



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 27, 2024 – 05:13 PM EST

PDB ID : 1CU1  
Title : CRYSTAL STRUCTURE OF AN ENZYME COMPLEX FROM HEPATITIS C VIRUS  
Authors : Yao, N.; Weber, P.C.  
Deposited on : 1999-08-20  
Resolution : 2.50 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](mailto: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>.

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

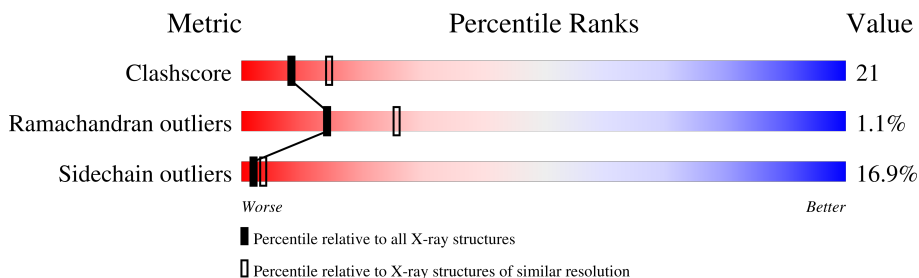
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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))
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

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  $\geq 3$ , 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  $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	645	59% 33% 8% .
1	B	645	62% 31% 7% .

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9894 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 PROTEIN (PROTEASE/HELICASE NS3).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	645	4807	3026	834	917	30	0	0	0
1	B	645	4807	3026	834	917	30	0	0	0

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Zn	0	0
			1	1		
2	B	1	Total	Zn	0	0
			1	1		

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		

- Molecule 4 is water.

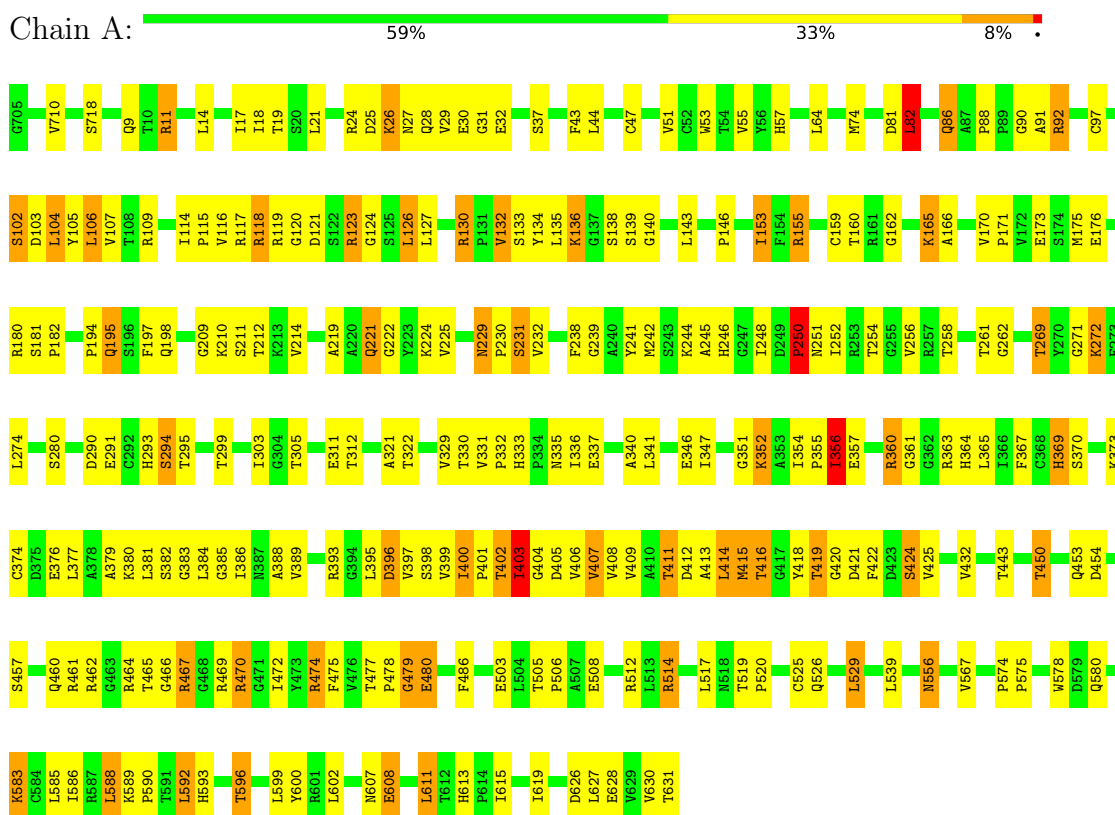
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	150	Total	O	0	0
			150	150		
4	B	118	Total	O	0	0
			118	118		

### 3 Residue-property plots i

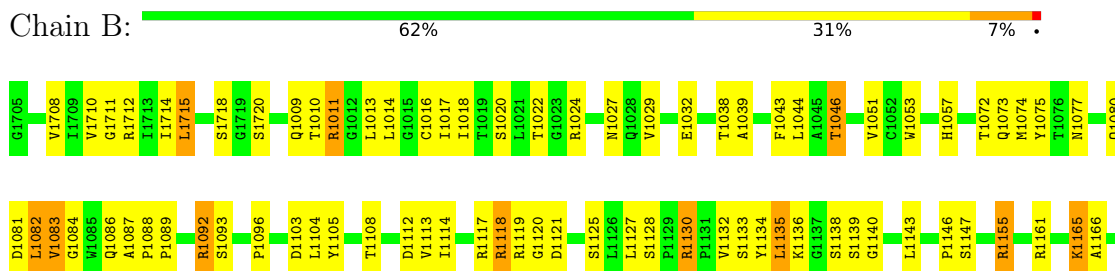
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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: PROTEIN (PROTEASE/HELICASE NS3)



