Full wwPDB X-ray Structure Validation Report ⓘ

Oct 15, 2023 – 11:57 AM EDT

PDB ID	:	2F7L
Title	:	Crystal structure of Sulfolobus tokodaii phosphomannomutase/phosphoglucomutase
Authors	:	Kawamura, T.; Sakai, N.; Akutsu, J.; Zhang, Z.; Watanabe, N.; Kawarabayashi, Y.; Tanaka, I.
Deposited on	:	2005-12-01
Resolution	:	2.80 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:

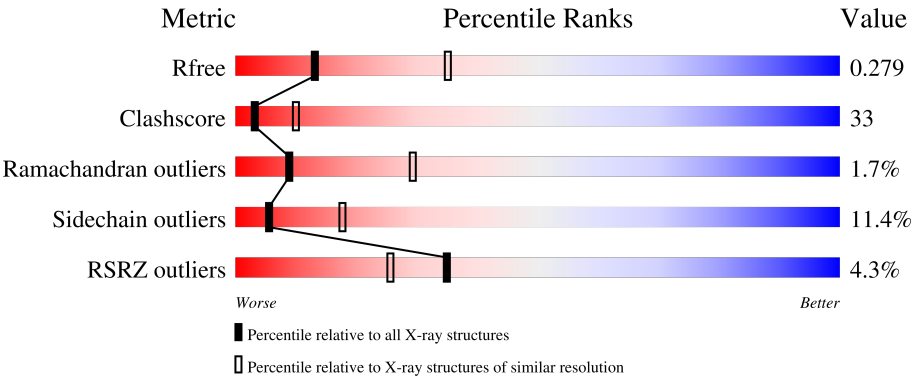
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	455	55% 37% 7%
1	B	455	8% 45% 49% 6%

2 Entry composition (i)

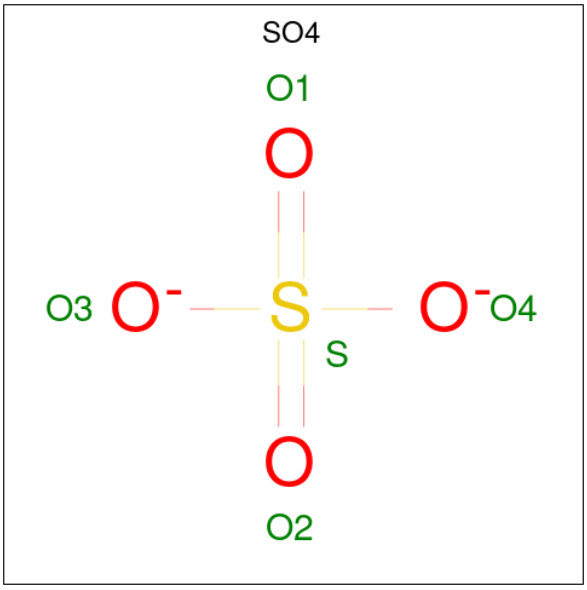
There are 3 unique types of molecules in this entry. The entry contains 7113 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 455aa long hypothetical phospho-sugar mutase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	455	Total	C	N	O	S	0	0	0
			3531	2259	589	674	9			
1	B	455	Total	C	N	O	S	0	0	0
			3531	2259	589	674	9			

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			5	4	1		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	34	Total	O	0	0
			34	34		

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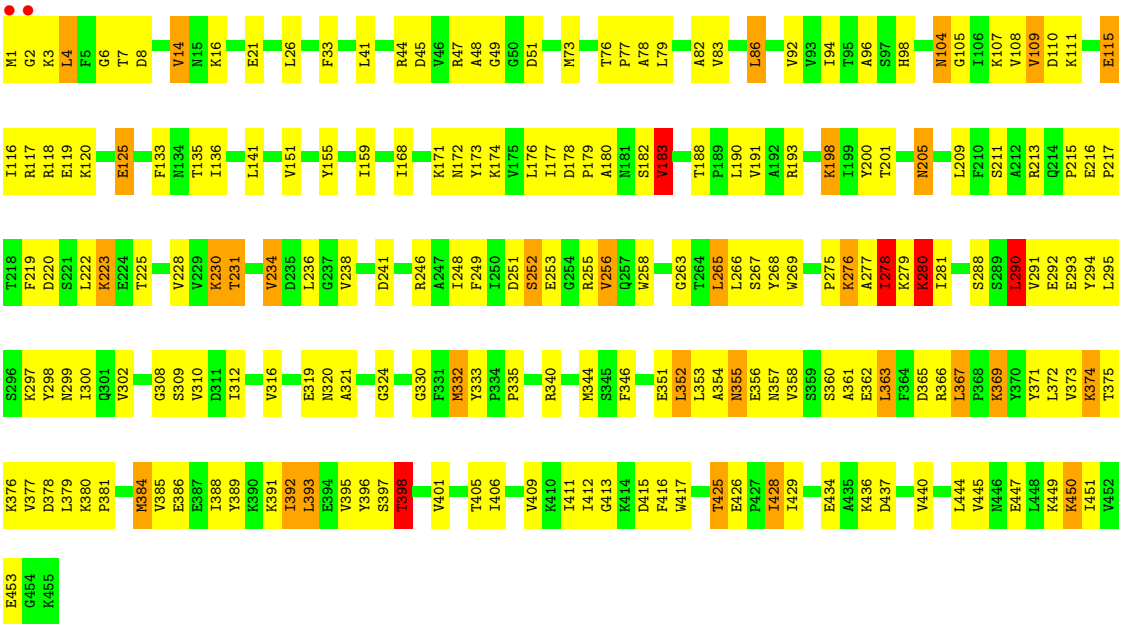
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	12	Total	O	0	0
			12	12		

3 Residue-property plots (i)

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.

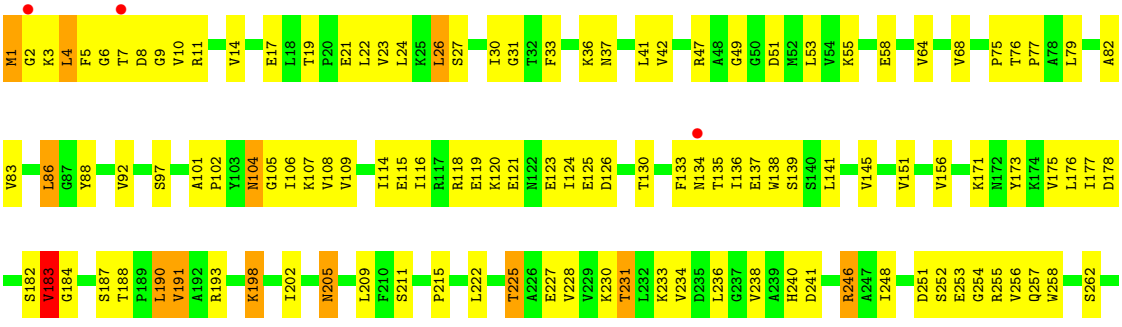
• Molecule 1: 455aa long hypothetical phospho-sugar mutase

