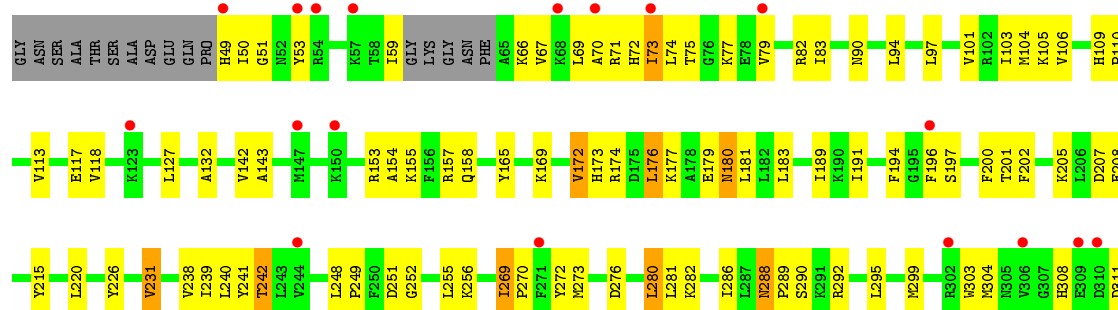
• Molecule 1: SERINE/THREONINE-PROTEIN KINASE MARK2



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4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	162.24Å 205.58Å 91.15Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.39 – 2.79 45.39 – 2.79	Depositor EDS
% Data completeness (in resolution range)	99.5 (45.39-2.79) 99.5 (45.39-2.79)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.02 (at 2.77Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.179 , 0.246 0.169 , 0.237	Depositor DCC
R_{free} test set	3846 reflections (5.02%)	DCC
Wilson B-factor (Å ²)	62.8	Xtriage
Anisotropy	0.391	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 64.0	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	0 of 76697 reflections	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	15326	wwPDB-VP
Average B, all atoms (Å ²)	76.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.60% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	0.46	0/2582	0.59	0/3476
1	B	0.44	0/2582	0.62	0/3476
1	C	0.42	0/2582	0.57	0/3476
1	D	0.42	0/2608	0.60	0/3512
1	E	0.35	0/2582	0.52	0/3476
1	F	0.35	0/2582	0.51	0/3476
All	All	0.41	0/15518	0.57	0/20892

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2531	0	2568	72	0
1	B	2531	0	2568	72	0
1	C	2531	0	2568	74	0
1	D	2556	0	2589	93	0
1	E	2531	0	2568	68	0
1	F	2531	0	2568	84	0
2	A	36	0	0	0	0
2	B	31	0	0	0	0
2	C	13	0	0	0	0
2	D	24	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	3	0	0	0	0
2	F	8	0	0	1	0
All	All	15326	0	15429	439	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 14.

All (439) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:46:GLU:HG2	1:D:54:ARG:HE	1.24	1.03
1:F:73:ILE:HG22	1:F:74:LEU:HD23	1.38	1.01
1:A:90:ASN:H	1:A:90:ASN:HD22	0.97	0.95
1:B:104:MET:HE2	1:B:196:PHE:HB3	1.49	0.90
1:C:90:ASN:H	1:C:90:ASN:HD22	1.17	0.90
1:F:320:LEU:H	1:F:320:LEU:HD12	1.36	0.89
1:A:104:MET:CE	1:A:196:PHE:HB3	2.03	0.88
1:B:269:ILE:H	1:B:269:ILE:HD13	1.39	0.86
1:A:104:MET:HE2	1:A:196:PHE:HB3	1.58	0.85
1:E:269:ILE:H	1:E:269:ILE:HD13	1.42	0.85
1:D:58:THR:HG22	1:D:68:LYS:NZ	1.91	0.85
1:B:90:ASN:HD22	1:B:90:ASN:H	1.20	0.84
1:A:90:ASN:H	1:A:90:ASN:ND2	1.77	0.83
1:C:49:HIS:HB2	1:C:53:TYR:O	1.79	0.83
1:D:238:VAL:O	1:D:242:THR:HG23	1.79	0.82
1:A:49:HIS:HB2	1:A:53:TYR:O	1.81	0.81
1:E:288:ASN:HD22	1:E:289:PRO:HD2	1.47	0.79
1:A:90:ASN:N	1:A:90:ASN:HD22	1.77	0.79
1:A:269:ILE:HD13	1:A:269:ILE:H	1.47	0.79
1:A:149:GLU:HG2	1:A:303:TRP:HE1	1.48	0.78
1:F:269:ILE:HD13	1:F:269:ILE:H	1.47	0.78
1:F:69:LEU:HD12	1:F:70:ALA:H	1.48	0.78
1:B:264:ARG:HD2	1:B:266:LYS:HG3	1.66	0.78
1:D:46:GLU:HG2	1:D:54:ARG:NE	2.00	0.77
1:F:201:THR:HG21	1:F:205:LYS:HB2	1.66	0.77
1:B:49:HIS:HB2	1:B:53:TYR:O	1.83	0.77
1:D:196:PHE:HE1	1:D:202:PHE:CZ	2.04	0.75
1:E:346:LEU:HD11	1:E:358:TYR:CD1	2.21	0.75
1:D:338:THR:O	1:D:342:ILE:HG13	1.86	0.74
1:A:95:GLN:HE22	1:B:174:ARG:HH22	1.32	0.74
1:C:82:ARG:HD3	1:C:198:ASN:HD22	1.52	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:ASN:HD22	1:A:289:PRO:HD2	1.53	0.73
1:F:59:ILE:HD13	1:F:69:LEU:HB2	1.69	0.73
1:D:46:GLU:CG	1:D:54:ARG:HE	2.02	0.73
1:C:173:HIS:CG	1:C:176:LEU:HD13	2.25	0.72