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V1170	C1279	I1403	L1517	L1598
P1171	S1280	T1411	M1518	L1599
V1172	S1294	D1412	T1519	Y1600
E1173	T1295	A1413	P1520	R1601
M1174	D1296	L1414	G1521	L1602
E1175	T1305	M1415	Q1526	M1607
E1176	Q1309	T1416	L1529	E1608
T1177	R1316	G1417	F1536	V1609
T1178	V1329	Y1418	L1539	T1610
S1181	T1330	T1419	I1542	L1611
P1182	V1331	V1425	D1543	H1612
F1183	P1332	C1428	H1544	P1614
F1184	E1338	N1429	H1545	I1615
T1185	V1339	Q1434	Q1549	M1620
D1186	A1340	T1435	D1555	L1627
N1187	L1341	D1441	M1556	Y1630
S1188	L1344	E1447	F1557	T1631
P1194	T1344	T1450	P1558	
Q1195	I1347	Y1451	A1562	
S1196	Y1350	P1452	Y1563	
F1197	G1351	V1456	T1566	
F1199	K1352	Q1460	V1567	
Q1198	A1353	R1467	R1570	
H1201	L1354	R1470	A1571	
L1202	P1356	G1471	Q1572	
A1204	I1356	I1472	A1573	
K1210	P1356	Y1473	P1574	
K1213	L1365	R1474	P1575	
K1224	L1365	G1479	P1576	
V1225	S1370	E1480	S1577	
L1226	K1371	E1481	W1578	
V1227	K1372	F1482	D1579	
L1228	K1373	S1483	Q1580	
N1229	L1381	D1487	M1581	
P1230	I1386	E1493	W1582	
S1231	V1389	E1503	K1583	
S1243	A1390	L1504	C1584	
D1249	Y1391	T1505	L1585	
I1252	Y1392	E1508	I1586	
T1258	L1395	R1514	R1587	
T1266	D1396	A1515	L1588	
Y1267	V1397	Y1516	K1589	
S1268	S1398		P1590	
T1269			T1591	
K1272			L1592	
F1273			H1593	
L1274			G1594	
			P1595	
			T1596	
			P1597	

## 4 Data and refinement statistics

Xtrriage (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, $\alpha$ , $\beta$ , $\gamma$	91.36Å 110.51Å 141.20Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.00 – 2.50	Depositor
% Data completeness (in resolution range)	(Not available) (40.00-2.50)	Depositor
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	X-PLOR 98.1	Depositor
R, $R_{free}$	0.200 , 0.260	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	9894	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	35.0	wwPDB-VP

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, ZN

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	0.67	1/4916 (0.0%)	0.83	7/6714 (0.1%)
1	B	0.67	2/4916 (0.0%)	0.83	7/6714 (0.1%)
All	All	0.67	3/9832 (0.0%)	0.83	14/13428 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	2
All	All	0	4

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	245	ALA	C-N	9.91	1.56	1.34
1	B	1183	VAL	C-N	-8.09	1.15	1.34
1	B	1081	ASP	C-N	-5.32	1.21	1.34

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	250	PRO	O-C-N	-11.66	104.04	122.70
1	B	1183	VAL	C-N-CA	8.79	143.66	121.70
1	A	245	ALA	C-N-CA	-7.39	103.23	121.70
1	B	1092	ARG	NE-CZ-NH2	6.53	123.57	120.30
1	A	556	ASN	N-CA-C	6.31	128.05	111.00
1	B	1363	ARG	NE-CZ-NH2	-5.85	117.37	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1341	LEU	CA-CB-CG	5.57	128.11	115.30
1	A	222	GLY	N-CA-C	5.30	126.36	113.10
1	A	82	LEU	CA-CB-CG	5.27	127.41	115.30
1	B	1143	LEU	N-CA-C	-5.24	96.86	111.00
1	A	143	LEU	N-CA-C	-5.13	97.15	111.00
1	A	245	ALA	O-C-N	5.13	130.91	122.70
1	B	1184	PHE	O-C-N	5.13	130.91	122.70
1	B	1185	THR	O-C-N	5.07	130.82	122.70

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	105	TYR	Sidechain
1	A	250	PRO	Mainchain
1	B	1084	GLY	Mainchain
1	B	1183	VAL	Peptide

## 5.2 Too-close contacts [i](#)

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	4807	0	4781	222	0
1	B	4807	0	4779	185	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	5	0	0	1	0
3	B	5	0	0	0	0
4	A	150	0	0	9	1
4	B	118	0	0	7	1
All	All	9894	0	9560	404	1

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 21.