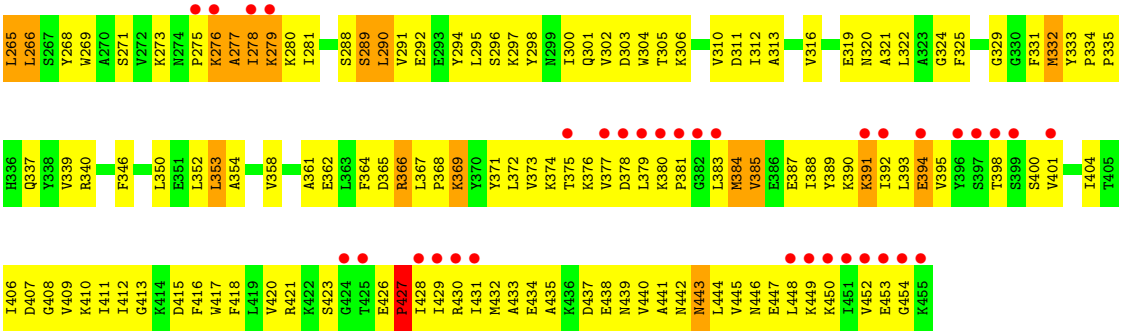
Chain A:



• Molecule 1: 455aa long hypothetical phospho-sugar mutase

Chain B:




L265 L266 S267 Y268 W269 A270 S271 V272 K273 N274 P275 K276 A277 I278 K279 K280 I281 S288 S289 L290 V291 E292 E293 Y294 L295 S296 K297 Y298 N299 I300 Q301 V302 D303 W304 T305 K306 V310 D311 I312 A313 V316 E319 N320 A321 L322 A323 G324 F325 G329 G330 F331 M332 Y333 P334 P335
H336 Q337 Y338 V339 R340 F346 L350 E351 L352 L353 A354 V358 A361 E362 L363 F364 D365 R366 L367 P368 K369 Y370 Y371 L372 V373 K374 T375 K376 V377 D378 L379 K380 P381 G382 L383 M384 V385 E386 E387 I388 Y389 K390 K391 I392 L393 E394 V395 Y396 S397 T398 S399 S400 V401 I404 T405
I406 D407 G408 V409 K410 I411 I412 G413 K414 D415 F416 W417 F418 L419 V420 R421 K422 S423 G424 T425 E426 P427 I428 I429 R430 I431 M432 A433 E434 A435 K436 D437 E438 N439 V440 A441 N442 N443 L444 V445 N446 E447 L448 K449 K450 I451 V452 E453 G454 K455

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 62 2 2	Depositor
Cell constants a, b, c, α, β, γ	161.90Å 161.90Å 170.49Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.00 – 2.80 46.74 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.5 (50.00-2.80) 99.9 (46.74-2.80)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.17 (at 2.81Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.225 , 0.280 0.228 , 0.279	Depositor DCC
R_{free} test set	1664 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	51.7	Xtriage
Anisotropy	0.344	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 54.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	7113	wwPDB-VP
Average B, all atoms (Å^2)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.85% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: SO4

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	0.54	0/3592	0.78	3/4855 (0.1%)
1	B	0.50	0/3592	0.77	2/4855 (0.0%)
All	All	0.52	0/7184	0.78	5/9710 (0.1%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	2	GLY	N-CA-C	-6.73	96.28	113.10
1	A	290	LEU	CA-CB-CG	5.81	128.67	115.30
1	A	198	LYS	N-CA-C	-5.81	95.32	111.00
1	B	329	GLY	N-CA-C	-5.50	99.34	113.10
1	B	198	LYS	N-CA-C	-5.46	96.25	111.00

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	3531	0	3616	197	1
1	B	3531	0	3616	288	1
2	A	5	0	0	0	0
3	A	34	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	12	0	0	0	0
All	All	7113	0	7232	477	2

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 33.