1:E:294:THR:O	1:E:298:ILE:HG13	1.91	0.71
1:F:173:HIS:CG	1:F:176:LEU:HD13	2.25	0.71
1:C:82:ARG:HG2	1:C:196:PHE:HZ	1.56	0.71
1:C:104:MET:HE1	1:C:196:PHE:CD2	2.26	0.70
1:A:288:ASN:HD22	1:A:289:PRO:CD	2.04	0.70
1:E:90:ASN:H	1:E:90:ASN:HD22	1.40	0.70
1:D:82:ARG:HE	1:D:196:PHE:HE2	1.39	0.70
1:D:286:ILE:HB	1:D:292:ARG:HG2	1.74	0.69
1:E:343:GLN:O	1:E:347:VAL:HG23	1.92	0.69
1:D:288:ASN:HD22	1:D:288:ASN:C	1.96	0.69
1:C:90:ASN:N	1:C:90:ASN:HD22	1.91	0.68
1:E:49:HIS:HB2	1:E:53:TYR:O	1.94	0.68
1:D:196:PHE:HE1	1:D:202:PHE:CE2	2.12	0.67
1:F:269:ILE:HD13	1:F:269:ILE:N	2.10	0.67
1:E:90:ASN:H	1:E:90:ASN:ND2	1.93	0.66
1:D:328:ARG:HA	1:D:331:LEU:HD12	1.78	0.66
1:C:77:LYS:HE2	1:C:363:TYR:HB2	1.77	0.66
1:F:286:ILE:HB	1:F:292:ARG:HG2	1.78	0.66
1:F:299:MET:HG2	1:F:313:LEU:HD23	1.77	0.66
1:F:238:VAL:O	1:F:242:THR:HG23	1.96	0.66
1:B:295:LEU:O	1:B:299:MET:HG3	1.96	0.65
1:A:173:HIS:CG	1:A:176:LEU:HD13	2.32	0.65
1:B:82:ARG:HG2	1:B:196:PHE:CZ	2.32	0.65
1:D:57:LYS:NZ	2:D:2004:HOH:O	2.30	0.65
1:A:104:MET:HE1	1:A:196:PHE:HB3	1.77	0.65
1:C:240:LEU:HD23	1:C:281:LEU:CD2	2.27	0.65
1:F:82:ARG:HB3	1:F:127:LEU:HB2	1.79	0.64
1:D:58:THR:HG22	1:D:68:LYS:HZ2	1.61	0.64
1:C:82:ARG:HD3	1:C:198:ASN:ND2	2.13	0.64
1:F:241:TYR:CG	1:F:249:PRO:HG3	2.33	0.64
1:C:174:ARG:HH21	1:C:227:ASP:HA	1.63	0.64
1:E:286:ILE:HB	1:E:292:ARG:HG2	1.79	0.64
1:C:321:PRO:HB3	1:C:323:TYR:CZ	2.33	0.63
1:C:58:THR:HG22	1:C:68:LYS:NZ	2.14	0.63
1:B:174:ARG:HH21	1:B:227:ASP:HA	1.61	0.63
1:D:47:GLN:HB3	1:D:48:PRO:HD3	1.81	0.63
1:C:104:MET:HE1	1:C:196:PHE:HD2	1.64	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:82:ARG:HG2	1:C:196:PHE:CZ	2.33	0.63
1:F:69:LEU:HD12	1:F:70:ALA:N	2.13	0.62
1:C:226:TYR:CE1	1:C:231:VAL:HG11	2.34	0.62
1:A:95:GLN:NE2	1:B:174:ARG:HH22	1.97	0.62
1:B:288:ASN:HD22	1:B:288:ASN:C	2.03	0.62
1:D:288:ASN:HD22	1:D:289:PRO:N	1.98	0.62
1:F:320:LEU:CD1	1:F:320:LEU:H	2.09	0.62
1:D:226:TYR:CE1	1:D:231:VAL:HG11	2.35	0.61
1:A:200:PHE:CZ	1:A:202:PHE:HA	2.35	0.61
1:A:119:ILE:HB	1:A:126:TYR:HB2	1.81	0.61
1:C:201:THR:HG21	1:C:205:LYS:CG	2.31	0.61
1:B:90:ASN:ND2	1:B:90:ASN:H	1.91	0.61
1:E:237:GLY:HA3	1:E:285:LEU:HD21	1.82	0.61
1:E:201:THR:HG21	1:E:205:LYS:HB2	1.82	0.60
1:C:269:ILE:H	1:C:269:ILE:HD13	1.65	0.60
1:A:269:ILE:CD1	1:A:269:ILE:H	2.15	0.60
1:D:179:GLU:OE2	1:D:211:GLY:HA3	2.02	0.60
1:E:270:PRO:HD2	1:E:273:MET:HE3	1.84	0.59
1:D:197:SER:HB3	1:D:200:PHE:HB3	1.84	0.59
1:C:104:MET:HE2	1:C:196:PHE:HB3	1.84	0.59
1:F:90:ASN:ND2	1:F:90:ASN:H	2.01	0.59
1:F:66:LYS:HD2	1:F:83:ILE:HB	1.84	0.59
1:F:201:THR:HG21	1:F:205:LYS:CB	2.31	0.59
1:D:196:PHE:CE1	1:D:202:PHE:CZ	2.90	0.59
1:A:100:GLU:HG2	1:A:195:GLY:O	2.03	0.58
1:F:201:THR:HG22	1:F:207:ASP:OD1	2.03	0.58
1:E:220:LEU:HB2	1:E:226:TYR:CE2	2.38	0.58
1:E:337:TYR:CE1	1:E:354:VAL:HG22	2.39	0.58
1:D:288:ASN:ND2	1:D:288:ASN:C	2.57	0.58
1:B:238:VAL:O	1:B:242:THR:HG23	2.04	0.58
1:F:73:ILE:CG2	1:F:74:LEU:HD23	2.24	0.57
1:B:299:MET:HG2	1:B:313:LEU:HD23	1.86	0.57
1:F:109:HIS:CG	1:F:110:PRO:HD2	2.39	0.57
1:F:132:ALA:HB1	1:F:183:LEU:O	2.04	0.57
1:B:181:LEU:HD11	1:B:239:ILE:HD13	1.86	0.57
1:D:172:VAL:CG2	1:D:174:ARG:HG3	2.34	0.57
1:F:251:ASP:OD1	1:F:252:GLY:N	2.38	0.57
