WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 04:50 AM EDT

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PDB ID	:	2B3O
Title	:	Crystal structure of human tyrosine phosphatase SHP-1
Authors	:	Yang, J.; Liu, L.; He, D.; Song, X.; Liang, X.; Zhao, Z.J.; Zhou, G.W.
Deposited on	:	2005-09-20
Resolution	:	2.80 Å(reported)

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 2.80 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	Percentile Ranks	Value
Clashscore		29
Ramachandran outliers		4.8%
Sidechain outliers		10.7%

Worse ... *Better*

▮ Percentile relative to all X-ray structures

⫿ Percentile relative to X-ray structures of similar resolution
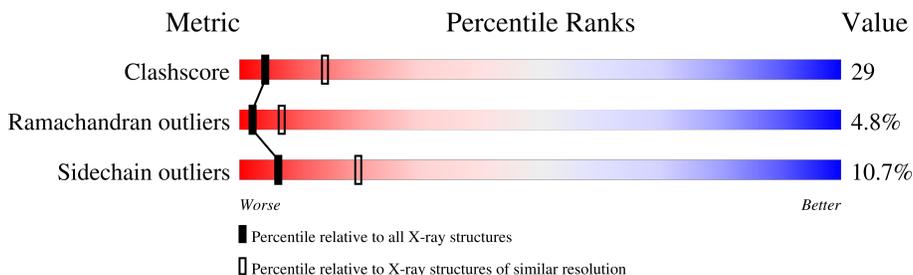
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

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%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	532	47% 39% 8% · 5%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 4062 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 Tyrosine-protein phosphatase, non-receptor type 6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	504	Total	C	N	O	S	0	0	0
			4043	2548	712	767	16			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	19	Total	O	0	0
			19	19		

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. 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. 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.

Note EDS was not executed.

• Molecule 1: Tyrosine-protein phosphatase, non-receptor type 6
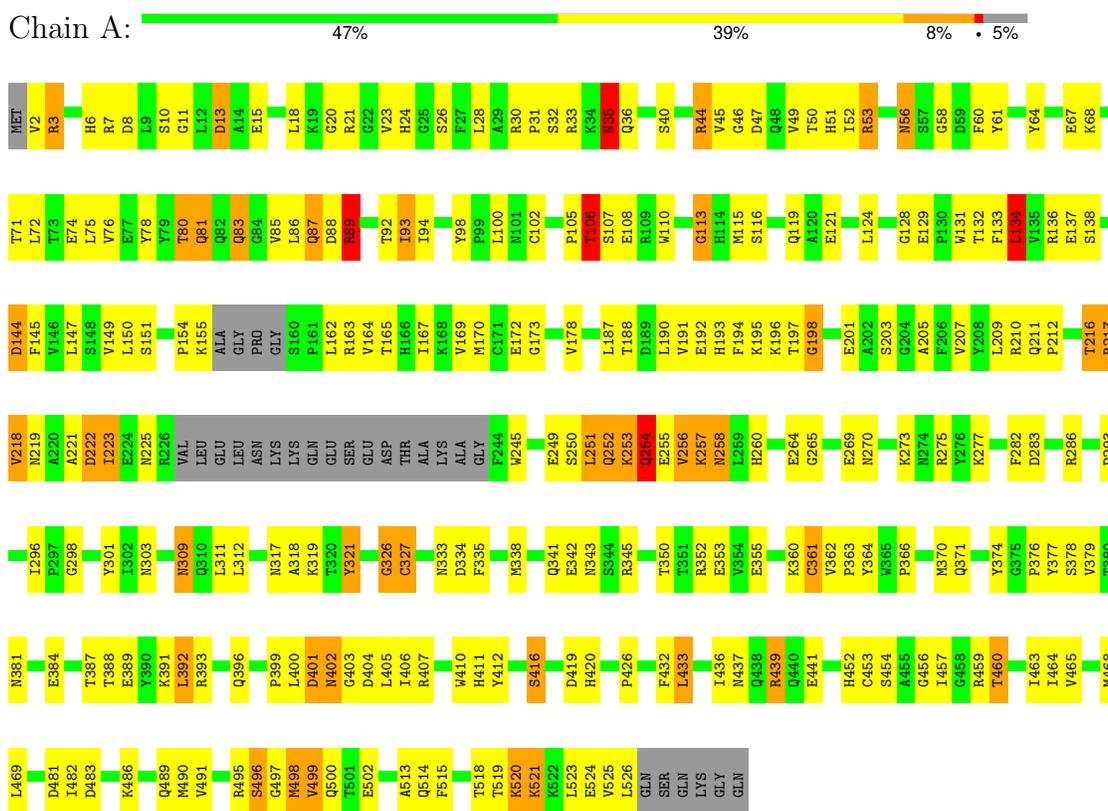
4 Data and refinement statistics ⓘ