All (477) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:5:PHE:CE1	1:B:10:VAL:HG23	1.74	1.22
1:A:1:MET:CE	1:A:6:GLY:HA3	1.74	1.18
1:B:5:PHE:CE1	1:B:10:VAL:CG2	2.31	1.14
1:A:1:MET:HE2	1:A:6:GLY:HA3	1.11	1.08
1:B:3:LYS:HG3	1:B:4:LEU:H	0.92	1.08
1:B:1:MET:HB2	1:B:11:ARG:HG2	1.39	1.01
1:B:3:LYS:CG	1:B:4:LEU:H	1.66	1.01
1:A:1:MET:HE3	1:A:7:THR:H	1.27	0.98
1:B:3:LYS:HG3	1:B:4:LEU:N	1.77	0.98
1:B:8:ASP:HB3	1:B:107:LYS:HE2	1.45	0.95
1:A:217:PRO:HB2	1:A:248:ILE:HD11	1.45	0.94
1:A:358:VAL:HG21	1:A:366:ARG:HH22	1.33	0.94
1:A:115:GLU:HG3	1:A:310:VAL:HG22	1.49	0.92
1:B:5:PHE:HE1	1:B:10:VAL:HG23	1.25	0.92
1:A:1:MET:HE2	1:A:6:GLY:CA	1.99	0.91
1:A:238:VAL:HG21	1:A:346:PHE:HD1	1.35	0.91
1:A:209:LEU:HD22	1:B:193:ARG:HD2	1.53	0.91
1:A:228:VAL:HA	1:A:231:THR:HG23	1.51	0.91
1:A:1:MET:HB3	1:A:6:GLY:CA	2.01	0.90
1:B:1:MET:HB2	1:B:11:ARG:CG	2.01	0.90
1:B:205:ASN:HD22	1:B:205:ASN:H	1.10	0.90
1:A:425:THR:HG22	1:A:426:GLU:HG3	1.54	0.88
1:B:1:MET:HG3	1:B:11:ARG:CZ	2.03	0.88
1:B:288:SER:O	1:B:291:VAL:HG12	1.74	0.88
1:B:375:THR:HG22	1:B:376:LYS:H	1.39	0.85
1:B:387:GLU:HG3	1:B:391:LYS:HE3	1.59	0.84
1:B:5:PHE:CD1	1:B:10:VAL:CG2	2.60	0.84
1:B:398:THR:HG22	1:B:401:VAL:HG22	1.60	0.84
1:B:1:MET:SD	1:B:6:GLY:HA3	2.17	0.84
1:A:398:THR:HG23	1:A:401:VAL:HG22	1.61	0.83
1:B:366:ARG:HB2	1:B:366:ARG:HH11	1.44	0.83
1:A:380:LYS:HD2	1:A:381:PRO:HD2	1.61	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:391:LYS:O	1:A:395:VAL:HG12	1.77	0.82
1:B:115:GLU:HB2	1:B:310:VAL:HG13	1.61	0.82
1:B:377:VAL:HG11	1:B:452:VAL:HG11	1.61	0.82
1:A:231:THR:HG21	1:B:231:THR:HG21	1.59	0.82
1:B:333:TYR:CE2	1:B:335:PRO:HG2	2.14	0.82
1:B:442:ASN:O	1:B:445:VAL:HG12	1.78	0.82
1:B:1:MET:CE	1:B:6:GLY:HA3	2.09	0.81
1:A:238:VAL:HG21	1:A:346:PHE:CD1	2.16	0.81
1:B:379:LEU:HD13	1:B:427:PRO:HB3	1.62	0.81
1:B:377:VAL:HG13	1:B:429:ILE:HB	1.63	0.81
1:A:193:ARG:HD2	1:B:209:LEU:HD22	1.63	0.79
1:B:366:ARG:HH11	1:B:366:ARG:CG	1.96	0.79
1:A:1:MET:HE3	1:A:7:THR:N	1.97	0.78
1:B:230:LYS:HE2	1:B:254:GLY:HA3	1.66	0.78
1:B:5:PHE:CD1	1:B:10:VAL:HG22	2.19	0.76
1:B:1:MET:HG3	1:B:11:ARG:NE	2.00	0.76
1:B:26:LEU:O	1:B:30:ILE:HG13	1.86	0.75
1:B:443:ASN:HA	1:B:446:ASN:HD22	1.51	0.75
1:B:5:PHE:CD1	1:B:10:VAL:HG23	2.21	0.75
1:B:222:LEU:CD1	1:B:248:ILE:HD11	2.17	0.74
1:B:228:VAL:HA	1:B:231:THR:HG23	1.69	0.74
1:A:276:LYS:HD3	1:A:277:ALA:N	2.03	0.74
1:A:275:PRO:HA	1:A:279:LYS:NZ	2.03	0.73
1:B:379:LEU:HB3	1:B:427:PRO:HB3	1.69	0.73
1:B:178:ASP:OD2	1:B:225:THR:HG21	1.87	0.73
1:B:366:ARG:HH11	1:B:366:ARG:CB	2.00	0.73
1:B:188:THR:OG1	1:B:240:HIS:HE1	1.71	0.73
1:A:267:SER:OG	1:A:281:ILE:HG21	1.88	0.73
1:B:222:LEU:HD11	1:B:248:ILE:HD11	1.69	0.72
1:B:176:LEU:HD23	1:B:177:ILE:N	2.03	0.72
1:A:1:MET:HB3	1:A:6:GLY:HA2	1.70	0.72
1:A:333:TYR:CE2	1:A:335:PRO:HG2	2.25	0.72
1:B:383:LEU:HD21	1:B:391:LYS:HZ2	1.55	0.72
1:B:380:LYS:HD3	1:B:381:PRO:HD2	1.71	0.72
1:B:1:MET:CE	1:B:6:GLY:CA	2.67	0.72
1:A:178:ASP:OD2	1:A:225:THR:HG21	1.90	0.71
1:B:104:ASN:HD22	1:B:105:GLY:H	1.37	0.71
1:A:253:GLU:HG2	1:A:361:ALA:CB	2.19	0.71
1:B:443:ASN:HA	1:B:446:ASN:ND2	2.06	0.71
1:A:217:PRO:HB2	1:A:248:ILE:CD1	2.20	0.70
1:A:216:GLU:HG3	1:A:246:ARG:NH2	2.07	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:205:ASN:HD22	1:B:205:ASN:N	1.88	0.70
1:B:238:VAL:HG21	1:B:346:PHE:CD1	2.26	0.70
1:A:447:GLU:HA	1:A:450:LYS:HZ2	1.54	0.69
1:A:205:ASN:H	1:A:205:ASN:HD22	1.41	0.69
1:B:377:VAL:CG1	1:B:429:ILE:HB	2.23	0.69
1:A:358:VAL:HG21	1:A:366:ARG:NH2	2.07	0.69
1:B:390:LYS:O	1:B:394:GLU:HG3	1.92	0.68
1:B:379:LEU:CB	1:B:427:PRO:HB3	2.24	0.68
1:B:420:VAL:HG13	1:B:431:ILE:HG12	1.76	0.68
1:B:366:ARG:HH11	1:B:366:ARG:HG3	1.58	0.67
1:A:280:LYS:HB2	1:A:280:LYS:NZ	2.10	0.67
1:B:383:LEU:HD11	1:B:391:LYS:HZ1	1.60	0.67
1:B:176:LEU:HD23	1:B:176:LEU:C	2.15	0.67
1:B:205:ASN:H	1:B:205:ASN:ND2	1.87	0.67
1:B:277:ALA:O	1:B:279:LYS:HD2	1.94	0.67
1:B:371:TYR:O	1:B:434:GLU:HB2	1.94	0.67
1:B:83:VAL:HA	1:B:88:TYR:HB2	1.77	0.67
1:B:118:ARG:HH22	1:B:311:ASP:HB2	1.59	0.67
1:B:319:GLU:HG2	1:B:319:GLU:O	1.96	0.66
1:B:379:LEU:CD1	1:B:427:PRO:HB3	2.25	0.66
1:B:366:ARG:HB2	1:B:366:ARG:NH1	2.11	0.66
1:A:398:THR:CG2	1:A:401:VAL:HG22	2.25	0.66