All (404) 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:400:ILE:HD12	1:A:400:ILE:H	1.18	1.07
1:A:596:THR:HG22	1:A:607:ASN:HD22	1.19	1.06
1:A:269:THR:HG22	1:A:272:LYS:H	1.21	1.02
1:A:360:ARG:HD2	1:A:361:GLY:H	1.27	0.99
1:B:1411:THR:HG23	1:B:1413:ALA:H	1.26	0.99
1:A:474:ARG:HG3	1:A:474:ARG:HH11	1.25	0.98
1:B:1434:GLN:HE22	1:B:1556:ASN:HD22	1.13	0.97
1:B:1074:MET:HE2	1:B:1075:TYR:CE2	2.01	0.96
1:B:1434:GLN:NE2	1:B:1556:ASN:HD22	1.67	0.92
1:B:1396:ASP:OD2	1:B:1398:SER:HB2	1.71	0.91
1:A:400:ILE:HD12	1:A:400:ILE:N	1.88	0.89
1:B:1613:HIS:HD2	1:B:1615:ILE:H	1.17	0.88
1:A:136:LYS:NZ	1:A:631:THR:HA	1.89	0.87
1:A:269:THR:CG2	1:A:272:LYS:H	1.88	0.87
1:B:1183:VAL:O	1:B:1183:VAL:HG12	1.77	0.84
1:A:360:ARG:HD2	1:A:361:GLY:N	1.93	0.83
1:A:425:VAL:HG23	1:A:465:THR:HB	1.60	0.82
1:A:401:PRO:C	1:A:403:ILE:H	1.77	0.82
1:A:474:ARG:HG3	1:A:474:ARG:NH1	1.92	0.81
1:B:1452:PRO:HB2	1:B:1481:ARG:HD2	1.63	0.81
1:A:130:ARG:HG3	1:A:130:ARG:HH11	1.46	0.80
1:B:1279:CYS:H	1:B:1309:GLN:NE2	1.80	0.80
1:A:400:ILE:H	1:A:400:ILE:CD1	1.95	0.80
1:A:401:PRO:O	1:A:403:ILE:N	2.15	0.79
1:A:399:VAL:O	1:A:401:PRO:HD3	1.83	0.79
1:B:1712:ARG:HG3	1:B:1714:ILE:HD11	1.64	0.78
1:A:74:MET:HE3	1:A:86:GLN:HB2	1.65	0.78
1:B:1279:CYS:N	1:B:1309:GLN:HE21	1.81	0.78
1:B:1279:CYS:HB2	1:B:1309:GLN:HG3	1.66	0.77
1:B:1580:GLN:HA	1:B:1580:GLN:NE2	1.98	0.77
1:B:1279:CYS:H	1:B:1309:GLN:HE21	1.34	0.76
1:A:17:ILE:HD13	1:B:1017:ILE:HD13	1.67	0.76
1:A:251:ASN:HD21	1:A:262:GLY:H	1.34	0.75
1:A:596:THR:CG2	1:A:607:ASN:HD22	1.95	0.75
1:B:1046:THR:HG22	1:B:1140:GLY:O	1.87	0.75
1:A:194:PRO:HG3	1:A:198:GLN:HB2	1.69	0.75
1:A:346:GLU:OE2	1:A:356:ILE:HG12	1.86	0.75
1:B:1074:MET:HE2	1:B:1075:TYR:HE2	1.47	0.74
1:B:1155:ARG:HH22	1:B:1526:GLN:HE22	1.35	0.74
1:B:1562:ALA:O	1:B:1566:THR:HG22	1.87	0.74
1:A:212:THR:HG22	1:A:242:MET:HE3	1.69	0.74
1:B:1715:LEU:H	1:B:1715:LEU:HD22	1.52	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:PRO:HB2	1:A:127:LEU:HD22	1.68	0.73
1:B:1029:VAL:HG11	1:B:1088:PRO:HG2	1.69	0.73
1:A:347:ILE:HD11	1:A:356:ILE:HG23	1.69	0.73
1:A:415:MET:HA	1:A:464:ARG:HH21	1.52	0.73
1:B:1279:CYS:N	1:B:1309:GLN:NE2	2.36	0.73
1:B:1710:VAL:HA	1:B:1011:ARG:HB2	1.72	0.72
1:B:1370:SER:OG	1:B:1372:LYS:HE2	1.89	0.72
1:A:140:GLY:HA2	1:A:153:ILE:HD12	1.72	0.71
1:B:1185:THR:HG23	1:B:1185:THR:O	1.91	0.71
1:B:1279:CYS:HB2	1:B:1309:GLN:HE21	1.54	0.71
1:A:333:HIS:CE1	1:A:335:ASN:HB2	2.26	0.70
1:B:1139:SER:HB3	1:B:1631:THR:O	1.90	0.70
1:B:1574:PRO:O	1:B:1596:THR:HB	1.91	0.70
1:A:382:SER:HA	1:A:386:ILE:O	1.91	0.70
1:A:477:THR:CG2	1:A:478:PRO:HD2	2.22	0.70
1:B:1712:ARG:HG3	1:B:1714:ILE:CD1	2.22	0.69
1:A:74:MET:CE	1:A:86:GLN:HB2	2.22	0.69
1:B:1038:THR:O	1:B:1039:ALA:HB3	1.92	0.69
1:A:340:ALA:HB1	4:A:892:HOH:O	1.91	0.69
1:A:596:THR:HG22	1:A:607:ASN:ND2	2.02	0.69
1:B:1089:PRO:HA	4:B:1911:HOH:O	1.92	0.69
1:A:118:ARG:NH1	1:A:121:ASP:HA	2.09	0.67
1:A:269:THR:HG22	1:A:272:LYS:N	2.05	0.67
1:A:57:HIS:HE1	1:A:631:THR:O	1.77	0.66
1:A:231:SER:HB2	1:A:416:THR:HA	1.76	0.66
1:B:1411:THR:HG21	4:B:1875:HOH:O	1.95	0.66
1:A:212:THR:HG22	1:A:242:MET:CE	2.25	0.66
1:A:365:LEU:HD13	1:A:408:VAL:HG23	1.78	0.66
1:B:1563:TYR:HA	1:B:1566:THR:HG23	1.76	0.66
1:A:130:ARG:HD2	1:A:134:TYR:CD1	2.31	0.66
1:B:1229:ASN:HD22	1:B:1231:SER:H	1.43	0.66
1:A:17:ILE:HD13	1:B:1017:ILE:CD1	2.26	0.66
1:A:197:PHE:CB	1:A:311:GLU:HG3	2.26	0.66
1:A:400:ILE:HD13	1:A:406:VAL:HG21	1.78	0.65
1:B:1613:HIS:CD2	1:B:1615:ILE:H	2.08	0.65
1:A:477:THR:HG22	1:A:478:PRO:HD2	1.80	0.64
1:B:1229:ASN:O	1:B:1269:THR:HA	1.98	0.64
1:B:1575:PRO:HG2	1:B:1577:SER:O	1.98	0.64