1:D:331:LEU:O	1:D:335:MET:HG3	2.05	0.57
1:F:288:ASN:ND2	1:F:290:SER:H	2.03	0.57
1:B:149:GLU:CG	1:B:303:TRP:HE1	2.18	0.57
1:C:173:HIS:O	1:C:174:ARG:HB2	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:105:LYS:HG2	1:F:351:TYR:CE2	2.40	0.56
1:B:288:ASN:C	1:B:288:ASN:ND2	2.58	0.56
1:F:308:HIS:HB3	1:F:311:ASP:HB3	1.87	0.56
1:B:82:ARG:HG2	1:B:196:PHE:HZ	1.69	0.56
1:B:149:GLU:HG2	1:B:303:TRP:HE1	1.70	0.56
1:F:142:VAL:HG12	1:F:143:ALA:N	2.21	0.56
1:C:172:VAL:CG2	1:C:174:ARG:HG3	2.36	0.56
1:C:272:TYR:HD1	1:C:273:MET:N	2.03	0.56
1:B:288:ASN:HD22	1:B:289:PRO:HD2	1.71	0.56
1:C:288:ASN:C	1:C:288:ASN:HD22	2.09	0.56
1:C:280:LEU:HD22	1:C:284:PHE:CE2	2.40	0.56
1:B:269:ILE:H	1:B:269:ILE:CD1	2.15	0.56
1:A:331:LEU:O	1:A:335:MET:HG3	2.06	0.56
1:D:209:PHE:HE2	1:E:214:PRO:HG3	1.70	0.55
1:D:342:ILE:HG22	1:D:346:LEU:HD12	1.89	0.55
1:D:57:LYS:HE2	2:D:2004:HOH:O	2.05	0.55
1:C:270:PRO:HB2	1:C:272:TYR:CE1	2.41	0.55
1:C:104:MET:CE	1:C:196:PHE:HD2	2.19	0.55
1:B:82:ARG:NE	1:B:196:PHE:HZ	2.05	0.55
1:C:276:ASP:OD1	1:C:302:ARG:HD2	2.06	0.55
1:A:233:VAL:O	1:A:284:PHE:HD1	1.90	0.55
1:A:343:GLN:O	1:A:347:VAL:HG23	2.07	0.54
1:B:88:GLN:C	1:B:89:LEU:HD23	2.28	0.54
1:D:219:GLU:OE2	1:D:292:ARG:NH2	2.39	0.54
1:E:141:LEU:HD11	1:E:243:LEU:HD23	1.90	0.54
1:E:288:ASN:ND2	1:E:289:PRO:HD2	2.21	0.54
1:B:109:HIS:HB3	1:B:112:ILE:HG13	1.88	0.54
1:B:324:LYS:HE2	1:B:343:GLN:HE22	1.73	0.54
1:C:89:LEU:HD21	1:C:202:PHE:HB2	1.90	0.54
1:B:288:ASN:HD22	1:B:289:PRO:CD	2.20	0.54
1:F:104:MET:HE1	1:F:196:PHE:HB3	1.90	0.54
1:D:269:ILE:O	1:D:269:ILE:HG12	2.07	0.54
1:D:196:PHE:CE1	1:D:202:PHE:CE2	2.95	0.53
1:F:299:MET:HG2	1:F:313:LEU:CD2	2.38	0.53
1:E:58:THR:HG22	1:E:68:LYS:NZ	2.23	0.53
1:F:181:LEU:HD11	1:F:239:ILE:HD13	1.91	0.53
1:F:270:PRO:HD2	1:F:273:MET:HE3	1.91	0.53
1:E:173:HIS:CG	1:E:176:LEU:HD13	2.43	0.53
1:D:219:GLU:CD	1:D:292:ARG:HH22	2.12	0.52
1:A:269:ILE:HG12	1:A:269:ILE:O	2.08	0.52
1:A:238:VAL:O	1:A:242:THR:HG23	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:53:TYR:CE2	1:E:128:VAL:HG11	2.44	0.52
1:D:209:PHE:CE2	1:E:214:PRO:HG3	2.44	0.52
1:A:288:ASN:HD22	1:A:289:PRO:N	2.08	0.52
1:E:89:LEU:HD12	1:E:94:LEU:HD23	1.91	0.52
1:F:320:LEU:HD12	1:F:320:LEU:N	2.17	0.52
1:F:288:ASN:HD22	1:F:290:SER:H	1.58	0.52
1:F:104:MET:CE	1:F:196:PHE:HB3	2.39	0.52
1:D:132:ALA:HB1	1:D:183:LEU:O	2.10	0.52
1:B:201:THR:HG22	1:B:207:ASP:OD1	2.10	0.52
1:C:90:ASN:ND2	1:C:93:SER:HB2	2.25	0.52
1:B:288:ASN:HD22	1:B:289:PRO:N	2.07	0.52
1:C:90:ASN:ND2	1:C:90:ASN:H	1.96	0.51
1:F:97:LEU:O	1:F:101:VAL:HG23	2.10	0.51
1:F:77:LYS:HE2	1:F:363:TYR:HB2	1.91	0.51
1:E:201:THR:HG21	1:E:205:LYS:CB	2.39	0.51
1:F:288:ASN:HD22	1:F:289:PRO:N	2.08	0.51
1:B:211:GLY:O	1:B:214:PRO:HD2	2.10	0.51
1:F:282:LYS:O	1:F:286:ILE:HD11	2.10	0.51
1:B:253:GLN:HG3	1:C:200:PHE:CD2	2.44	0.51
1:F:226:TYR:CE1	1:F:231:VAL:HG11	2.46	0.51
1:B:200:PHE:CD2	1:C:253:GLN:HG3	2.46	0.51
1:C:286:ILE:HB	1:C:292:ARG:HG2	1.93	0.51
1:B:117:GLU:HB2	1:B:356:ALA:HB2	1.91	0.51
1:F:49:HIS:HB2	1:F:53:TYR:O	2.11	0.51
1:D:201:THR:HG22	1:D:207:ASP:OD1	2.11	0.51
1:F:72:HIS:O	1:F:73:ILE:C	2.49	0.51
1:B:186:ASP:O	1:B:187:MET:HB2	2.11	0.50
1:C:240:LEU:HD23	1:C:281:LEU:HD21	1.92	0.50
1:A:201:THR:HG21	1:A:205:LYS:HG2	1.93	0.50