1:B:305:THR:HA	1:B:406:ILE:HD13	1.77	0.66
1:B:373:VAL:HG21	1:B:442:ASN:HA	1.76	0.66
1:A:115:GLU:HG3	1:A:310:VAL:CG2	2.22	0.66
1:A:8:ASP:OD1	1:A:107:LYS:HE2	1.96	0.66
1:B:440:VAL:O	1:B:444:LEU:HB2	1.96	0.65
1:A:379:LEU:HG	1:A:429:ILE:HD11	1.77	0.65
1:B:251:ASP:OD2	1:B:255:ARG:HG3	1.97	0.65
1:B:278:ILE:HD12	1:B:280:LYS:NZ	2.10	0.65
1:A:1:MET:CE	1:A:6:GLY:CA	2.65	0.65
1:B:136:ILE:HD11	1:B:141:LEU:HD13	1.79	0.64
1:A:275:PRO:HA	1:A:279:LYS:HZ3	1.60	0.64
1:A:176:LEU:HD23	1:A:176:LEU:C	2.17	0.64
1:A:280:LYS:HB2	1:A:280:LYS:HZ3	1.62	0.64
1:A:215:PRO:O	1:A:241:ASP:HA	1.97	0.64
1:B:21:GLU:CD	1:B:21:GLU:H	2.00	0.64
1:B:389:TYR:CE1	1:B:408:GLY:HA2	2.33	0.63
1:A:380:LYS:HD2	1:A:381:PRO:CD	2.27	0.63
1:A:33:PHE:HZ	1:A:120:LYS:HD3	1.64	0.63
1:A:188:THR:O	1:A:191:VAL:HG22	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:ALA:O	1:A:86:LEU:HB2	1.99	0.63
1:A:253:GLU:HG2	1:A:361:ALA:HB1	1.81	0.63
1:B:413:GLY:HA3	1:B:416:PHE:CE2	2.33	0.63
1:B:295:LEU:HD22	1:B:300:ILE:HD12	1.79	0.62
1:A:98:HIS:HB2	1:A:216:GLU:HB2	1.81	0.62
1:A:358:VAL:CG1	1:A:362:GLU:HB3	2.28	0.62
1:A:104:ASN:HD22	1:A:105:GLY:H	1.48	0.62
1:B:228:VAL:HA	1:B:231:THR:CG2	2.29	0.62
1:B:278:ILE:HD12	1:B:280:LYS:HZ3	1.64	0.62
1:B:333:TYR:CD2	1:B:335:PRO:HG2	2.35	0.62
1:B:391:LYS:O	1:B:394:GLU:HB2	1.99	0.62
1:A:447:GLU:HA	1:A:450:LYS:NZ	2.15	0.61
1:B:383:LEU:HD21	1:B:391:LYS:NZ	2.16	0.61
1:B:429:ILE:HG22	1:B:431:ILE:HG13	1.81	0.61
1:A:253:GLU:HG2	1:A:361:ALA:HB2	1.82	0.61
1:B:401:VAL:HG12	1:B:413:GLY:HA2	1.83	0.60
1:B:33:PHE:CD2	1:B:124:ILE:HD11	2.36	0.60
1:B:120:LYS:HA	1:B:123:GLU:HG3	1.84	0.60
1:B:417:TRP:HH2	1:B:432:MET:HE1	1.67	0.60
1:B:387:GLU:O	1:B:391:LYS:HG3	2.02	0.60
1:A:168:ILE:HD11	1:A:351:GLU:HG3	1.82	0.60
1:B:173:TYR:CZ	1:B:353:LEU:HD12	2.37	0.59
1:A:263:GLY:O	1:A:267:SER:HB2	2.03	0.59
1:A:437:ASP:HB3	1:A:440:VAL:HG13	1.83	0.59
1:B:21:GLU:OE1	1:B:21:GLU:N	2.34	0.59
1:B:332:MET:O	1:B:334:PRO:HD3	2.03	0.59
1:B:429:ILE:N	1:B:429:ILE:HD12	2.16	0.59
1:A:136:ILE:HD11	1:A:141:LEU:CD1	2.33	0.59
1:A:375:THR:HG22	1:A:376:LYS:N	2.18	0.59
1:B:58:GLU:HG2	1:B:68:VAL:HG11	1.84	0.59
1:A:392:ILE:HA	1:A:395:VAL:CG1	2.33	0.59
1:B:14:VAL:HG21	1:B:49:GLY:HA3	1.85	0.59
1:B:265:LEU:HD11	1:B:367:LEU:HD13	1.83	0.58
1:A:352:LEU:CD1	1:A:363:LEU:HD11	2.33	0.58
1:B:305:THR:HA	1:B:406:ILE:CD1	2.32	0.58
1:B:365:ASP:C	1:B:367:LEU:H	2.06	0.58
1:B:227:GLU:O	1:B:231:THR:HG22	2.04	0.58
1:B:449:LYS:HG2	1:B:453:GLU:OE2	2.03	0.58
1:B:398:THR:HG23	1:B:401:VAL:H	1.68	0.58
1:A:415:ASP:OD1	1:A:436:LYS:HD2	2.03	0.57
1:A:417:TRP:NE1	1:A:434:GLU:HG3	2.18	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1:MET:HE3	1:B:6:GLY:HA3	1.84	0.57
1:B:411:ILE:HB	1:B:418:PHE:CE1	2.39	0.57
1:B:294:TYR:O	1:B:297:LYS:HG2	2.05	0.57
1:A:177:ILE:HD13	1:A:188:THR:HG22	1.87	0.57
1:B:276:LYS:O	1:B:276:LYS:HD3	2.05	0.56
1:A:288:SER:OG	1:A:290:LEU:HB3	2.05	0.56
1:A:372:LEU:HA	1:A:434:GLU:HB3	1.86	0.56
1:A:384:MET:SD	1:A:385:VAL:HG12	2.46	0.56
1:B:119:GLU:H	1:B:119:GLU:CD	2.09	0.56
1:B:251:ASP:OD2	1:B:255:ARG:NH1	2.38	0.56
1:A:281:ILE:C	1:A:281:ILE:HD12	2.26	0.56
1:A:340:ARG:HG3	3:A:461:HOH:O	2.05	0.56
1:B:302:VAL:HG23	1:B:302:VAL:O	2.04	0.56
1:A:253:GLU:HA	1:A:253:GLU:OE1	2.06	0.56
1:B:115:GLU:HB2	1:B:310:VAL:CG1	2.34	0.56
1:B:383:LEU:CD1	1:B:387:GLU:HG2	2.35	0.56
1:B:268:TYR:O	1:B:271:SER:HB3	2.06	0.56
1:B:289:SER:HB3	1:B:417:TRP:CD1	2.41	0.56
1:B:156:VAL:HG13	1:B:191:VAL:HG12	1.88	0.56
1:B:248:ILE:O	1:B:248:ILE:HG13	2.06	0.56
1:B:437:ASP:OD2	1:B:439:ASN:HB2	2.05	0.56
1:A:83:VAL:HG11	1:A:109:VAL:HG21	1.88	0.56
1:A:379:LEU:HG	1:A:429:ILE:CD1	2.35	0.56
1:B:1:MET:HE3	1:B:6:GLY:CA	2.33	0.56
1:B:104:ASN:ND2	1:B:105:GLY:H	2.02	0.56
1:B:379:LEU:HD13	1:B:427:PRO:CB	2.34	0.56
1:A:14:VAL:HG21	1:A:49:GLY:HA3	1.88	0.55
1:A:278:ILE:N	1:A:278:ILE:HD13	2.21	0.55
1:A:280:LYS:NZ	1:A:280:LYS:CB	2.68	0.55
1:A:288:SER:HA	1:A:417:TRP:CZ2	2.40	0.55
1:A:220:ASP:O	1:A:223:LYS:HB2	2.06	0.55
1:A:110:ASP:CG	1:A:111:LYS:H	2.09	0.55
1:B:133:PHE:C	1:B:135:THR:H	2.10	0.55
1:B:104:ASN:HD22	1:B:105:GLY:N	2.04	0.55
1:A:182:SER:OG	1:A:183:VAL:N	2.40	0.55