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

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	44.74Å 100.40Å 149.47Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.80	Depositor
% Data completeness (in resolution range)	(Not available) (20.00-2.80)	Depositor
R_{merge}	0.10	Depositor
R_{sym}	0.10	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.233 , 0.296	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	4062	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

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	0.43	0/4133	0.67	2/5594 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	198	GLY	N-CA-C	-5.53	99.28	113.10
1	A	134	LEU	CA-CB-CG	5.45	127.84	115.30

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	4043	0	3943	234	0
2	A	19	0	0	0	0
All	All	4062	0	3943	234	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 29.

All (234) 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:A:257:LYS:H	1:A:257:LYS:HD2	1.29	0.97
1:A:343:ASN:HD21	1:A:345:ARG:HH21	1.12	0.90
1:A:326:GLY:O	1:A:327:CYS:HB2	1.73	0.88
1:A:350:THR:OG1	1:A:453:CYS:HB3	1.73	0.87
1:A:437:ASN:O	1:A:441:GLU:HG3	1.77	0.85
1:A:457:ILE:HA	1:A:498:MET:HE2	1.57	0.84
1:A:169:VAL:HG22	1:A:178:VAL:HG12	1.61	0.83
1:A:88:ASP:HB2	1:A:94:ILE:HD11	1.66	0.78
1:A:2:VAL:HG23	1:A:256:VAL:HG22	1.66	0.77
1:A:515:PHE:O	1:A:519:THR:HG23	1.85	0.77
1:A:520:LYS:O	1:A:520:LYS:HG2	1.86	0.76
1:A:15:GLU:HA	1:A:49:VAL:HG21	1.67	0.76
1:A:364:TYR:OH	1:A:411:HIS:HE1	1.70	0.74
1:A:110:TRP:HB3	1:A:212:PRO:HB3	1.70	0.74
1:A:113:GLY:O	1:A:137:GLU:HG2	1.89	0.73
1:A:338:MET:O	1:A:342:GLU:HG2	1.90	0.71
1:A:190:LEU:HG	1:A:194:PHE:HE1	1.56	0.71
1:A:87:GLN:HB2	1:A:92:THR:HG23	1.74	0.69
1:A:201:GLU:CD	1:A:205:ALA:HB3	2.13	0.69
1:A:457:ILE:HA	1:A:498:MET:CE	2.22	0.69
1:A:483:ASP:OD1	1:A:486:LYS:HB2	1.93	0.69
1:A:257:LYS:HD2	1:A:257:LYS:N	2.04	0.69
1:A:60:PHE:HA	1:A:500:GLN:OE1	1.94	0.68
1:A:402:ASN:ND2	1:A:405:LEU:HB2	2.09	0.68
1:A:456:GLY:HA2	1:A:460:THR:HG21	1.76	0.68
1:A:453:CYS:SG	1:A:460:THR:HG22	2.34	0.68
1:A:343:ASN:HD21	1:A:345:ARG:NH2	1.89	0.68
1:A:453:CYS:SG	1:A:460:THR:CG2	2.83	0.67
1:A:389:GLU:HA	1:A:416:SER:OG	1.94	0.67