1:B:174:ARG:NH2	1:B:227:ASP:HA	2.26	0.50
1:D:253:GLN:HG3	1:E:200:PHE:CD2	2.46	0.50
1:D:57:LYS:CE	2:D:2004:HOH:O	2.58	0.50
1:A:201:THR:HG21	1:A:205:LYS:HB2	1.93	0.50
1:D:104:MET:CE	1:D:196:PHE:HB3	2.42	0.50
1:C:222:GLN:HE21	1:C:263:LEU:HD22	1.77	0.50
1:C:355:MET:O	1:C:359:LEU:HG	2.11	0.50
1:F:357:THR:N	2:F:2008:HOH:O	2.44	0.50
1:D:46:GLU:HG3	1:D:56:LEU:CD2	2.42	0.50
1:C:89:LEU:CD2	1:C:202:PHE:HB2	2.42	0.50
1:A:286:ILE:HB	1:A:292:ARG:HG2	1.94	0.50
1:A:58:THR:HG22	1:A:68:LYS:HD3	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:338:THR:HG23	1:E:341:GLU:OE2	2.11	0.50
1:E:320:LEU:H	1:E:320:LEU:HD12	1.76	0.50
1:B:226:TYR:CE1	1:B:231:VAL:HG11	2.46	0.50
1:D:58:THR:HG22	1:D:68:LYS:HZ3	1.75	0.50
1:C:288:ASN:HD22	1:C:289:PRO:N	2.09	0.49
1:C:340:GLU:HG2	1:C:341:GLU:N	2.26	0.49
1:A:82:ARG:HD3	1:A:198:ASN:HD22	1.77	0.49
1:D:244:VAL:HG23	1:D:244:VAL:O	2.12	0.49
1:A:170:PHE:O	1:B:95:GLN:HG2	2.13	0.49
1:E:269:ILE:O	1:E:269:ILE:HG12	2.11	0.49
1:B:200:PHE:CD1	1:B:201:THR:O	2.66	0.49
1:C:226:TYR:CE1	1:C:231:VAL:CG1	2.96	0.49
1:C:280:LEU:HD22	1:C:284:PHE:HE2	1.77	0.49
1:F:346:LEU:HD11	1:F:358:TYR:CD1	2.48	0.49
1:A:201:THR:HG21	1:A:205:LYS:CB	2.42	0.48
1:E:113:VAL:HG13	1:E:191:ILE:O	2.13	0.48
1:D:109:HIS:CG	1:D:110:PRO:HD2	2.48	0.48
1:E:109:HIS:CG	1:E:110:PRO:HD2	2.49	0.48
1:C:58:THR:HG22	1:C:68:LYS:HZ1	1.76	0.48
1:E:84:ILE:HD11	1:E:196:PHE:CZ	2.48	0.48
1:F:321:PRO:HB3	1:F:323:TYR:CZ	2.48	0.48
1:A:338:THR:OG1	1:A:341:GLU:HG2	2.14	0.48
1:A:288:ASN:ND2	1:A:289:PRO:HD2	2.26	0.48
1:B:299:MET:HG2	1:B:313:LEU:CD2	2.44	0.48
1:C:284:PHE:CZ	1:C:298:ILE:HG21	2.49	0.48
1:C:100:GLU:HG2	1:C:195:GLY:O	2.13	0.48
1:B:173:HIS:O	1:B:174:ARG:HB2	2.14	0.48
1:E:172:VAL:CG2	1:E:174:ARG:HG3	2.44	0.48
1:B:326:PRO:O	1:B:330:GLU:HG2	2.14	0.47
1:C:99:ARG:HD2	1:D:99:ARG:HD2	1.97	0.47
1:E:178:ALA:HA	1:E:181:LEU:HD12	1.96	0.47
1:D:288:ASN:HD22	1:D:289:PRO:CD	2.27	0.47
1:E:285:LEU:HD23	1:E:285:LEU:N	2.29	0.47
1:F:280:LEU:HD11	1:F:304:MET:SD	2.55	0.47
1:F:50:ILE:HG13	1:F:51:GLY:N	2.28	0.47
1:D:226:TYR:CE1	1:D:231:VAL:CG1	2.98	0.47
1:F:155:LYS:HB3	1:F:189:ILE:HD11	1.96	0.47
1:C:184:ASP:OD2	1:C:188:ASN:HB2	2.15	0.47
1:F:59:ILE:HG12	1:F:67:VAL:O	2.14	0.47
1:D:200:PHE:CZ	1:D:202:PHE:HA	2.50	0.47
1:F:226:TYR:CE1	1:F:231:VAL:CG1	2.98	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:214:PRO:HG3	1:E:209:PHE:CE2	2.49	0.47
1:A:214:PRO:HB3	1:A:248:LEU:HD13	1.96	0.47
1:D:119:ILE:HB	1:D:126:TYR:HB2	1.96	0.47
1:E:104:MET:HE2	1:E:196:PHE:HB3	1.96	0.47
1:C:311:ASP:O	1:C:312:GLU:C	2.53	0.47
1:B:119:ILE:HB	1:B:126:TYR:HB2	1.97	0.47
1:A:269:ILE:HD13	1:A:269:ILE:N	2.25	0.47
1:D:82:ARG:NE	1:D:196:PHE:HE2	2.10	0.47
1:B:103:ILE:O	1:B:106:VAL:HG12	2.15	0.47
1:A:320:LEU:CD2	1:B:350:ARG:HH22	2.28	0.46
1:A:240:LEU:HD22	1:A:280:LEU:HD13	1.96	0.46
1:F:276:ASP:HB3	1:F:303:TRP:HB2	1.96	0.46
1:C:104:MET:CE	1:C:196:PHE:CD2	2.95	0.46
1:E:174:ARG:HH21	1:E:227:ASP:HA	1.80	0.46
1:D:280:LEU:HD22	1:D:284:PHE:CE2	2.50	0.46
1:A:100:GLU:HG2	1:A:195:GLY:C	2.35	0.46
1:E:316:TYR:OH	1:E:319:PRO:HD3	2.15	0.46
1:A:217:ALA:HB1	1:A:219:GLU:OE1	2.15	0.46
1:D:241:TYR:CD1	1:D:249:PRO:HG3	2.51	0.46
1:D:220:LEU:HB2	1:D:226:TYR:CE2	2.50	0.46