1:B:1229:ASN:ND2	1:B:1231:SER:H	1.95	0.63
1:A:365:LEU:CD1	1:A:408:VAL:HG23	2.28	0.63
1:B:1118:ARG:NH1	1:B:1121:ASP:HA	2.13	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1580:GLN:O	1:B:1583:LYS:HG2	1.97	0.63
1:A:118:ARG:HD3	1:A:120:GLY:O	1.97	0.63
1:B:1536:PHE:HA	1:B:1539:LEU:HD22	1.81	0.63
1:A:514:ARG:HG2	1:A:529:LEU:HD23	1.79	0.63
1:A:414:LEU:HB3	4:A:888:HOH:O	1.97	0.62
1:A:132:VAL:HG23	1:A:162:GLY:O	1.99	0.62
1:A:403:ILE:HG23	1:A:403:ILE:O	1.98	0.62
1:B:1586:ILE:CG2	1:B:1587:ARG:N	2.62	0.62
1:A:251:ASN:ND2	1:A:261:THR:H	1.98	0.61
1:A:57:HIS:HD2	1:A:81:ASP:OD1	1.82	0.61
1:A:165:LYS:HE2	1:A:626:ASP:OD1	2.00	0.61
1:A:330:THR:HB	1:A:480:GLU:OE1	2.00	0.61
1:B:1139:SER:HB3	1:B:1631:THR:C	2.21	0.61
1:B:1555:ASP:OD1	1:B:1557:PHE:N	2.33	0.61
1:B:1397:VAL:HG11	1:B:1417:GLY:O	1.99	0.61
1:A:239:GLY:HA2	1:A:250:PRO:HG2	1.83	0.61
1:B:1545:HIS:O	1:B:1549:GLN:HG3	2.01	0.61
1:A:613:HIS:HE1	1:A:615:ILE:HG12	1.65	0.60
1:A:29:VAL:HG22	1:A:90:GLY:C	2.21	0.60
1:A:432:VAL:HG22	1:A:450:THR:HG22	1.82	0.60
1:B:1451:VAL:HB	1:B:1452:PRO:HD2	1.82	0.60
1:A:24:ARG:NH1	1:A:26:LYS:HE3	2.17	0.60
1:B:1074:MET:HG2	1:B:1075:TYR:CE2	2.37	0.60
1:A:505:THR:HG23	1:A:508:GLU:OE1	2.01	0.59
1:B:1018:ILE:O	1:B:1022:THR:HG23	2.02	0.59
1:B:1204:ALA:HB3	1:B:1210:LYS:HD3	1.83	0.59
1:B:1032:GLU:HG2	1:B:1093:SER:O	2.02	0.58
1:A:130:ARG:HD2	1:A:134:TYR:CE1	2.39	0.58
1:B:1155:ARG:NH2	1:B:1526:GLN:HE22	2.00	0.58
1:A:382:SER:O	1:A:385:GLY:N	2.36	0.58
1:A:418:TYR:O	1:A:464:ARG:NH2	2.35	0.58
1:B:1391:TYR:HA	1:B:1395:LEU:HD23	1.84	0.58
1:A:82:LEU:HD11	1:A:175:MET:HG2	1.85	0.58
1:A:411:THR:HG23	1:A:413:ALA:H	1.68	0.58
1:A:357:GLU:HG3	4:A:890:HOH:O	2.03	0.57
1:B:1451:VAL:HB	1:B:1452:PRO:CD	2.35	0.57
1:A:474:ARG:NH1	1:A:474:ARG:CG	2.65	0.57
1:B:1082:LEU:HG	1:B:1170:VAL:HG11	1.86	0.57
1:A:613:HIS:CE1	1:A:615:ILE:HG12	2.39	0.57
1:B:1542:ILE:HG12	1:B:1543:ASP:H	1.70	0.57
1:A:53:TRP:CE3	1:A:82:LEU:HD13	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1589:LYS:N	1:B:1590:PRO:HD2	2.20	0.56
1:A:588:LEU:O	1:A:592:LEU:HD22	2.06	0.56
1:B:1504:LEU:HA	1:B:1508:GLU:OE2	2.05	0.56
1:A:106:LEU:HD12	1:A:107:VAL:N	2.21	0.56
1:B:1082:LEU:HD11	1:B:1175:MET:HG2	1.88	0.56
1:A:102:SER:HB3	1:A:117:ARG:CZ	2.36	0.55
1:B:1279:CYS:CB	1:B:1309:GLN:HE21	2.19	0.55
1:A:132:VAL:HG22	1:A:159:CYS:SG	2.45	0.55
1:B:1057:HIS:NE2	1:B:1630:VAL:HG13	2.21	0.55
1:B:1077:ASN:ND2	1:B:1080:GLN:OE1	2.39	0.55
1:A:457:SER:O	1:A:461:ARG:HG3	2.07	0.55
1:A:406:VAL:HG22	1:A:407:VAL:N	2.22	0.55
1:B:1073:GLN:HG3	4:B:1960:HOH:O	2.07	0.55
1:B:1562:ALA:O	1:B:1566:THR:CG2	2.54	0.55
1:A:252:ILE:O	1:A:258:THR:HA	2.06	0.55
1:B:1456:VAL:O	1:B:1460:GLN:HG3	2.07	0.55
1:A:474:ARG:HH11	1:A:474:ARG:CG	2.07	0.54
1:B:1434:GLN:NE2	1:B:1556:ASN:ND2	2.49	0.54
1:B:1714:ILE:HD12	1:B:1714:ILE:N	2.23	0.54
1:B:1505:THR:H	1:B:1508:GLU:CD	2.11	0.54
1:A:242:MET:O	1:A:246:HIS:N	2.32	0.54
1:A:123:ARG:HH11	1:A:123:ARG:CG	2.20	0.54
1:A:347:ILE:CD1	1:A:356:ILE:HG23	2.37	0.54
1:A:104:LEU:HD21	1:A:118:ARG:HG3	1.88	0.54
1:A:210:LYS:HD2	1:A:321:ALA:HB1	1.90	0.54
1:A:421:ASP:HB3	1:A:467:ARG:HG3	1.90	0.54
1:A:411:THR:CG2	1:A:413:ALA:H	2.21	0.53
1:B:1434:GLN:HA	1:B:1447:GLU:O	2.07	0.53
1:A:155:ARG:NH2	1:A:628:GLU:OE1	2.42	0.53
1:A:593:HIS:HB2	4:A:919:HOH:O	2.08	0.53
1:A:251:ASN:O	1:A:252:ILE:HD13	2.09	0.53
1:A:396:ASP:O	1:A:398:SER:N	2.42	0.53
1:B:1347:ILE:HB	1:B:1354:ILE:HB	1.91	0.52
1:A:19:THR:CG2	1:A:25:ASP:HB2	2.39	0.52
1:B:1130:ARG:NH2	4:B:1822:HOH:O	2.42	0.52
1:B:1588:LEU:N	1:B:1588:LEU:HD23	2.24	0.52
1:A:336:ILE:HG12	1:A:466:GLY:HA3	1.92	0.52