1:A:150:LEU:HD11	1:A:162:LEU:HB2	1.77	0.67
1:A:92:THR:HG22	1:A:93:ILE:N	2.11	0.66
1:A:251:LEU:O	1:A:254:GLN:HB2	1.95	0.66
1:A:2:VAL:HG11	1:A:252:GLN:HE22	1.61	0.66
1:A:32:SER:OG	1:A:35:ASN:HB3	1.94	0.66
1:A:216:THR:O	1:A:218:VAL:HG23	1.94	0.66
1:A:44:ARG:NH1	1:A:46:GLY:O	2.28	0.66
1:A:106:THR:HG22	1:A:250:SER:HB2	1.79	0.65
1:A:426:PRO:HG2	1:A:514:GLN:NE2	2.10	0.65
1:A:293:ASP:OD1	1:A:296:ILE:HG13	1.96	0.64
1:A:121:GLU:HG2	1:A:164:VAL:HB	1.81	0.63
1:A:92:THR:HG22	1:A:93:ILE:H	1.63	0.63
1:A:163:ARG:HH12	1:A:165:THR:HB	1.63	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:327:CYS:O	1:A:362:VAL:HG22	1.98	0.63
1:A:6:HIS:NE2	1:A:102:CYS:HB3	2.14	0.63
1:A:15:GLU:HG2	1:A:49:VAL:CG1	2.29	0.62
1:A:265:GLY:HA2	1:A:301:TYR:CE1	2.34	0.62
1:A:519:THR:O	1:A:521:LYS:HD3	1.99	0.62
1:A:15:GLU:HG2	1:A:49:VAL:HG11	1.82	0.62
1:A:197:THR:HG22	1:A:198:GLY:O	1.98	0.62
1:A:392:LEU:HD22	1:A:393:ARG:N	2.14	0.61
1:A:245:TRP:O	1:A:249:GLU:HG3	2.01	0.60
1:A:257:LYS:H	1:A:257:LYS:CD	2.11	0.60
1:A:129:GLU:O	1:A:150:LEU:HD23	2.01	0.60
1:A:333:ASN:HD22	1:A:333:ASN:N	1.98	0.60
1:A:2:VAL:HG11	1:A:252:GLN:NE2	2.16	0.60
1:A:345:ARG:NE	1:A:407:ARG:HD3	2.17	0.59
1:A:387:THR:HG22	1:A:388:THR:N	2.18	0.59
1:A:60:PHE:CE1	1:A:68:LYS:HD3	2.38	0.58
1:A:52:ILE:HD12	1:A:52:ILE:N	2.19	0.58
1:A:252:GLN:HE21	1:A:253:LYS:N	2.01	0.58
1:A:3:ARG:HB2	1:A:3:ARG:CZ	2.34	0.58
1:A:521:LYS:NZ	1:A:523:LEU:O	2.36	0.57
1:A:155:LYS:O	1:A:155:LYS:HD3	2.04	0.57
1:A:309:ASN:HA	1:A:490:MET:HE1	1.86	0.57
1:A:187:LEU:O	1:A:191:VAL:HG23	2.05	0.57
1:A:193:HIS:O	1:A:196:LYS:HG2	2.04	0.56
1:A:371:GLN:HG3	1:A:371:GLN:O	2.05	0.56
1:A:44:ARG:NH1	1:A:47:ASP:HA	2.20	0.56
1:A:497:GLY:O	1:A:498:MET:C	2.44	0.56
1:A:335:PHE:HE1	1:A:364:TYR:CE2	2.23	0.56
1:A:343:ASN:ND2	1:A:345:ARG:HE	2.03	0.56
1:A:257:LYS:N	1:A:257:LYS:HZ3	2.04	0.55
1:A:2:VAL:CG1	1:A:252:GLN:HE22	2.18	0.55
1:A:293:ASP:CG	1:A:296:ILE:HG13	2.27	0.55
1:A:498:MET:O	1:A:499:VAL:HB	2.07	0.55
1:A:51:HIS:C	1:A:52:ILE:HD12	2.27	0.55
1:A:253:LYS:O	1:A:254:GLN:HG2	2.07	0.55
1:A:326:GLY:N	1:A:454:SER:O	2.36	0.55
1:A:326:GLY:HA2	1:A:453:CYS:O	2.07	0.55
1:A:270:ASN:HA	1:A:273:LYS:HD2	1.89	0.54
1:A:81:GLN:HB3	1:A:83:GLN:HG2	1.88	0.54