1:A:198:LYS:HA	1:B:211:SER:OG	2.06	0.55
1:B:366:ARG:HG3	1:B:366:ARG:NH1	2.22	0.55
1:A:228:VAL:CA	1:A:231:THR:HG23	2.31	0.54
1:B:121:GLU:O	1:B:125:GLU:HG3	2.07	0.54
1:B:290:LEU:HD23	1:B:291:VAL:N	2.22	0.54
1:A:375:THR:CG2	1:A:376:LYS:N	2.71	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:GLU:HG3	1:A:310:VAL:HG13	1.89	0.54
1:A:369:LYS:HE2	1:A:371:TYR:HE1	1.71	0.54
1:B:238:VAL:HG21	1:B:346:PHE:HD1	1.72	0.54
1:A:290:LEU:C	1:A:290:LEU:HD23	2.28	0.54
1:A:378:ASP:HA	1:A:428:ILE:HG13	1.90	0.54
1:B:126:ASP:O	1:B:130:THR:HG23	2.08	0.54
1:B:288:SER:HA	1:B:417:TRP:CZ2	2.43	0.54
1:A:352:LEU:O	1:A:356:GLU:HG2	2.07	0.54
1:A:136:ILE:HD11	1:A:141:LEU:HD13	1.90	0.53
1:A:449:LYS:HG2	1:A:453:GLU:OE2	2.08	0.53
1:B:17:GLU:O	1:B:19:THR:HG23	2.09	0.53
1:B:133:PHE:O	1:B:135:THR:N	2.39	0.53
1:A:265:LEU:HD13	1:A:367:LEU:HD11	1.90	0.53
1:B:385:VAL:HG23	1:B:389:TYR:CE2	2.43	0.53
1:B:1:MET:HG3	1:B:11:ARG:CD	2.38	0.53
1:B:290:LEU:HD23	1:B:290:LEU:C	2.28	0.53
1:A:1:MET:CB	1:A:6:GLY:CA	2.82	0.53
1:B:1:MET:HE1	1:B:7:THR:N	2.23	0.53
1:B:10:VAL:HG21	1:B:26:LEU:HD11	1.90	0.53
1:B:383:LEU:HD23	1:B:388:ILE:HD11	1.90	0.53
1:B:108:VAL:HG23	1:B:116:ILE:HG12	1.89	0.53
1:B:273:LYS:HE3	1:B:333:TYR:OH	2.09	0.53
1:A:119:GLU:CD	1:A:119:GLU:H	2.12	0.53
1:B:418:PHE:HB3	1:B:433:ALA:HB2	1.91	0.53
1:A:76:THR:N	1:A:77:PRO:CD	2.72	0.52
1:A:78:ALA:HA	1:A:155:TYR:CD1	2.44	0.52
1:B:443:ASN:N	1:B:443:ASN:HD22	2.06	0.52
1:B:4:LEU:HD12	1:B:5:PHE:H	1.74	0.52
1:A:96:ALA:HB2	1:A:104:ASN:HA	1.91	0.52
1:A:279:LYS:O	1:A:280:LYS:HB2	2.10	0.52
1:B:1:MET:HE1	1:B:6:GLY:C	2.29	0.52
1:A:205:ASN:H	1:A:205:ASN:ND2	2.07	0.52
1:A:96:ALA:HB2	1:A:104:ASN:CA	2.40	0.52
1:A:177:ILE:HG22	1:A:179:PRO:HD3	1.91	0.52
1:A:371:TYR:O	1:A:434:GLU:HB2	2.10	0.52
1:A:316:VAL:HG13	1:A:321:ALA:HB3	1.90	0.52
1:B:75:PRO:HA	1:B:183:VAL:HG11	1.92	0.52
1:B:171:LYS:HG2	1:B:173:TYR:CZ	2.44	0.52
1:B:281:ILE:HG13	1:B:281:ILE:O	2.08	0.52
1:A:252:SER:N	1:A:360:SER:OG	2.38	0.52
1:B:36:LYS:O	1:B:37:ASN:HB2	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:371:TYR:O	1:A:434:GLU:CB	2.58	0.51
1:A:117:ARG:HB3	1:A:119:GLU:OE1	2.10	0.51
1:B:1:MET:HE3	1:B:6:GLY:N	2.25	0.51
1:A:115:GLU:CG	1:A:310:VAL:HG13	2.40	0.51
1:B:173:TYR:OH	1:B:353:LEU:HD12	2.10	0.51
1:B:440:VAL:CG2	1:B:441:ALA:N	2.74	0.51
1:B:372:LEU:HD12	1:B:433:ALA:O	2.09	0.51
1:B:411:ILE:HD13	1:B:418:PHE:CZ	2.46	0.51
1:A:417:TRP:NE1	1:A:434:GLU:CG	2.74	0.51
1:B:262:SER:O	1:B:266:LEU:HB2	2.11	0.51
1:B:372:LEU:HD12	1:B:373:VAL:H	1.75	0.51
1:B:380:LYS:HD3	1:B:381:PRO:CD	2.40	0.51
1:B:444:LEU:O	1:B:444:LEU:HD23	2.11	0.50
1:B:265:LEU:CD1	1:B:367:LEU:HD13	2.41	0.50
1:B:364:PHE:O	1:B:367:LEU:HB2	2.11	0.50
1:B:383:LEU:CD2	1:B:388:ILE:HD11	2.41	0.50
1:A:295:LEU:HB3	1:A:300:ILE:HB	1.93	0.50
1:B:136:ILE:HD11	1:B:141:LEU:CD1	2.41	0.50
1:B:230:LYS:HG3	1:B:254:GLY:HA3	1.93	0.50
1:A:174:LYS:O	1:A:234:VAL:HG13	2.11	0.50
1:A:388:ILE:O	1:A:392:ILE:HG12	2.11	0.50
1:A:4:LEU:HB2	1:A:125:GLU:OE2	2.11	0.50
1:A:219:PHE:O	1:A:223:LYS:HD3	2.12	0.50
1:A:389:TYR:O	1:A:393:LEU:HB2	2.11	0.50
1:B:1:MET:O	1:B:3:LYS:N	2.44	0.50
1:B:118:ARG:O	1:B:121:GLU:HB2	2.12	0.50
1:B:411:ILE:O	1:B:417:TRP:HA	2.11	0.50
1:B:440:VAL:HG23	1:B:441:ALA:N	2.27	0.50
1:A:401:VAL:HB	1:A:412:ILE:O	2.11	0.50
1:B:389:TYR:O	1:B:393:LEU:HB2	2.11	0.50
1:A:275:PRO:HA	1:A:279:LYS:HZ1	1.77	0.49
1:B:1:MET:C	1:B:3:LYS:N	2.65	0.49
1:B:379:LEU:C	1:B:379:LEU:HD23	2.32	0.49
1:B:398:THR:CG2	1:B:401:VAL:H	2.24	0.49
1:B:417:TRP:HH2	1:B:432:MET:CE	2.24	0.49
1:A:1:MET:HB3	1:A:6:GLY:HA3	1.89	0.49
1:B:435:ALA:N	1:B:441:ALA:HB2	2.27	0.49
1:B:4:LEU:CD1	1:B:5:PHE:H	2.26	0.49
1:B:294:TYR:CD1	1:B:367:LEU:HD12	2.46	0.49
1:B:375:THR:HG22	1:B:376:LYS:N	2.18	0.49
1:B:384:MET:O	1:B:387:GLU:HB3	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:404:ILE:HG22	1:B:406:ILE:HG22	1.94	0.49
1:B:447:GLU:O	1:B:450:LYS:HB2	2.13	0.49
1:A:94:ILE:HD12	1:A:94:ILE:N	2.28	0.49
1:A:211:SER:OG	1:B:198:LYS:HA	2.12	0.49
1:B:1:MET:HB2	1:B:11:ARG:CD	2.42	0.49
1:B:8:ASP:O	1:B:107:LYS:HG2	2.13	0.49
1:B:23:VAL:HG21	1:B:53:LEU:HD22	1.93	0.49
1:A:333:TYR:CD2	1:A:335:PRO:HG2	2.48	0.49
1:B:118:ARG:NH2	1:B:311:ASP:HB2	2.27	0.49