1:A:425:VAL:CG2	1:A:465:THR:HB	2.37	0.52
1:B:1567:VAL:HG12	1:B:1597:PRO:HG2	1.91	0.52
1:B:1613:HIS:CG	1:B:1614:PRO:HD2	2.45	0.52
1:A:251:ASN:ND2	1:A:262:GLY:H	2.04	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:180:ARG:NH2	4:A:852:HOH:O	2.42	0.52
1:B:1073:GLN:OE1	1:B:1083:VAL:HG22	2.09	0.52
1:A:195:GLN:HE21	1:A:195:GLN:HA	1.75	0.52
1:A:411:THR:HG23	1:A:412:ASP:N	2.25	0.52
1:B:1044:LEU:HD12	1:B:1138:SER:O	2.10	0.52
1:A:567:VAL:HG21	1:A:599:LEU:HD11	1.91	0.52
1:A:210:LYS:HB2	3:A:800:PO4:O4	2.10	0.51
1:A:364:HIS:HB2	1:A:407:VAL:HG13	1.92	0.51
1:B:1595:PRO:O	1:B:1610:THR:HG22	2.11	0.51
1:A:176:GLU:HB3	1:A:180:ARG:HH21	1.76	0.51
1:A:376:GLU:O	1:A:379:ALA:HB3	2.10	0.51
1:A:293:HIS:HD2	1:A:322:THR:OG1	1.92	0.51
1:B:1136:LYS:HA	1:B:1631:THR:HG22	1.93	0.51
1:A:136:LYS:HZ3	1:A:631:THR:HG22	1.76	0.51
1:B:1185:THR:O	1:B:1185:THR:CG2	2.58	0.51
1:B:1252:ILE:O	1:B:1258:THR:HA	2.10	0.51
1:A:14:LEU:HD11	1:A:18:ILE:HD11	1.92	0.51
1:B:1339:VAL:O	1:B:1474:ARG:HA	2.11	0.51
1:A:116:VAL:HG22	1:A:126:LEU:HD12	1.92	0.51
1:B:1350:TYR:OH	1:B:1373:LYS:HG2	2.11	0.51
1:B:1578:TRP:CE2	1:B:1589:LYS:HG3	2.46	0.51
1:A:470:ARG:HG3	1:A:470:ARG:HH11	1.75	0.51
1:B:1563:TYR:HA	1:B:1566:THR:CG2	2.39	0.51
1:B:1580:GLN:NE2	1:B:1583:LYS:HE3	2.26	0.51
1:B:1370:SER:HG	1:B:1372:LYS:HE2	1.73	0.50
1:A:293:HIS:CD2	1:A:322:THR:OG1	2.63	0.50
1:A:415:MET:SD	1:A:415:MET:C	2.89	0.50
1:A:269:THR:HG21	4:A:862:HOH:O	2.10	0.50
1:A:340:ALA:HB2	1:A:475:PHE:CZ	2.46	0.50
1:B:1103:ASP:O	1:B:1146:PRO:HD3	2.11	0.50
1:B:1613:HIS:CD2	1:B:1614:PRO:HD2	2.46	0.50
1:B:1203:HIS:HE1	4:B:1826:HOH:O	1.94	0.50
1:A:135:LEU:O	1:A:138:SER:HB2	2.12	0.50
1:B:1092:ARG:O	1:B:1093:SER:HB3	2.11	0.50
1:B:1555:ASP:O	1:B:1558:PRO:HD3	2.11	0.50
1:A:421:ASP:C	1:A:422:PHE:CD1	2.86	0.50
1:A:269:THR:HG22	1:A:272:LYS:HB2	1.92	0.50
1:A:130:ARG:HH11	1:A:130:ARG:CG	2.19	0.49
1:A:136:LYS:HZ2	1:A:631:THR:HA	1.75	0.49
1:A:506:PRO:HD2	4:A:902:HOH:O	2.12	0.49
1:B:1279:CYS:CA	1:B:1309:GLN:HE21	2.25	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:24:ARG:HH12	1:A:26:LYS:HE3	1.77	0.49
1:A:299:THR:O	1:A:303:ILE:HG13	2.11	0.49
1:A:29:VAL:HG22	1:A:91:ALA:N	2.28	0.49
1:B:1096:PRO:HB3	1:B:1172:VAL:HG21	1.94	0.49
1:B:1165:LYS:HG2	1:B:1166:ALA:N	2.27	0.49
1:B:1596:THR:HG22	1:B:1607:ASN:OD1	2.13	0.49
1:A:176:GLU:HB3	1:A:180:ARG:NH2	2.26	0.49
1:B:1572:GLN:HG2	1:B:1591:THR:O	2.13	0.49
1:A:291:GLU:OE1	4:A:954:HOH:O	2.20	0.49
1:A:381:LEU:O	1:A:386:ILE:HB	2.11	0.49
1:A:578:TRP:CE2	1:A:589:LYS:HE3	2.48	0.49
1:B:1572:GLN:CG	1:B:1591:THR:O	2.61	0.49
1:A:136:LYS:NZ	1:A:630:VAL:O	2.45	0.49
1:A:478:PRO:O	1:A:479:GLY:O	2.31	0.49
1:B:1118:ARG:HD3	1:B:1120:GLY:O	2.13	0.48
1:B:1171:PRO:HB2	1:B:1173:GLU:CD	2.33	0.48
1:A:331:VAL:HB	1:A:332:PRO:HD2	1.94	0.48
1:A:229:ASN:ND2	1:A:230:PRO:HD2	2.28	0.48
1:A:251:ASN:HD22	1:A:261:THR:H	1.60	0.48
1:A:239:GLY:HA3	1:A:252:ILE:HD11	1.95	0.48
1:A:588:LEU:HB3	1:A:592:LEU:CD2	2.44	0.48
1:B:1077:ASN:ND2	1:B:1080:GLN:CD	2.67	0.48
1:A:400:ILE:HG22	1:A:402:THR:OG1	2.14	0.48
1:B:1201:HIS:CE1	1:B:1521:GLY:HA3	2.49	0.48
1:A:312:THR:HG22	1:A:312:THR:O	2.13	0.48
1:A:574:PRO:O	1:A:596:THR:HB	2.13	0.48
1:A:173:GLU:CD	1:A:173:GLU:H	2.16	0.47
1:B:1127:LEU:N	1:B:1127:LEU:HD22	2.29	0.47
1:B:1578:TRP:CZ3	1:B:1586:ILE:HA	2.49	0.47
1:B:1571:ALA:O	1:B:1573:ALA:N	2.47	0.47
1:A:221:GLN:O	1:A:221:GLN:HG3	2.13	0.47
1:A:369:HIS:CD2	1:A:370:SER:N	2.82	0.47
1:B:1130:ARG:HD2	1:B:1134:TYR:CD2	2.49	0.47
1:A:82:LEU:HG	1:A:170:VAL:HG11	1.95	0.47
1:A:290:ASP:OD1	1:A:291:GLU:N	2.48	0.47
1:B:1038:THR:O	1:B:1039:ALA:CB	2.57	0.47