1:A:124:LEU:HD11	1:A:134:LEU:HD13	1.89	0.54
1:A:165:THR:HG21	1:A:207:VAL:HG11	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:495:ARG:O	1:A:498:MET:HG2	2.08	0.54
1:A:393:ARG:HG3	1:A:393:ARG:HH11	1.72	0.54
1:A:393:ARG:HG3	1:A:393:ARG:NH1	2.23	0.54
1:A:190:LEU:HD23	1:A:190:LEU:C	2.28	0.53
1:A:464:ILE:O	1:A:468:MET:HG3	2.08	0.53
1:A:257:LYS:N	1:A:257:LYS:CD	2.70	0.53
1:A:345:ARG:CZ	1:A:407:ARG:HD3	2.38	0.53
1:A:350:THR:HG1	1:A:453:CYS:HB3	1.72	0.53
1:A:155:LYS:HB3	1:A:163:ARG:HB2	1.92	0.52
1:A:85:VAL:HG13	1:A:93:ILE:HD13	1.91	0.52
1:A:392:LEU:HD22	1:A:392:LEU:C	2.30	0.52
1:A:138:SER:HB3	1:A:144:ASP:O	2.09	0.52
1:A:252:GLN:O	1:A:255:GLU:HG3	2.10	0.52
1:A:352:ARG:HG3	1:A:352:ARG:HH11	1.74	0.52
1:A:201:GLU:CG	1:A:205:ALA:HB3	2.40	0.51
1:A:225:ASN:HD21	1:A:513:ALA:HB2	1.75	0.51
1:A:105:PRO:O	1:A:107:SER:N	2.43	0.51
1:A:353:GLU:HG2	1:A:363:PRO:HG3	1.92	0.51
1:A:376:PRO:HG2	1:A:377:TYR:CE2	2.46	0.51
1:A:92:THR:CG2	1:A:93:ILE:H	2.24	0.51
1:A:253:LYS:O	1:A:253:LYS:HG3	2.10	0.51
1:A:7:ARG:NH1	1:A:106:THR:HG23	2.26	0.51
1:A:10:SER:OG	1:A:13:ASP:HB2	2.10	0.51
1:A:75:LEU:C	1:A:75:LEU:HD23	2.30	0.51
1:A:258:ASN:OD1	1:A:489:GLN:NE2	2.42	0.51
1:A:391:LYS:HD2	1:A:393:ARG:CZ	2.42	0.50
1:A:188:THR:O	1:A:192:GLU:HG2	2.11	0.50
1:A:216:THR:O	1:A:218:VAL:N	2.43	0.50
1:A:107:SER:HB2	1:A:253:LYS:NZ	2.27	0.50
1:A:384:GLU:HG2	1:A:393:ARG:HG2	1.93	0.50
1:A:28:LEU:C	1:A:28:LEU:HD12	2.32	0.50
1:A:53:ARG:H	1:A:53:ARG:CD	2.24	0.50
1:A:147:LEU:HB3	1:A:167:ILE:HB	1.92	0.50
1:A:56:ASN:HD22	1:A:58:GLY:H	1.57	0.49
1:A:252:GLN:O	1:A:254:GLN:N	2.46	0.49
1:A:3:ARG:HB2	1:A:3:ARG:NH1	2.28	0.48
1:A:115:MET:HG3	1:A:119:GLN:HG3	1.93	0.48
1:A:309:ASN:C	1:A:309:ASN:HD22	2.15	0.48
1:A:264:GLU:HB2	1:A:283:ASP:OD2	2.13	0.48
1:A:53:ARG:H	1:A:53:ARG:HD2	1.78	0.48
1:A:113:GLY:HA2	1:A:137:GLU:N	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:132:THR:HA	1:A:211:GLN:O	2.13	0.48
1:A:210:ARG:HH11	1:A:210:ARG:HG2	1.78	0.48
1:A:374:TYR:CE1	1:A:379:VAL:CG1	2.96	0.48
1:A:410:TRP:CE3	1:A:439:ARG:HG2	2.49	0.48
1:A:56:ASN:HD22	1:A:56:ASN:C	2.17	0.47
1:A:393:ARG:HB2	1:A:411:HIS:HB3	1.97	0.47
1:A:92:THR:CG2	1:A:93:ILE:N	2.76	0.47
1:A:105:PRO:O	1:A:108:GLU:N	2.35	0.47