1:F:288:ASN:C	1:F:288:ASN:HD22	2.18	0.46
1:D:90:ASN:H	1:D:90:ASN:ND2	2.14	0.46
1:C:343:GLN:HG2	1:D:323:TYR:OH	2.16	0.46
1:E:114:LYS:HD3	1:E:115:LEU:H	1.81	0.46
1:A:346:LEU:HD23	1:A:355:MET:HG3	1.97	0.46
1:D:104:MET:HE1	1:D:196:PHE:HB3	1.96	0.46
1:D:346:LEU:HD23	1:D:346:LEU:HA	1.78	0.46
1:C:238:VAL:O	1:C:242:THR:HG23	2.15	0.46
1:A:162:ALA:HB3	1:A:191:ILE:HD12	1.98	0.46
1:D:186:ASP:O	1:D:187:MET:HB2	2.14	0.46
1:E:82:ARG:NE	1:E:196:PHE:HZ	2.13	0.46
1:D:200:PHE:HB2	1:E:253:GLN:HA	1.98	0.46
1:B:58:THR:HG23	1:B:68:LYS:HD3	1.97	0.46
1:A:320:LEU:HD22	1:B:350:ARG:HH22	1.81	0.46
1:D:295:LEU:O	1:D:299:MET:HG3	2.15	0.46
1:D:200:PHE:CE1	1:D:202:PHE:HA	2.51	0.45
1:B:286:ILE:HB	1:B:292:ARG:HG2	1.98	0.45
1:E:299:MET:HG2	1:E:313:LEU:HD23	1.98	0.45
1:F:79:VAL:CG1	1:F:360:LEU:HD21	2.46	0.45
1:D:341:GLU:CD	2:D:2022:HOH:O	2.55	0.45
1:A:259:ARG:HD3	1:F:220:LEU:HD12	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:288:ASN:OD1	1:E:291:LYS:HG3	2.16	0.45
1:A:81:VAL:HG22	1:A:128:VAL:HG22	1.99	0.45
1:D:184:ASP:C	1:D:184:ASP:OD1	2.55	0.45
1:A:180:ASN:HA	1:A:180:ASN:HD22	1.56	0.45
1:C:201:THR:HG21	1:C:205:LYS:HG3	1.97	0.45
1:C:288:ASN:HA	1:C:289:PRO:HD3	1.86	0.45
1:C:347:VAL:HG13	1:D:347:VAL:O	2.17	0.45
1:A:109:HIS:HB3	1:A:112:ILE:HG13	1.97	0.45
1:B:201:THR:HG21	1:B:205:LYS:HB2	1.99	0.45
1:F:240:LEU:HG	1:F:281:LEU:HD21	1.99	0.45
1:E:104:MET:CE	1:E:196:PHE:HB3	2.47	0.45
1:B:58:THR:O	1:B:59:ILE:HG23	2.17	0.45
1:C:149:GLU:CG	1:C:303:TRP:HE1	2.30	0.45
1:A:165:TYR:HA	1:A:168:GLN:HE21	1.80	0.45
1:A:162:ALA:CB	1:A:191:ILE:HD12	2.46	0.45
1:B:280:LEU:HG	1:B:301:ASP:OD1	2.17	0.45
1:C:49:HIS:O	1:C:49:HIS:HD2	1.99	0.45
1:A:323:TYR:CD1	1:A:346:LEU:HB3	2.52	0.45
1:E:103:ILE:O	1:E:107:LEU:HG	2.17	0.45
1:B:77:LYS:HE2	1:B:363:TYR:CB	2.47	0.45
1:E:288:ASN:HD22	1:E:289:PRO:CD	2.25	0.44
1:D:77:LYS:HE2	1:D:363:TYR:HB2	1.98	0.44
1:B:177:LYS:HG3	1:B:179:GLU:OE1	2.16	0.44
1:A:201:THR:HG21	1:A:205:LYS:CG	2.46	0.44
1:E:82:ARG:NE	1:E:196:PHE:CZ	2.85	0.44
1:B:177:LYS:HB2	1:B:215:TYR:CE1	2.52	0.44
1:D:312:GLU:O	1:D:314:LYS:HG2	2.16	0.44
1:B:173:HIS:CG	1:B:176:LEU:HD13	2.52	0.44
1:A:175:ASP:O	1:A:177:LYS:HG2	2.17	0.44
1:E:156:PHE:CE1	1:E:240:LEU:HB2	2.52	0.44
1:B:200:PHE:CG	1:C:253:GLN:HA	2.52	0.44
1:E:302:ARG:O	1:E:306:VAL:HG23	2.17	0.44
1:D:351:TYR:CE1	1:D:355:MET:HE2	2.52	0.44
1:E:117:GLU:HB2	1:E:356:ALA:HB2	1.98	0.44
1:D:200:PHE:CG	1:D:200:PHE:O	2.71	0.44
1:A:288:ASN:HD22	1:A:288:ASN:C	2.19	0.44
1:A:253:GLN:HE21	1:F:197:SER:HB2	1.82	0.44
1:D:269:ILE:HD13	1:D:269:ILE:H	1.81	0.44
1:B:203:GLY:HA2	1:C:251:ASP:OD2	2.16	0.44
1:F:177:LYS:HB2	1:F:215:TYR:CE1	2.53	0.44
1:D:284:PHE:CZ	1:D:298:ILE:HG21	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:211:GLY:O	1:C:214:PRO:HD2	2.17	0.44
1:D:196:PHE:CE1	1:D:202:PHE:HZ	2.34	0.43
1:F:241:TYR:HB3	1:F:249:PRO:HG3	1.99	0.43
1:F:357:THR:HG22	1:F:361:LEU:HD11	2.00	0.43
1:D:90:ASN:O	1:D:93:SER:N	2.51	0.43
1:C:114:LYS:H	1:C:130:GLU:HB2	1.83	0.43
1:A:149:GLU:OE2	1:A:274:SER:HB3	2.19	0.43
1:F:241:TYR:O	1:F:241:TYR:CD1	2.72	0.43
1:F:90:ASN:H	1:F:90:ASN:HD22	1.64	0.43
1:C:192:ALA:O	1:C:193:ASP:HB2	2.19	0.43
1:D:46:GLU:HB3	1:D:54:ARG:HH21	1.83	0.43