1:B:177:ILE:HD13	1:B:188:THR:HG22	1.94	0.49
1:B:292:GLU:HG3	1:B:302:VAL:HG22	1.93	0.49
1:B:372:LEU:HA	1:B:434:GLU:HB3	1.93	0.49
1:B:1:MET:H3	1:B:11:ARG:HD2	1.76	0.49
1:B:246:ARG:HD2	1:B:340:ARG:NH1	2.27	0.49
1:A:265:LEU:O	1:A:268:TYR:HB3	2.13	0.49
1:B:443:ASN:HD22	1:B:444:LEU:N	2.11	0.49
1:A:397:SER:C	1:A:398:THR:HG22	2.33	0.48
1:B:383:LEU:CD1	1:B:391:LYS:HZ1	2.26	0.48
1:B:431:ILE:HD11	1:B:452:VAL:HG21	1.95	0.48
1:A:174:LYS:HE2	1:A:200:TYR:CE1	2.48	0.48
1:B:24:LEU:O	1:B:27:SER:HB2	2.14	0.48
1:B:251:ASP:HB2	1:B:361:ALA:HA	1.96	0.48
1:A:293:GLU:OE2	1:A:436:LYS:NZ	2.32	0.48
1:A:294:TYR:CD1	1:A:367:LEU:HD12	2.48	0.48
1:B:358:VAL:HG13	1:B:362:GLU:OE2	2.13	0.48
1:A:386:GLU:O	1:A:386:GLU:HG2	2.14	0.48
1:A:405:THR:HG22	1:A:409:VAL:HG22	1.96	0.48
1:B:75:PRO:HG2	1:B:187:SER:OG	2.14	0.48
1:B:257:GLN:OE1	1:B:364:PHE:CD2	2.67	0.48
1:B:392:ILE:HG13	1:B:393:LEU:N	2.28	0.48
1:A:47:ARG:CZ	1:A:96:ALA:HB3	2.44	0.48
1:A:110:ASP:HB2	1:A:116:ILE:HG22	1.96	0.48
1:A:288:SER:O	1:A:291:VAL:HG12	2.14	0.48
1:B:173:TYR:OH	1:B:354:ALA:HA	2.14	0.48
1:B:306:LYS:HB3	1:B:407:ASP:OD2	2.14	0.48
1:B:398:THR:HG23	1:B:400:SER:H	1.79	0.48
1:A:44:ARG:O	1:A:73:MET:HA	2.14	0.47
1:A:228:VAL:HA	1:A:231:THR:CG2	2.34	0.47
1:A:238:VAL:HG22	1:A:249:PHE:CD2	2.48	0.47
1:A:258:TRP:HA	1:A:258:TRP:CE3	2.48	0.47
1:B:295:LEU:HD22	1:B:300:ILE:CD1	2.44	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1:MET:CB	1:A:6:GLY:HA3	2.45	0.47
1:B:215:PRO:O	1:B:241:ASP:HA	2.13	0.47
1:A:371:TYR:CD1	1:A:371:TYR:N	2.80	0.47
1:A:396:TYR:O	1:A:398:THR:HG22	2.15	0.47
1:B:75:PRO:HA	1:B:183:VAL:CG1	2.45	0.47
1:B:296:SER:C	1:B:298:TYR:H	2.17	0.47
1:B:313:ALA:HA	1:B:332:MET:HE2	1.95	0.47
1:B:423:SER:HB2	1:B:430:ARG:NE	2.30	0.47
1:A:21:GLU:CD	1:A:21:GLU:H	2.17	0.47
1:A:278:ILE:HD13	1:A:278:ILE:H	1.79	0.47
1:B:278:ILE:HD11	1:B:320:ASN:O	2.14	0.47
1:A:133:PHE:O	1:A:135:THR:N	2.40	0.47
1:B:305:THR:HG23	1:B:306:LYS:O	2.15	0.47
1:B:415:ASP:O	1:B:435:ALA:HB1	2.15	0.47
1:A:288:SER:HA	1:A:417:TRP:CE2	2.50	0.47
1:B:366:ARG:CG	1:B:366:ARG:NH1	2.65	0.47
1:B:383:LEU:HD12	1:B:387:GLU:HG2	1.95	0.47
1:A:308:GLY:O	1:A:312:ILE:HG13	2.15	0.46
1:B:388:ILE:O	1:B:391:LYS:HB2	2.15	0.46
1:B:398:THR:HG23	1:B:400:SER:N	2.30	0.46
1:A:176:LEU:HA	1:A:200:TYR:O	2.15	0.46
1:A:219:PHE:CD2	1:A:256:VAL:HG22	2.50	0.46
1:B:346:PHE:CZ	1:B:350:LEU:HD11	2.50	0.46
1:A:3:LYS:HA	1:A:3:LYS:HD3	1.59	0.46
1:A:406:ILE:HG13	1:A:406:ILE:O	2.14	0.46
1:B:222:LEU:HD12	1:B:248:ILE:HD11	1.93	0.46
1:B:369:LYS:HE2	1:B:371:TYR:HE1	1.80	0.46
1:B:383:LEU:HD11	1:B:387:GLU:HG2	1.97	0.46
1:A:392:ILE:HG23	1:A:451:ILE:HG21	1.96	0.46
1:A:230:LYS:HE3	1:A:253:GLU:O	2.16	0.46
1:B:49:GLY:O	1:B:53:LEU:HG	2.15	0.46
1:B:429:ILE:N	1:B:429:ILE:CD1	2.79	0.46
1:A:371:TYR:O	1:A:434:GLU:HA	2.16	0.46
1:A:374:LYS:CB	1:A:374:LYS:NZ	2.79	0.46
1:B:418:PHE:CD2	1:B:448:LEU:HD11	2.51	0.45
1:B:435:ALA:HB3	1:B:441:ALA:HB2	1.96	0.45
1:B:266:LEU:HB3	1:B:331:PHE:CE1	2.51	0.45
1:A:136:ILE:HD11	1:A:141:LEU:HD12	1.98	0.45
1:B:22:LEU:HD23	1:B:22:LEU:O	2.17	0.45
1:B:101:ALA:N	1:B:102:PRO:HD2	2.31	0.45
1:B:388:ILE:HG21	1:B:452:VAL:HG22	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:110:ASP:CG	1:A:111:LYS:N	2.69	0.45
1:B:138:TRP:CG	1:B:139:SER:N	2.84	0.45
1:B:316:VAL:HG13	1:B:321:ALA:HB3	1.97	0.45
1:B:417:TRP:NE1	1:B:434:GLU:CG	2.80	0.45
1:B:281:ILE:HD12	1:B:325:PHE:CE1	2.51	0.45
1:B:176:LEU:HB2	1:B:234:VAL:HG21	1.97	0.45
1:B:269:TRP:CE3	1:B:352:LEU:HD23	2.52	0.45
1:A:219:PHE:CE2	1:A:256:VAL:HG22	2.52	0.45
1:B:440:VAL:HA	1:B:443:ASN:HD21	1.81	0.45
1:B:371:TYR:CG	1:B:438:GLU:HB3	2.52	0.45
1:B:378:ASP:OD2	1:B:428:ILE:HG12	2.17	0.45
1:B:388:ILE:O	1:B:389:TYR:C	2.55	0.45
1:B:411:ILE:HD13	1:B:418:PHE:CE2	2.52	0.45
1:B:443:ASN:N	1:B:443:ASN:ND2	2.65	0.45
1:A:222:LEU:HD11	1:A:248:ILE:HD11	1.99	0.45
1:A:234:VAL:CG1	1:A:236:LEU:O	2.65	0.45
1:B:4:LEU:HD12	1:B:125:GLU:OE2	2.16	0.45
1:B:137:GLU:O	1:B:138:TRP:C	2.55	0.45
1:B:371:TYR:O	1:B:434:GLU:CB	2.63	0.45
1:A:94:ILE:N	1:A:94:ILE:CD1	2.80	0.44
1:A:374:LYS:HB3	1:A:374:LYS:HZ3	1.82	0.44
1:B:1:MET:HG3	1:B:11:ARG:NH1	2.31	0.44
1:A:225:THR:HA	1:A:228:VAL:HG22	1.98	0.44