1:A:347:ILE:HD11	1:A:356:ILE:CG2	2.43	0.47
1:A:443:THR:HG21	1:A:619:ILE:HG22	1.97	0.47
1:B:1032:GLU:N	1:B:1032:GLU:OE1	2.48	0.47
1:B:1613:HIS:CD2	1:B:1614:PRO:CD	2.98	0.47
1:A:136:LYS:HZ3	1:A:631:THR:HA	1.77	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:PHE:O	1:A:241:TYR:N	2.43	0.47
1:A:588:LEU:HB3	1:A:592:LEU:HD21	1.96	0.47
1:A:44:LEU:O	1:A:140:GLY:HA3	2.14	0.46
1:A:305:THR:OG1	1:A:512:ARG:HD3	2.14	0.46
1:B:1082:LEU:HD22	1:B:1083:VAL:N	2.30	0.46
1:A:197:PHE:CG	1:A:311:GLU:HG3	2.50	0.46
1:A:477:THR:HG23	1:A:478:PRO:HD2	1.94	0.46
1:B:1583:LYS:C	1:B:1585:LEU:H	2.18	0.46
1:B:1117:ARG:HG3	1:B:1125:SER:OG	2.14	0.46
1:B:1570:ARG:O	1:B:1571:ALA:HB2	2.16	0.46
1:B:1586:ILE:HG23	1:B:1587:ARG:N	2.29	0.46
1:A:181:SER:HB3	1:A:182:PRO:CD	2.46	0.46
1:B:1117:ARG:HD2	1:B:1119:ARG:NH2	2.30	0.46
1:A:123:ARG:NH1	1:A:123:ARG:HG2	2.30	0.46
1:B:1578:TRP:CZ2	1:B:1589:LYS:HG3	2.51	0.46
1:A:415:MET:HA	1:A:464:ARG:NH2	2.24	0.46
1:A:588:LEU:C	1:A:592:LEU:HD22	2.36	0.46
1:B:1135:LEU:HB3	1:B:1631:THR:HG21	1.98	0.46
1:A:160:THR:OG1	1:A:165:LYS:HD3	2.15	0.46
1:A:241:TYR:C	1:A:241:TYR:CD2	2.88	0.46
1:A:248:ILE:O	1:A:250:PRO:HD3	2.15	0.46
1:A:346:GLU:N	1:A:346:GLU:OE1	2.48	0.46
1:B:1194:PRO:O	1:B:1316:ARG:HG2	2.15	0.46
1:B:1347:ILE:HD13	1:B:1381:LEU:CD2	2.46	0.46
1:A:155:ARG:HH22	1:A:526:GLN:HE22	1.64	0.46
1:A:365:LEU:HD21	1:A:367:PHE:CZ	2.51	0.45
1:A:383:GLY:C	1:A:385:GLY:H	2.20	0.45
1:A:588:LEU:C	1:A:590:PRO:HD2	2.37	0.45
1:A:181:SER:HB3	1:A:182:PRO:HD2	1.98	0.45
1:A:575:PRO:HD2	1:A:578:TRP:CZ2	2.52	0.45
1:A:47:CYS:HA	1:A:51:VAL:O	2.15	0.45
1:A:365:LEU:HD13	1:A:408:VAL:CG2	2.46	0.45
1:B:1187:ASN:HD21	1:B:1203:HIS:CD2	2.33	0.45
1:B:1226:LEU:HD12	1:B:1266:THR:HB	1.98	0.45
1:B:1567:VAL:CG1	1:B:1597:PRO:HG2	2.46	0.45
1:A:355:PRO:O	1:A:357:GLU:N	2.49	0.45
1:A:388:ALA:O	1:A:389:VAL:HG13	2.17	0.45
1:A:477:THR:HG22	1:A:478:PRO:CD	2.45	0.45
1:B:1161:ARG:NH1	4:B:925:HOH:O	2.47	0.45
1:B:1272:LYS:O	1:B:1272:LYS:HD3	2.16	0.45
1:A:363:ARG:HD2	1:A:403:ILE:HA	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:103:ASP:O	1:A:146:PRO:HD3	2.16	0.45
1:A:589:LYS:N	1:A:590:PRO:HD2	2.31	0.45
1:A:133:SER:HA	1:A:136:LYS:HG3	1.98	0.45
1:A:123:ARG:HH11	1:A:123:ARG:HG2	1.81	0.45
1:A:351:GLY:O	1:A:352:LYS:HE3	2.16	0.45
1:A:419:THR:O	1:A:467:ARG:NH2	2.45	0.45
1:B:1051:VAL:CG1	1:B:1053:TRP:CE2	3.00	0.45
1:B:1519:THR:HA	1:B:1520:PRO:HD3	1.68	0.45
1:B:1580:GLN:NE2	1:B:1580:GLN:CA	2.73	0.45
1:A:357:GLU:O	1:A:360:ARG:HG3	2.17	0.44
1:B:1555:ASP:OD1	1:B:1556:ASN:N	2.50	0.44
1:A:29:VAL:HG11	1:A:88:PRO:HG2	1.99	0.44
1:A:360:ARG:HH11	1:A:361:GLY:H	1.64	0.44
1:B:1105:TYR:HB3	1:B:1113:VAL:HG12	1.99	0.44
1:A:505:THR:OG1	1:A:508:GLU:HG3	2.18	0.44
1:B:1014:LEU:HD12	1:B:1014:LEU:O	2.17	0.44
1:B:1210:LYS:HB2	1:B:1210:LYS:HE2	1.55	0.44
1:B:1184:PHE:HD1	1:B:1185:THR:N	2.16	0.44
1:B:1358:ALA:HB1	1:B:1474:ARG:NH1	2.32	0.44
1:A:519:THR:HA	1:A:520:PRO:HD3	1.68	0.44
1:A:232:VAL:HG23	1:A:254:THR:HG21	1.99	0.44
1:B:1108:THR:OG1	1:B:1112:ASP:HB2	2.17	0.44
1:B:1583:LYS:O	1:B:1585:LEU:N	2.51	0.44
1:A:393:ARG:HD2	4:A:761:HOH:O	2.18	0.44
1:A:406:VAL:HG22	1:A:407:VAL:H	1.82	0.44
1:B:1279:CYS:HB2	1:B:1309:GLN:NE2	2.28	0.44
1:A:333:HIS:HE1	1:A:335:ASN:HB2	1.76	0.44
1:A:580:GLN:HA	1:A:580:GLN:NE2	2.31	0.44
1:B:1571:ALA:C	1:B:1573:ALA:H	2.21	0.44
1:B:1574:PRO:HD3	1:B:1593:HIS:C	2.38	0.44
1:B:1032:GLU:N	4:B:1912:HOH:O	2.31	0.43
1:B:1372:LYS:H	1:B:1372:LYS:HG3	1.41	0.43
1:A:121:ASP:OD2	1:A:171:PRO:HG3	2.19	0.43
1:A:470:ARG:HG3	1:A:470:ARG:NH1	2.33	0.43
1:B:1589:LYS:N	1:B:1590:PRO:CD	2.81	0.43