1:A:105:PRO:HA	1:A:108:GLU:HG2	1.96	0.47
1:A:44:ARG:HH11	1:A:47:ASP:HA	1.79	0.47
1:A:110:TRP:CH2	1:A:191:VAL:HG21	2.50	0.47
1:A:154:PRO:O	1:A:155:LYS:HB2	2.15	0.47
1:A:341:GLN:HG3	1:A:342:GLU:OE1	2.15	0.47
1:A:352:ARG:HG3	1:A:352:ARG:NH1	2.29	0.47
1:A:333:ASN:N	1:A:333:ASN:ND2	2.63	0.47
1:A:439:ARG:HD3	1:A:439:ARG:C	2.34	0.47
1:A:136:ARG:O	1:A:145:PHE:HB3	2.15	0.46
1:A:124:LEU:CD1	1:A:134:LEU:HD13	2.45	0.46
1:A:26:SER:HA	1:A:98:TYR:O	2.15	0.46
1:A:149:VAL:HG21	1:A:209:LEU:CD2	2.46	0.46
1:A:155:LYS:HD3	1:A:155:LYS:C	2.36	0.46
1:A:303:ASN:OD1	1:A:495:ARG:NH2	2.48	0.46
1:A:518:THR:HG22	1:A:519:THR:N	2.30	0.46
1:A:317:ASN:O	1:A:318:ALA:HB2	2.16	0.46
1:A:426:PRO:CG	1:A:514:GLN:NE2	2.76	0.46
1:A:439:ARG:HD3	1:A:439:ARG:O	2.15	0.46
1:A:6:HIS:CD2	1:A:102:CYS:HB3	2.50	0.46
1:A:53:ARG:HD2	1:A:53:ARG:N	2.31	0.46
1:A:67:GLU:OE1	1:A:277:LYS:HD3	2.15	0.46
1:A:343:ASN:HA	1:A:407:ARG:NH1	2.31	0.46
1:A:30:ARG:NH1	1:A:40:SER:HB3	2.31	0.46
1:A:144:ASP:OD1	1:A:170:MET:HA	2.16	0.46
1:A:251:LEU:HD21	1:A:489:GLN:HB2	1.97	0.46
1:A:28:LEU:HD12	1:A:28:LEU:O	2.16	0.45
1:A:326:GLY:O	1:A:327:CYS:CB	2.53	0.45
1:A:150:LEU:HD11	1:A:162:LEU:CB	2.45	0.45
1:A:18:LEU:HD23	1:A:100:LEU:CD1	2.46	0.45
1:A:110:TRP:HB3	1:A:212:PRO:CB	2.42	0.45
1:A:433:LEU:HD12	1:A:433:LEU:HA	1.84	0.45
1:A:76:VAL:O	1:A:80:THR:HB	2.16	0.45
1:A:221:ALA:O	1:A:223:ILE:N	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:131:TRP:CZ3	1:A:151:SER:HA	2.51	0.45
1:A:131:TRP:HA	1:A:131:TRP:CE3	2.51	0.45
1:A:191:VAL:O	1:A:195:LYS:HB2	2.16	0.45
1:A:456:GLY:HA2	1:A:460:THR:CG2	2.45	0.45
1:A:53:ARG:HH11	1:A:64:TYR:HB3	1.81	0.45
1:A:321:TYR:CD1	1:A:321:TYR:N	2.84	0.45
1:A:93:ILE:O	1:A:93:ILE:HG23	2.17	0.45
1:A:110:TRP:CE2	1:A:191:VAL:HG11	2.51	0.45
1:A:260:HIS:HB2	1:A:282:PHE:CD1	2.52	0.45
1:A:387:THR:HG22	1:A:389:GLU:H	1.82	0.44
1:A:459:ARG:O	1:A:463:ILE:HG12	2.17	0.44
1:A:371:GLN:OE1	1:A:378:SER:OG	2.36	0.44
1:A:399:PRO:HB2	1:A:401:ASP:OD1	2.17	0.44
1:A:412:TYR:HB3	1:A:432:PHE:CE1	2.53	0.44
1:A:133:PHE:HB3	1:A:209:LEU:HD22	1.99	0.43
1:A:468:MET:HE1	1:A:491:VAL:HG13	2.01	0.43
1:A:163:ARG:NH1	1:A:165:THR:HB	2.31	0.43
1:A:400:LEU:C	1:A:402:ASN:H	2.22	0.43
1:A:319:LYS:HE3	1:A:437:ASN:ND2	2.34	0.43