1:D:226:TYR:CD1	1:D:231:VAL:HG21	2.54	0.43
1:A:320:LEU:HA	1:A:321:PRO:HD3	1.88	0.43
1:E:332:MET:HE1	1:E:354:VAL:HG13	2.01	0.43
1:C:325:ASP:HA	1:C:326:PRO:HD3	1.89	0.43
1:F:179:GLU:N	1:F:179:GLU:OE1	2.47	0.43
1:A:328:ARG:HG2	1:A:361:LEU:HB3	2.01	0.43
1:F:173:HIS:O	1:F:174:ARG:HB2	2.17	0.43
1:C:269:ILE:H	1:C:269:ILE:CD1	2.31	0.43
1:F:197:SER:HB3	1:F:200:PHE:HB3	2.01	0.43
1:D:340:GLU:HA	1:D:343:GLN:HB3	2.01	0.43
1:A:333:VAL:HG12	1:A:334:SER:N	2.34	0.43
1:E:114:LYS:NZ	1:E:351:TYR:OH	2.51	0.43
1:D:58:THR:CG2	1:D:68:LYS:NZ	2.74	0.43
1:D:253:GLN:HA	1:E:200:PHE:CD1	2.54	0.43
1:D:241:TYR:CG	1:D:249:PRO:HG3	2.54	0.43
1:A:179:GLU:OE2	1:F:208:GLU:OE2	2.36	0.43
1:A:326:PRO:O	1:A:330:GLU:HG2	2.19	0.43
1:C:172:VAL:HG23	1:C:174:ARG:HG3	2.00	0.43
1:C:240:LEU:HD23	1:C:281:LEU:HD23	1.98	0.43
1:F:248:LEU:HA	1:F:249:PRO:HD3	1.77	0.43
1:D:58:THR:HG22	1:D:68:LYS:CE	2.47	0.42
1:F:94:LEU:O	1:F:97:LEU:HB3	2.19	0.42
1:D:109:HIS:HA	1:D:110:PRO:HD3	1.87	0.42
1:F:295:LEU:HD23	1:F:295:LEU:HA	1.62	0.42
1:E:74:LEU:N	1:E:74:LEU:HD23	2.33	0.42
1:D:113:VAL:HG12	1:D:190:LYS:HB3	2.02	0.42
1:A:219:GLU:CD	1:A:292:ARG:HH22	2.23	0.42
1:B:240:LEU:HD22	1:B:280:LEU:HD13	2.00	0.42
1:B:77:LYS:HE2	1:B:363:TYR:HB2	2.00	0.42
1:C:117:GLU:HB2	1:C:356:ALA:HB2	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:251:ASP:OD1	1:E:252:GLY:N	2.48	0.42
1:E:122:GLU:OE1	1:E:122:GLU:HA	2.18	0.42
1:B:90:ASN:ND2	1:B:93:SER:OG	2.52	0.42
1:C:156:PHE:O	1:C:160:VAL:HG23	2.19	0.42
1:A:156:PHE:CZ	1:A:240:LEU:HB2	2.54	0.42
1:A:117:GLU:HB2	1:A:356:ALA:HB2	2.00	0.42
1:D:217:ALA:HA	1:D:234:TRP:CD1	2.53	0.42
1:E:241:TYR:CD1	1:E:249:PRO:HD3	2.54	0.42
1:F:172:VAL:HG22	1:F:174:ARG:NH1	2.35	0.42
1:E:219:GLU:OE2	1:E:292:ARG:NH2	2.52	0.42
1:A:219:GLU:OE2	1:A:292:ARG:NH2	2.52	0.42
1:E:269:ILE:N	1:E:269:ILE:HD13	2.23	0.42
1:A:256:LYS:HG3	1:A:257:GLU:N	2.33	0.42
1:C:109:HIS:HB2	1:C:165:TYR:CE2	2.55	0.42
1:D:329:THR:O	1:D:333:VAL:HG23	2.20	0.42
1:E:242:THR:HG22	1:E:247:SER:O	2.19	0.42
1:F:196:PHE:HE1	1:F:202:PHE:CZ	2.38	0.42
1:A:240:LEU:CD2	1:A:280:LEU:HD13	2.50	0.42
1:D:240:LEU:CD2	1:D:280:LEU:HD13	2.50	0.42
1:E:50:ILE:HD13	1:E:126:TYR:CZ	2.54	0.42
1:B:333:VAL:C	1:B:335:MET:H	2.23	0.42
1:C:122:GLU:OE1	1:C:122:GLU:HA	2.20	0.42
1:B:173:HIS:HB3	1:B:176:LEU:HD22	2.01	0.42
1:C:157:ARG:NH1	1:C:313:LEU:HB2	2.35	0.42
1:E:321:PRO:O	1:E:323:TYR:HD2	2.02	0.42
1:E:299:MET:HG2	1:E:313:LEU:CD2	2.50	0.41
1:B:331:LEU:O	1:B:335:MET:HG3	2.19	0.41
1:B:332:MET:HE2	1:B:332:MET:HB3	1.87	0.41
1:D:342:ILE:HA	1:D:354:VAL:HG11	2.03	0.41
1:F:113:VAL:HG13	1:F:191:ILE:O	2.20	0.41
1:D:264:ARG:HG2	1:D:266:LYS:HG2	2.02	0.41
1:C:101:VAL:O	1:C:105:LYS:HG3	2.20	0.41
1:C:321:PRO:HB3	1:C:323:TYR:CE1	2.55	0.41
1:C:220:LEU:HB2	1:C:226:TYR:CE2	2.55	0.41
1:D:310:ASP:OD1	1:D:310:ASP:N	2.47	0.41
1:B:104:MET:CE	1:B:196:PHE:HD2	2.33	0.41
1:D:288:ASN:HD22	1:D:289:PRO:HD2	1.84	0.41
1:D:280:LEU:CD2	1:D:284:PHE:HE2	2.34	0.41
1:E:308:HIS:HB3	1:E:311:ASP:O	2.21	0.41
1:A:94:LEU:HD23	1:A:94:LEU:HA	1.94	0.41
1:F:255:LEU:HA	1:F:255:LEU:HD23	1.71	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:173:HIS:CB	1:F:176:LEU:HD13	2.51	0.41
1:E:176:LEU:HD12	1:E:176:LEU:HA	1.72	0.41