1:A:229:ASN:O	1:A:269:THR:HA	2.19	0.43
1:A:466:GLY:HA2	1:A:469:ARG:O	2.18	0.43
1:B:1226:LEU:HD12	1:B:1226:LEU:HA	1.85	0.43
1:B:1586:ILE:HG22	1:B:1587:ARG:H	1.82	0.43
1:A:462:ARG:O	1:A:465:THR:HG22	2.19	0.43
1:B:1711:GLY:HA2	1:B:1010:THR:HG23	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1581:MET:HG2	1:B:1582:TRP:CE2	2.53	0.43
1:B:1359:ILE:HA	1:B:1364:HIS:CE1	2.53	0.43
1:B:1493:GLU:HG2	1:B:1557:PHE:CE1	2.54	0.43
1:A:331:VAL:HB	1:A:332:PRO:CD	2.49	0.43
1:B:1029:VAL:HG11	1:B:1088:PRO:CG	2.46	0.43
1:B:1545:HIS:CD2	1:B:1587:ARG:HH22	2.37	0.43
1:A:269:THR:HG23	1:A:271:GLY:N	2.34	0.43
1:A:486:PHE:CE2	1:A:525:CYS:HB2	2.54	0.43
1:B:1435:THR:HA	1:B:1487:ASP:OD1	2.19	0.43
1:B:1596:THR:HG23	1:B:1608:GLU:O	2.18	0.43
1:A:374:CYS:HA	1:A:409:VAL:HG11	2.01	0.42
1:B:1504:LEU:HD12	1:B:1508:GLU:OE2	2.18	0.42
1:A:26:LYS:O	1:A:27:ASN:C	2.56	0.42
1:B:1516:TYR:HD1	1:B:1517:LEU:HD23	1.83	0.42
1:B:1013:LEU:O	1:B:1017:ILE:HD12	2.19	0.42
1:B:1082:LEU:HD23	1:B:1082:LEU:HA	1.84	0.42
1:B:1184:PHE:CD1	1:B:1184:PHE:C	2.93	0.42
1:B:1331:VAL:HB	1:B:1332:PRO:HD2	2.00	0.42
1:B:1371:LYS:HD3	1:B:1392:TYR:CD1	2.54	0.42
1:A:611:LEU:HD22	1:B:1620:MET:HE1	2.00	0.42
1:B:1074:MET:HE2	1:B:1075:TYR:CZ	2.50	0.42
1:B:1579:ASP:CG	1:B:1580:GLN:N	2.72	0.42
1:A:402:THR:C	1:A:404:GLY:N	2.72	0.42
1:B:1213:LYS:HB3	1:B:1213:LYS:HE3	1.77	0.42
1:B:1294:SER:OG	1:B:1296:ASP:OD2	2.37	0.42
1:A:424:SER:HB2	1:A:472:ILE:HB	2.01	0.42
1:A:124:GLY:O	1:A:166:ALA:HB1	2.20	0.42
1:B:1087:ALA:HA	1:B:1088:PRO:HD3	1.87	0.42
1:B:1434:GLN:CD	1:B:1556:ASN:HD22	2.22	0.42
1:A:421:ASP:CB	1:A:467:ARG:HG3	2.49	0.42
1:B:1139:SER:CB	1:B:1631:THR:O	2.63	0.42
1:B:1365:LEU:O	1:B:1425:VAL:HA	2.20	0.42
1:B:1542:ILE:HG12	1:B:1543:ASP:N	2.33	0.42
1:B:1130:ARG:HE	1:B:1130:ARG:HB2	1.68	0.41
1:B:1228:LEU:HA	1:B:1268:SER:O	2.20	0.41
1:B:1305:THR:O	1:B:1309:GLN:HG2	2.19	0.41
1:B:1571:ALA:C	1:B:1573:ALA:N	2.73	0.41
1:A:710:VAL:HA	1:A:11:ARG:HB2	2.01	0.41
1:A:219:ALA:C	1:A:221:GLN:H	2.23	0.41
1:A:583:LYS:HA	1:A:586:ILE:HG13	2.02	0.41
1:A:136:LYS:NZ	1:A:631:THR:HG22	2.34	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1586:ILE:HG22	1:B:1587:ARG:N	2.35	0.41
1:A:209:GLY:O	1:A:214:VAL:HG13	2.20	0.41
1:A:403:ILE:O	1:A:403:ILE:CG2	2.66	0.41
1:A:418:TYR:CE2	1:A:420:GLY:N	2.89	0.41
1:A:588:LEU:HD12	1:A:588:LEU:HA	1.83	0.41
1:B:1043:PHE:CD1	1:B:1043:PHE:N	2.89	0.41
1:B:1441:ASP:O	1:B:1601:ARG:NE	2.37	0.41
1:A:31:GLY:CA	1:A:92:ARG:HG3	2.51	0.41
1:A:470:ARG:HA	1:A:470:ARG:HD2	1.56	0.41
1:B:1016:CYS:O	1:B:1020:SER:HB2	2.21	0.41
1:B:1588:LEU:C	1:B:1590:PRO:HD2	2.40	0.41
1:A:197:PHE:HB3	1:A:311:GLU:HG3	2.00	0.41
1:A:608:GLU:H	1:A:608:GLU:HG2	1.55	0.41
1:A:291:GLU:O	1:A:294:SER:HB3	2.21	0.41
1:A:295:THR:HG21	1:A:486:PHE:HB3	2.03	0.41
1:A:354:ILE:HA	1:A:355:PRO:HD3	1.84	0.41
1:B:1428:CYS:O	1:B:1429:ASN:HB2	2.21	0.41
1:B:1456:VAL:O	1:B:1460:GLN:CG	2.67	0.41
1:A:114:ILE:HA	1:A:115:PRO:HD3	1.90	0.41
1:A:130:ARG:CG	1:A:130:ARG:NH1	2.83	0.41
1:A:19:THR:HG21	1:A:25:ASP:HB2	2.02	0.40
1:A:274:LEU:HD23	1:A:274:LEU:HA	1.92	0.40
1:A:337:GLU:HG2	1:A:470:ARG:HH22	1.86	0.40
1:B:1195:GLN:OE1	1:B:1195:GLN:N	2.54	0.40
1:B:1279:CYS:CB	1:B:1309:GLN:HG3	2.45	0.40
1:B:1135:LEU:HD12	1:B:1135:LEU:HA	1.79	0.40
1:A:195:GLN:HA	1:A:195:GLN:NE2	2.37	0.40
1:A:365:LEU:HD12	1:A:408:VAL:HG23	2.01	0.40
1:B:1226:LEU:CD1	1:B:1266:THR:HB	2.51	0.40
1:A:43:PHE:HA	1:A:109:ARG:HH21	1.85	0.40
1:B:1456:VAL:HG13	1:B:1483:SER:HB2	2.04	0.40
1:A:114:ILE:HD12	1:A:130:ARG:NH2	2.37	0.40
1:A:453:GLN:HB2	1:A:457:SER:OG	2.22	0.40
1:B:1176:GLU:O	1:B:1177:THR:C	2.60	0.40