1:A:406:ILE:H	1:A:406:ILE:HG13	1.63	0.43
1:A:61:TYR:CE1	1:A:71:THR:HA	2.53	0.43
1:A:252:GLN:NE2	1:A:252:GLN:C	2.72	0.43
1:A:309:ASN:HD21	1:A:311:LEU:HB2	1.84	0.43
1:A:45:VAL:HG23	1:A:50:THR:HG22	2.00	0.43
1:A:131:TRP:HA	1:A:131:TRP:HE3	1.83	0.43
1:A:364:TYR:CZ	1:A:411:HIS:HE1	2.36	0.43
1:A:432:PHE:O	1:A:436:ILE:HD12	2.19	0.43
1:A:219:ASN:O	1:A:482:ILE:HD12	2.19	0.43
1:A:115:MET:SD	1:A:134:LEU:HD11	2.59	0.43
1:A:256:VAL:HB	1:A:257:LYS:HE2	2.01	0.42
1:A:269:GLU:OE2	1:A:269:GLU:N	2.43	0.42
1:A:387:THR:CG2	1:A:388:THR:N	2.83	0.42
1:A:523:LEU:HG	1:A:525:VAL:CG2	2.49	0.42
1:A:457:ILE:CA	1:A:498:MET:HE2	2.39	0.42
1:A:465:VAL:HG12	1:A:469:LEU:HD12	2.00	0.42
1:A:11:GLY:HA2	1:A:30:ARG:NE	2.34	0.42
1:A:23:VAL:HG23	1:A:24:HIS:O	2.19	0.42
1:A:88:ASP:O	1:A:89:ARG:C	2.58	0.42
1:A:401:ASP:O	1:A:402:ASN:HB2	2.20	0.42
1:A:6:HIS:HE1	1:A:100:LEU:O	2.03	0.42
1:A:74:GLU:OE1	1:A:496:SER:HB3	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:PRO:HB2	1:A:370:MET:HB2	2.00	0.42
1:A:498:MET:O	1:A:499:VAL:CB	2.67	0.42
1:A:145:PHE:CD1	1:A:145:PHE:N	2.88	0.42
1:A:150:LEU:HD21	1:A:162:LEU:HD12	2.02	0.42
1:A:456:GLY:O	1:A:498:MET:HE1	2.20	0.42
1:A:18:LEU:HD23	1:A:100:LEU:HD12	2.01	0.41
1:A:71:THR:OG1	1:A:74:GLU:HG3	2.19	0.41
1:A:519:THR:C	1:A:521:LYS:H	2.22	0.41
1:A:6:HIS:O	1:A:31:PRO:HD2	2.20	0.41
1:A:113:GLY:HA2	1:A:137:GLU:H	1.84	0.41
1:A:138:SER:CB	1:A:144:ASP:O	2.68	0.41
1:A:252:GLN:HE21	1:A:252:GLN:C	2.22	0.41
1:A:7:ARG:HG3	1:A:8:ASP:H	1.86	0.41
1:A:20:GLY:O	1:A:21:ARG:HG2	2.20	0.41
1:A:129:GLU:C	1:A:150:LEU:HD23	2.41	0.41
1:A:113:GLY:HA2	1:A:136:ARG:HA	2.01	0.41
1:A:116:SER:OG	1:A:119:GLN:HG2	2.20	0.41
1:A:178:VAL:HG13	1:A:190:LEU:HD11	2.03	0.41
1:A:355:GLU:HB2	1:A:360:LYS:HZ2	1.86	0.41
1:A:524:GLU:C	1:A:526:LEU:H	2.24	0.41
1:A:78:TYR:O	1:A:83:GLN:HB2	2.20	0.41
1:A:275:ARG:NH2	1:A:361:CYS:HA	2.36	0.41
1:A:360:LYS:O	1:A:361:CYS:HB2	2.21	0.41
1:A:526:LEU:HD23	1:A:526:LEU:O	2.21	0.40
1:A:525:VAL:HG12	1:A:525:VAL:O	2.22	0.40
1:A:256:VAL:CG2	1:A:257:LYS:HE2	2.52	0.40
1:A:514:GLN:HE21	1:A:514:GLN:HB2	1.71	0.40
1:A:286:ARG:O	1:A:286:ARG:HG3	2.20	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	498/532 (94%)	434 (87%)	40 (8%)	24 (5%)	2	7