1:D:351:TYR:CZ	1:D:355:MET:HE1	2.55	0.41
1:B:49:HIS:HB2	1:B:54:ARG:HA	2.03	0.41
1:D:82:ARG:NE	1:D:196:PHE:CE2	2.87	0.41
1:A:288:ASN:ND2	1:A:288:ASN:C	2.74	0.41
1:F:154:ALA:O	1:F:158:GLN:HG3	2.20	0.41
1:E:186:ASP:O	1:E:187:MET:HB2	2.20	0.41
1:D:286:ILE:HD12	1:D:292:ARG:HA	2.02	0.41
1:B:346:LEU:HD23	1:B:346:LEU:HA	1.78	0.41
1:A:318:GLU:HA	1:A:319:PRO:HD3	1.94	0.41
1:F:153:ARG:O	1:F:157:ARG:HG3	2.20	0.41
1:F:72:HIS:ND1	1:F:75:THR:HG23	2.36	0.41
1:B:269:ILE:HG12	1:B:269:ILE:O	2.21	0.41
1:A:213:PRO:N	1:A:214:PRO:CD	2.84	0.41
1:F:79:VAL:HG11	1:F:360:LEU:HD21	2.02	0.41
1:A:299:MET:HG2	1:A:313:LEU:HD23	2.02	0.41
1:B:82:ARG:HG2	1:B:196:PHE:CE2	2.56	0.41
1:A:253:GLN:NE2	1:F:197:SER:HB2	2.36	0.41
1:F:103:ILE:O	1:F:106:VAL:HG12	2.20	0.41
1:F:241:TYR:CB	1:F:249:PRO:HG3	2.52	0.40
1:C:102:ARG:NH2	1:D:169:LYS:O	2.54	0.40
1:B:82:ARG:NE	1:B:196:PHE:CZ	2.88	0.40
1:F:177:LYS:O	1:F:180:ASN:HB2	2.21	0.40
1:C:102:ARG:HH11	1:C:102:ARG:HD2	1.73	0.40
1:F:331:LEU:O	1:F:335:MET:HG3	2.21	0.40
1:B:109:HIS:CG	1:B:110:PRO:HD2	2.56	0.40
1:A:174:ARG:HH21	1:A:227:ASP:HA	1.86	0.40
1:B:255:LEU:HA	1:B:255:LEU:HD23	1.79	0.40
1:F:165:TYR:CZ	1:F:169:LYS:HE2	2.57	0.40
1:F:117:GLU:CG	1:F:118:VAL:N	2.84	0.40
1:B:81:VAL:HG22	1:B:128:VAL:HG22	2.04	0.40
1:B:264:ARG:HH11	1:E:264:ARG:HH12	1.70	0.40
1:E:346:LEU:CD1	1:E:358:TYR:CD1	3.00	0.40
1:D:173:HIS:O	1:D:174:ARG:HB2	2.21	0.40
1:D:280:LEU:HD22	1:D:284:PHE:HE2	1.86	0.40
1:E:231:VAL:HG12	1:E:232:ASP:N	2.36	0.40
1:D:236:LEU:HD23	1:D:236:LEU:HA	1.91	0.40
1:F:332:MET:O	1:F:337:TYR:HB2	2.22	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	306/327 (94%)	289 (94%)	17 (6%)	0	100	100
1	B	306/327 (94%)	293 (96%)	12 (4%)	1 (0%)	46	78
1	C	306/327 (94%)	287 (94%)	19 (6%)	0	100	100
1	D	309/327 (94%)	287 (93%)	19 (6%)	3 (1%)	19	50
1	E	306/327 (94%)	276 (90%)	30 (10%)	0	100	100
1	F	306/327 (94%)	279 (91%)	26 (8%)	1 (0%)	46	78
All	All	1839/1962 (94%)	1711 (93%)	123 (7%)	5 (0%)	46	78

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	202	PHE
1	D	47	GLN
1	D	323	TYR
1	F	73	ILE
1	B	334	SER

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	277/289 (96%)	257 (93%)	20 (7%)	18	43
1	B	277/289 (96%)	262 (95%)	15 (5%)	27	59
1	C	277/289 (96%)	254 (92%)	23 (8%)	14	36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	280/289 (97%)	265 (95%)	15 (5%)	27	59
1	E	277/289 (96%)	260 (94%)	17 (6%)	23	53
1	F	277/289 (96%)	262 (95%)	15 (5%)	27	59
All	All	1665/1734 (96%)	1560 (94%)	105 (6%)	22	51

All (105) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	90	ASN
1	A	91	SER
1	A	95	GLN
1	A	100	GLU
1	A	149	GLU
1	A	176	LEU
1	A	180	ASN
1	A	186	ASP
1	A	194	PHE
1	A	224	LYS
1	A	244	VAL
1	A	256	LYS
1	A	264	ARG
1	A	269	ILE
1	A	280	LEU
1	A	288	ASN
1	A	317	VAL
1	A	333	VAL
1	A	334	SER
1	A	340	GLU
1	B	58	THR
1	B	90	ASN
1	B	176	LEU
1	B	177	LYS
1	B	194	PHE
1	B	196	PHE
1	B	200	PHE
1	B	224	LYS
1	B	244	VAL
1	B	268	ARG
1	B	269	ILE
1	B	280	LEU
1	B	288	ASN

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Mol	Chain	Res	Type
1	B	340	GLU
1	B	353	GLU
1	C	49	HIS
1	C	58	THR
1	C	90	ASN
1	C	113	VAL
1	C	176	LEU
1	C	180	ASN
1	C	189	ILE
1	C	194	PHE
1	C	196	PHE
1	C	200	PHE
1	C	204	ASN
1	C	244	VAL