All (1) 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)
4:A:783:HOH:O	4:B:1838:HOH:O[4_567]	2.11	0.09

## 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	643/645 (100%)	609 (95%)	28 (4%)	6 (1%)	17	31
1	B	643/645 (100%)	609 (95%)	26 (4%)	8 (1%)	13	24
All	All	1286/1290 (100%)	1218 (95%)	54 (4%)	14 (1%)	14	26

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	402	THR
1	B	1571	ALA
1	A	356	ILE
1	A	397	VAL
1	A	479	GLY
1	B	1572	GLN
1	B	1584	CYS
1	A	480	GLU
1	B	1185	THR
1	B	1479	GLY
1	B	1480	GLU
1	B	1586	ILE
1	A	403	ILE
1	B	1183	VAL

### 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	526/526 (100%)	440 (84%)	86 (16%)	2	4
1	B	526/526 (100%)	434 (82%)	92 (18%)	2	3
All	All	1052/1052 (100%)	874 (83%)	178 (17%)	2	3

All (178) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	718	SER
1	A	9	GLN
1	A	11	ARG
1	A	21	LEU
1	A	26	LYS
1	A	28	GLN
1	A	30	GLU
1	A	32	GLU
1	A	37	SER
1	A	55	VAL
1	A	64	LEU
1	A	82	LEU
1	A	86	GLN
1	A	92	ARG
1	A	97	CYS
1	A	102	SER
1	A	104	LEU
1	A	106	LEU
1	A	118	ARG
1	A	119	ARG
1	A	123	ARG
1	A	126	LEU
1	A	130	ARG
1	A	132	VAL
1	A	136	LYS
1	A	139	SER
1	A	153	ILE
1	A	155	ARG
1	A	165	LYS
1	A	195	GLN
1	A	211	SER
1	A	221	GLN
1	A	224	LYS
1	A	225	VAL
1	A	229	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	231	SER
1	A	244	LYS
1	A	256	VAL
1	A	269	THR
1	A	272	LYS
1	A	280	SER
1	A	294	SER
1	A	329	VAL
1	A	341	LEU
1	A	352	LYS
1	A	356	ILE
1	A	360	ARG
1	A	369	HIS
1	A	373	LYS
1	A	377	LEU
1	A	380	LYS
1	A	384	LEU
1	A	395	LEU
1	A	396	ASP
1	A	400	ILE
1	A	403	ILE
1	A	405	ASP
1	A	407	VAL
1	A	411	THR
1	A	414	LEU
1	A	415	MET
1	A	416	THR
1	A	419	THR
1	A	424	SER
1	A	450	THR
1	A	454	ASP
1	A	460	GLN
1	A	467	ARG
1	A	470	ARG
1	A	474	ARG
1	A	503	GLU
1	A	514	ARG
1	A	517	LEU
1	A	529	LEU
1	A	539	LEU
1	A	556	ASN
1	A	583	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	585	LEU
1	A	588	LEU
1	A	592	LEU
1	A	596	THR
1	A	600	TYR
1	A	602	LEU
1	A	608	GLU
1	A	611	LEU
1	A	627	LEU
1	B	1708	VAL
1	B	1715	LEU
1	B	1718	SER
1	B	1720	SER
1	B	1009	GLN
1	B	1011	ARG
1	B	1024	ARG
1	B	1027	ASN
1	B	1046	THR
1	B	1072	THR
1	B	1082	LEU
1	B	1083	VAL
1	B	1086	GLN
1	B	1104	LEU
1	B	1114	ILE
1	B	1118	ARG
1	B	1128	SER
1	B	1130	ARG
1	B	1132	VAL
1	B	1133	SER
1	B	1135	LEU
1	B	1147	SER
1	B	1155	ARG
1	B	1165	LYS
1	B	1178	THR
1	B	1181	SER
1	B	1184	PHE
1	B	1187	ASN
1	B	1188	SER
1	B	1196	SER
1	B	1198	GLN
1	B	1210	LYS
1	B	1213	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	1224	LYS
1	B	1228	LEU
1	B	1243	SER
1	B	1249	ASP
1	B	1274	LEU
1	B	1280	SER
1	B	1294	SER
1	B	1316	ARG
1	B	1329	VAL
1	B	1338	GLU
1	B	1341	LEU
1	B	1344	THR
1	B	1352	LYS
1	B	1356	ILE
1	B	1372	LYS
1	B	1373	LYS
1	B	1386	ILE
1	B	1389	VAL
1	B	1395	LEU
1	B	1397	VAL
1	B	1398	SER
1	B	1403	ILE
1	B	1415	MET
1	B	1419	THR
1	B	1425	VAL
1	B	1450	THR
1	B	1456	VAL
1	B	1467	ARG
1	B	1470	ARG
1	B	1472	ILE
1	B	1474	ARG
1	B	1481	ARG
1	B	1503	GLU
1	B	1504	LEU
1	B	1508	GLU
1	B	1514	ARG
1	B	1529	LEU
1	B	1539	LEU
1	B	1555	ASP
1	B	1566	THR
1	B	1579	ASP
1	B	1580	GLN

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Mol	Chain	Res	Type
1	B	1581	MET
1	B	1583	LYS
1	B	1584	CYS
1	B	1586	ILE
1	B	1587	ARG
1	B	1588	LEU
1	B	1591	THR
1	B	1593	HIS
1	B	1596	THR
1	B	1598	LEU
1	B	1600	TYR
1	B	1602	LEU
1	B	1609	VAL
1	B	1611	LEU
1	B	1615	ILE
1	B	1627	LEU
1	B	1631	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	9	GLN
1	A	27	ASN
1	A	57	HIS
1	A	80	GLN
1	A	195	GLN
1	A	251	ASN
1	A	293	HIS
1	A	434	GLN
1	A	526	GLN
1	A	556	ASN
1	A	580	GLN
1	A	607	ASN
1	B	1027	ASN
1	B	1034	GLN
1	B	1086	GLN
1	B	1149	HIS
1	B	1187	ASN
1	B	1198	GLN
1	B	1203	HIS
1	B	1229	ASN
1	B	1309	GLN

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Mol	Chain	Res	Type
1	B	1364	HIS
1	B	1526	GLN
1	B	1545	HIS
1	B	1556	ASN
1	B	1572	GLN
1	B	1580	GLN
1	B	1613	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

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

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	PO4	B	1800	-	4,4,4	1.63	0	6,6,6	0.76	0
3	PO4	A	800	-	4,4,4	1.56	0	6,6,6	0.51	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	800	PO4	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	B	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	B	1183:VAL	C	1184:PHE	N	1.15

## 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.