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	93	ILE
1	A	106	THR
1	A	113	GLY
1	A	217	ARG
1	A	222	ASP
1	A	254	GLN
1	A	327	CYS
1	A	36	GLN
1	A	326	GLY
1	A	402	ASN
1	A	498	MET
1	A	35	ASN
1	A	128	GLY
1	A	203	SER
1	A	253	LYS
1	A	89	ARG
1	A	298	GLY
1	A	361	CYS
1	A	401	ASP
1	A	403	GLY
1	A	83	GLN
1	A	173	GLY
1	A	499	VAL
1	A	520	LYS

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	440/461 (95%)	393 (89%)	47 (11%)	6	20

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	ARG
1	A	13	ASP
1	A	33	ARG
1	A	35	ASN
1	A	44	ARG
1	A	53	ARG
1	A	56	ASN
1	A	72	LEU
1	A	80	THR
1	A	81	GLN
1	A	86	LEU
1	A	87	GLN
1	A	89	ARG
1	A	106	THR
1	A	134	LEU
1	A	144	ASP
1	A	172	GLU
1	A	216	THR
1	A	217	ARG
1	A	218	VAL
1	A	222	ASP
1	A	223	ILE
1	A	251	LEU
1	A	252	GLN
1	A	254	GLN
1	A	256	VAL
1	A	257	LYS
1	A	258	ASN
1	A	309	ASN
1	A	312	LEU
1	A	321	TYR
1	A	334	ASP
1	A	381	ASN
1	A	392	LEU
1	A	396	GLN
1	A	404	ASP
1	A	416	SER
1	A	419	ASP
1	A	420	HIS
1	A	433	LEU
1	A	439	ARG
1	A	452	HIS
1	A	460	THR

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Mol	Chain	Res	Type
1	A	481	ASP
1	A	496	SER
1	A	502	GLU
1	A	521	LYS

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	6	HIS
1	A	35	ASN
1	A	56	ASN
1	A	82	GLN
1	A	83	GLN
1	A	87	GLN
1	A	101	ASN
1	A	112	HIS
1	A	211	GLN
1	A	225	ASN
1	A	252	GLN
1	A	254	GLN
1	A	309	ASN
1	A	310	GLN
1	A	317	ASN
1	A	325	GLN
1	A	333	ASN
1	A	343	ASN
1	A	381	ASN
1	A	402	ASN
1	A	411	HIS
1	A	437	ASN
1	A	485	GLN
1	A	514	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 monosaccharides 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 ⓘ

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.