1:A:309:SER:OG	1:A:340:ARG:HD3	2.17	0.44
1:B:428:ILE:C	1:B:429:ILE:HD12	2.37	0.44
1:A:396:TYR:HB3	1:A:411:ILE:HD12	1.99	0.44
1:B:182:SER:O	1:B:184:GLY:N	2.50	0.44
1:B:418:PHE:HB3	1:B:433:ALA:CB	2.48	0.44
1:A:104:ASN:HD22	1:A:105:GLY:N	2.15	0.44
1:B:404:ILE:CG2	1:B:406:ILE:HG22	2.48	0.44
1:B:440:VAL:O	1:B:443:ASN:ND2	2.51	0.44
1:A:447:GLU:CD	1:A:450:LYS:HZ1	2.19	0.44
1:A:216:GLU:HG3	1:A:246:ARG:HH21	1.83	0.44
1:B:225:THR:O	1:B:228:VAL:HG22	2.18	0.44
1:B:333:TYR:CE2	1:B:335:PRO:CG	2.94	0.44
1:A:222:LEU:O	1:A:223:LYS:C	2.56	0.44
1:B:409:VAL:HG12	1:B:411:ILE:CD1	2.48	0.44
1:B:445:VAL:CG1	1:B:446:ASN:N	2.81	0.44
1:B:114:ILE:HG22	1:B:115:GLU:N	2.33	0.43
1:B:253:GLU:CG	1:B:361:ALA:HB1	2.48	0.43
1:B:276:LYS:HB2	1:B:276:LYS:HE2	1.78	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:45:ASP:OD1	1:A:45:ASP:C	2.57	0.43
1:A:83:VAL:HG11	1:A:109:VAL:CG2	2.49	0.43
1:A:173:TYR:OH	1:A:354:ALA:HA	2.18	0.43
1:A:269:TRP:HH2	1:A:355:ASN:OD1	2.01	0.43
1:B:337:GLN:HG3	1:B:339:VAL:HG22	2.00	0.43
1:B:271:SER:HA	1:B:322:LEU:HD11	2.00	0.43
1:A:180:ALA:HB2	1:A:213:ARG:NH2	2.33	0.43
1:A:222:LEU:HD11	1:A:248:ILE:CD1	2.48	0.43
1:A:298:TYR:O	1:A:299:ASN:HB2	2.19	0.43
1:A:413:GLY:HA3	1:A:416:PHE:CE2	2.54	0.43
1:B:108:VAL:HG21	1:B:116:ILE:HD11	2.00	0.43
1:A:159:ILE:HG23	1:A:344:MET:CE	2.48	0.43
1:B:138:TRP:CD2	1:B:139:SER:N	2.87	0.43
1:B:392:ILE:O	1:B:395:VAL:HG13	2.19	0.43
1:A:374:LYS:O	1:A:375:THR:OG1	2.35	0.42
1:B:452:VAL:C	1:B:454:GLY:H	2.21	0.42
1:A:8:ASP:CG	1:A:107:LYS:HE2	2.39	0.42
1:A:255:ARG:HH22	1:A:365:ASP:CG	2.23	0.42
1:A:1:MET:HE3	1:A:6:GLY:HA3	1.86	0.42
1:A:319:GLU:O	1:A:320:ASN:C	2.57	0.42
1:A:392:ILE:HG12	1:A:392:ILE:H	1.73	0.42
1:B:303:ASP:OD2	1:B:319:GLU:OE1	2.36	0.42
1:B:377:VAL:HG13	1:B:377:VAL:O	2.19	0.42
1:A:1:MET:CG	1:A:6:GLY:HA3	2.48	0.42
1:A:188:THR:O	1:A:191:VAL:CG2	2.66	0.42
1:B:369:LYS:O	1:B:369:LYS:HG2	2.18	0.42
1:B:421:ARG:O	1:B:429:ILE:HA	2.18	0.42
1:A:251:ASP:HB2	1:A:360:SER:OG	2.20	0.42
1:A:373:VAL:HG12	1:A:445:VAL:HG21	2.02	0.42
1:A:333:TYR:CZ	1:A:335:PRO:CG	3.03	0.42
1:B:411:ILE:O	1:B:417:TRP:HB2	2.19	0.42
1:B:55:LYS:HA	1:B:55:LYS:HD3	1.66	0.42
1:B:133:PHE:C	1:B:135:THR:N	2.73	0.42
1:A:373:VAL:CG1	1:A:445:VAL:HG21	2.49	0.42
1:B:302:VAL:HG23	1:B:304:TRP:NE1	2.34	0.42
1:B:3:LYS:CG	1:B:4:LEU:N	2.44	0.42
1:B:279:LYS:HD2	1:B:279:LYS:N	2.34	0.42
1:A:118:ARG:NH2	1:A:310:VAL:HB	2.35	0.42
1:A:211:SER:HG	1:B:198:LYS:HA	1.84	0.41
1:B:82:ALA:O	1:B:86:LEU:HB2	2.19	0.41
1:B:416:PHE:CD1	1:B:444:LEU:HD11	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:225:THR:O	1:A:228:VAL:HG22	2.20	0.41
1:B:188:THR:OG1	1:B:240:HIS:CE1	2.62	0.41
1:B:234:VAL:CG1	1:B:236:LEU:H	2.33	0.41
1:B:365:ASP:C	1:B:367:LEU:N	2.71	0.41
1:B:334:PRO:N	1:B:335:PRO:HD2	2.35	0.41
1:A:230:LYS:HB2	1:A:230:LYS:NZ	2.36	0.41
1:B:251:ASP:OD1	1:B:253:GLU:HB2	2.20	0.41
1:A:393:LEU:HD21	1:A:405:THR:HG21	2.01	0.41
1:B:324:GLY:O	1:B:332:MET:HG2	2.21	0.41
1:B:450:LYS:NZ	1:B:450:LYS:CB	2.83	0.41
1:A:193:ARG:CD	1:B:209:LEU:HD22	2.41	0.41
1:A:297:LYS:HG3	1:A:298:TYR:CE2	2.55	0.41
1:B:41:LEU:HD23	1:B:42:VAL:N	2.35	0.41
1:B:410:LYS:HE3	1:B:412:ILE:HD11	2.03	0.41
1:A:171:LYS:O	1:A:172:ASN:C	2.57	0.41
1:A:333:TYR:CZ	1:A:335:PRO:HG2	2.55	0.41
1:B:31:GLY:HA3	1:B:64:VAL:HG21	2.02	0.41
1:B:190:LEU:HD12	1:B:190:LEU:HA	1.95	0.41
1:B:253:GLU:HG2	1:B:361:ALA:CB	2.51	0.41
1:B:258:TRP:HA	1:B:258:TRP:CE3	2.56	0.41
1:A:115:GLU:HG3	1:A:310:VAL:CG1	2.50	0.41
1:A:201:THR:O	1:B:202:ILE:HD12	2.21	0.41
1:A:398:THR:HG23	1:A:401:VAL:H	1.84	0.41
1:A:440:VAL:O	1:A:444:LEU:HG	2.21	0.41
1:B:1:MET:HE3	1:B:9:GLY:O	2.21	0.41
1:B:105:GLY:O	1:B:106:ILE:HD13	2.20	0.41
1:A:217:PRO:CB	1:A:248:ILE:HD11	2.33	0.41
1:A:324:GLY:CA	1:A:332:MET:HG2	2.51	0.41
1:B:76:THR:N	1:B:77:PRO:CD	2.83	0.41
1:B:265:LEU:O	1:B:268:TYR:HB3	2.20	0.41
1:A:291:VAL:HG13	1:A:292:GLU:N	2.36	0.40
1:A:297:LYS:NZ	1:A:298:TYR:HE2	2.19	0.40
1:B:369:LYS:NZ	1:B:369:LYS:HB3	2.36	0.40
1:B:367:LEU:HA	1:B:368:PRO:HD3	1.92	0.40
1:B:437:ASP:O	1:B:440:VAL:HG22	2.21	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:48:ALA:O	1:A:141:LEU:O[7_554]	2.10	0.10