1	C	256	LYS
1	C	268	ARG
1	C	269	ILE
1	C	272	TYR
1	C	280	LEU
1	C	283	LYS
1	C	288	ASN
1	C	320	LEU
1	C	339	ARG
1	C	340	GLU
1	C	343	GLN
1	D	46	GLU
1	D	91	SER
1	D	106	VAL
1	D	114	LYS
1	D	176	LEU
1	D	194	PHE
1	D	224	LYS
1	D	242	THR
1	D	269	ILE
1	D	271	PHE
1	D	280	LEU
1	D	288	ASN
1	D	339	ARG
1	D	340	GLU
1	D	353	GLU
1	E	58	THR
1	E	71	ARG

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Mol	Chain	Res	Type
1	E	74	LEU
1	E	90	ASN
1	E	106	VAL
1	E	124	THR
1	E	149	GLU
1	E	176	LEU
1	E	194	PHE
1	E	224	LYS
1	E	231	VAL
1	E	269	ILE
1	E	280	LEU
1	E	290	SER
1	E	317	VAL
1	E	340	GLU
1	E	353	GLU
1	F	71	ARG
1	F	172	VAL
1	F	176	LEU
1	F	180	ASN
1	F	194	PHE
1	F	231	VAL
1	F	242	THR
1	F	256	LYS
1	F	269	ILE
1	F	272	TYR
1	F	280	LEU
1	F	288	ASN
1	F	338	THR
1	F	340	GLU
1	F	353	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	HIS
1	A	90	ASN
1	A	95	GLN
1	A	168	GLN
1	A	180	ASN
1	A	198	ASN
1	A	288	ASN
1	A	349	GLN

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Mol	Chain	Res	Type
1	B	49	HIS
1	B	90	ASN
1	B	288	ASN
1	C	49	HIS
1	C	90	ASN
1	C	180	ASN
1	C	198	ASN
1	C	222	GLN
1	C	253	GLN
1	C	288	ASN
1	C	343	GLN
1	D	90	ASN
1	D	180	ASN
1	D	198	ASN
1	D	253	GLN
1	D	288	ASN
1	E	90	ASN
1	E	180	ASN
1	E	198	ASN
1	E	288	ASN
1	F	90	ASN
1	F	180	ASN
1	F	198	ASN
1	F	288	ASN
1	F	349	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

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, 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	310/327 (94%)	-0.14	3 (0%) 84 79	34, 58, 99, 154	0
1	B	310/327 (94%)	-0.08	7 (2%) 64 56	34, 60, 100, 132	0
1	C	310/327 (94%)	0.00	6 (1%) 70 63	43, 66, 100, 133	0
1	D	313/327 (95%)	-0.06	7 (2%) 65 58	37, 62, 105, 173	0
1	E	310/327 (94%)	0.27	16 (5%) 31 23	55, 88, 131, 168	0
1	F	310/327 (94%)	0.41	28 (9%) 12 7	46, 100, 149, 182	0
All	All	1863/1962 (94%)	0.07	67 (3%) 46 39	34, 71, 129, 182	0

All (67) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	54	ARG	4.8
1	F	70	ALA	4.7
1	F	326	PRO	4.2
1	E	244	VAL	3.8
1	E	146	ARG	3.7
1	E	150	LYS	3.7
1	F	68	LYS	3.6
1	A	49	HIS	3.5
1	F	333	VAL	3.5
1	F	339	ARG	3.4
1	F	271	PHE	3.3
1	D	46	GLU	3.3
1	F	150	LYS	3.2
1	E	141	LEU	3.2
1	E	196	PHE	3.2
1	E	272	TYR	3.1
1	F	310	ASP	3.0
1	C	339	ARG	3.0
1	F	337	TYR	3.0

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Mol	Chain	Res	Type	RSRZ
1	B	196	PHE	2.9
1	B	339	ARG	2.9
1	D	309	GLU	2.9
1	F	335	MET	2.9
1	E	140	TYR	2.8
1	E	50	ILE	2.7
1	F	57	LYS	2.7
1	E	271	PHE	2.7
1	B	56	LEU	2.6
1	F	244	VAL	2.6
1	F	73	ILE	2.6
1	E	340	GLU	2.6
1	B	54	ARG	2.5
1	B	74	LEU	2.5
1	F	330	GLU	2.5
1	D	323	TYR	2.5
1	F	196	PHE	2.5
1	A	55	LEU	2.4
1	C	343	GLN	2.4
1	F	123	LYS	2.4
1	F	328	ARG	2.4
1	E	74	LEU	2.4
1	C	196	PHE	2.4
1	D	88	GLN	2.4
1	D	202	PHE	2.4
1	F	49	HIS	2.3
1	D	310	ASP	2.3
1	F	343	GLN	2.3
1	F	306	VAL	2.3
1	C	337	TYR	2.3
1	E	148	LYS	2.3
1	F	334	SER	2.2
1	E	243	LEU	2.2
1	F	309	GLU	2.2
1	E	145	GLY	2.2
1	E	270	PRO	2.2
1	F	147	MET	2.2
1	E	144	HIS	2.1
1	B	334	SER	2.1
1	C	271	PHE	2.1
1	F	342	ILE	2.1
1	F	302	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	F	79	VAL	2.1
1	B	71	ARG	2.1
1	A	73	ILE	2.0
1	D	340	GLU	2.0
1	F	53	TYR	2.0
1	C	340	GLU	2.0

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.