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2:GLY:O	1:B:126:ASP:OD1[10_444]	2.18	0.02

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	453/455 (100%)	408 (90%)	40 (9%)	5 (1%)	14 41
1	B	453/455 (100%)	384 (85%)	59 (13%)	10 (2%)	6 22
All	All	906/910 (100%)	792 (87%)	99 (11%)	15 (2%)	9 29

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	97	SER
1	B	183	VAL
1	B	278	ILE
1	A	183	VAL
1	A	278	ILE
1	B	134	ASN
1	B	427	PRO
1	A	280	LYS
1	B	47	ARG
1	B	277	ALA
1	B	394	GLU
1	B	275	PRO
1	B	391	LYS
1	A	398	THR
1	A	330	GLY

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	386/386 (100%)	338 (88%)	48 (12%)	4	14
1	B	386/386 (100%)	346 (90%)	40 (10%)	7	21
All	All	772/772 (100%)	684 (89%)	88 (11%)	5	18

All (88) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LEU
1	A	14	VAL
1	A	16	LYS
1	A	26	LEU
1	A	41	LEU
1	A	51	ASP
1	A	79	LEU
1	A	86	LEU
1	A	92	VAL
1	A	104	ASN
1	A	108	VAL
1	A	109	VAL
1	A	115	GLU
1	A	125	GLU
1	A	151	VAL
1	A	183	VAL
1	A	190	LEU
1	A	205	ASN
1	A	223	LYS
1	A	230	LYS
1	A	231	THR
1	A	234	VAL
1	A	252	SER
1	A	256	VAL
1	A	265	LEU
1	A	266	LEU
1	A	276	LYS

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Mol	Chain	Res	Type
1	A	278	ILE
1	A	280	LYS
1	A	290	LEU
1	A	302	VAL
1	A	332	MET
1	A	352	LEU
1	A	353	LEU
1	A	355	ASN
1	A	357	ASN
1	A	363	LEU
1	A	367	LEU
1	A	369	LYS
1	A	374	LYS
1	A	377	VAL
1	A	384	MET
1	A	392	ILE
1	A	393	LEU
1	A	398	THR
1	A	425	THR
1	A	428	ILE
1	A	450	LYS
1	B	1	MET
1	B	4	LEU
1	B	26	LEU
1	B	51	ASP
1	B	79	LEU
1	B	86	LEU
1	B	92	VAL
1	B	104	ASN
1	B	109	VAL
1	B	145	VAL
1	B	151	VAL
1	B	175	VAL
1	B	183	VAL
1	B	190	LEU
1	B	191	VAL
1	B	205	ASN
1	B	225	THR
1	B	231	THR
1	B	233	LYS
1	B	246	ARG
1	B	252	SER

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Mol	Chain	Res	Type
1	B	256	VAL
1	B	265	LEU
1	B	266	LEU
1	B	276	LYS
1	B	279	LYS
1	B	289	SER
1	B	290	LEU
1	B	301	GLN
1	B	312	ILE
1	B	332	MET
1	B	353	LEU
1	B	366	ARG
1	B	369	LYS
1	B	374	LYS
1	B	384	MET
1	B	385	VAL
1	B	426	GLU
1	B	427	PRO
1	B	443	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	104	ASN
1	A	122	ASN
1	A	205	ASN
1	A	214	GLN
1	A	299	ASN
1	A	355	ASN
1	A	357	ASN
1	B	37	ASN
1	B	98	HIS
1	B	104	ASN
1	B	122	ASN
1	B	157	ASN
1	B	162	HIS
1	B	205	ASN
1	B	214	GLN
1	B	240	HIS
1	B	257	GLN
1	B	299	ASN
1	B	301	GLN

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Mol	Chain	Res	Type
1	B	336	HIS
1	B	355	ASN
1	B	357	ASN
1	B	443	ASN
1	B	446	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry

1 ligand is 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	SO4	A	460	-	4,4,4	1.11	0	6,6,6	1.59	1 (16%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	460	SO4	O4-S-O3	3.61	124.47	109.06

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	455/455 (100%)	-0.20	2 (0%) 92 91	19, 37, 59, 79	0
1	B	455/455 (100%)	0.34	37 (8%) 12 6	24, 48, 99, 100	0
All	All	910/910 (100%)	0.07	39 (4%) 35 25	19, 41, 89, 100	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	382	GLY	6.0
1	A	1	MET	5.7
1	B	380	LYS	5.5
1	A	2	GLY	5.4
1	B	383	LEU	5.1
1	B	377	VAL	4.9
1	B	431	ILE	4.5
1	B	428	ILE	4.4
1	B	451	ILE	4.1
1	B	396	TYR	3.9
1	B	276	LYS	3.8
1	B	448	LEU	3.8
1	B	398	THR	3.8
1	B	455	LYS	3.7
1	B	429	ILE	3.6
1	B	391	LYS	3.5
1	B	134	ASN	3.5
1	B	453	GLU	3.3
1	B	449	LYS	3.2
1	B	454	GLY	3.2
1	B	381	PRO	3.2
1	B	452	VAL	3.0
1	B	401	VAL	3.0
1	B	375	THR	3.0

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Mol	Chain	Res	Type	RSRZ
1	B	378	ASP	2.7
1	B	278	ILE	2.7
1	B	397	SER	2.6
1	B	425	THR	2.4
1	B	450	LYS	2.4
1	B	399	SER	2.3
1	B	279	LYS	2.3
1	B	379	LEU	2.2
1	B	392	ILE	2.2
1	B	424	GLY	2.2
1	B	275	PRO	2.1
1	B	2	GLY	2.1
1	B	7	THR	2.1
1	B	394	GLU	2.0
1	B	430	ARG	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 monosaccharides 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, 95^{th} 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
2	SO4	A	460	5/5	0.96	0.13	68,68,69,69	0

6.5 Other polymers (i)

There are no such residues in this entry.