# Full wwPDB X-ray Structure Validation Report ⓘ

May 25, 2020 – 10:50 am BST

| | | |
|---|---|---|
| PDB ID | : | 2YFY |
| Title | : | SERCA in the HnE2 State Complexed With Debutanoyl Thapsigargin |
| Authors | : | Sonntag, Y.; Musgaard, M.; Olesen, C.; Schiott, B.; Moller, J.V.; Nissen, P.; Thogersen, L. |
| Deposited on | : | 2011-04-11 |
| Resolution | : | 3.10 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.

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

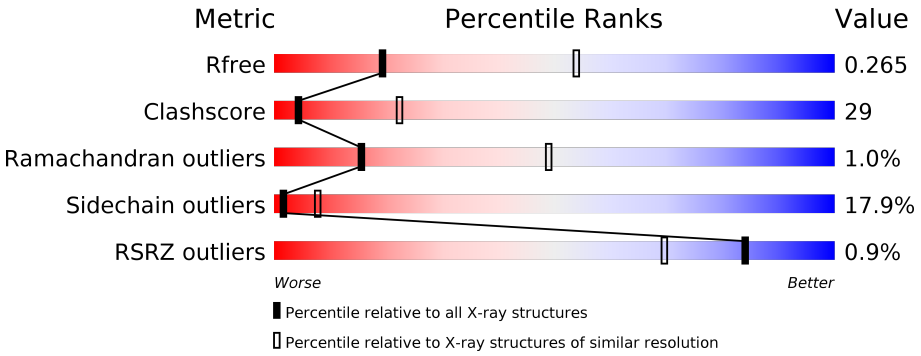
| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.11 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 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) | : | 2.11 |

# 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 3.10 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 | 1094 (3.10-3.10) |
| Clashscore | 141614 | 1184 (3.10-3.10) |
| Ramachandran outliers | 138981 | 1141 (3.10-3.10) |
| Sidechain outliers | 138945 | 1141 (3.10-3.10) |
| RSRZ outliers | 127900 | 1067 (3.10-3.10) |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria 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 | 994 | % 50% 40% 10% |

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

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 2 | 9TN | A | 1995 | - | - | X | - |
| 3 | K | A | 1996 | - | - | - | X |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 4 | MG | A | 1997 | - | - | - | X |

## 2 Entry composition

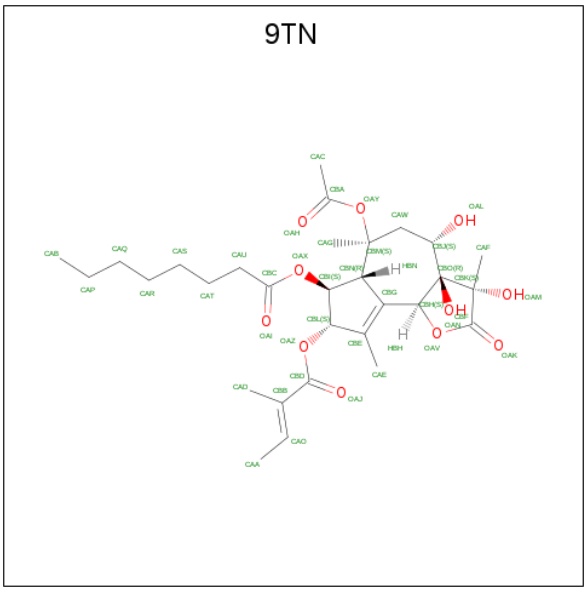
There are 4 unique types of molecules in this entry. The entry contains 7714 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 SARCOPLASMIC/ENDOPLASMIC RETICULUM CALCIUM ATPASE 1.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | | |
| 1 | A | 994 | 7671 | 4876 | 1287 | 1451 | 57 | 0 | 0 | 0 |

- Molecule 2 is DEBUTANOYL THAPSIGARGIN (three-letter code: 9TN) (formula: $C_{30}H_{44}O_{11}$).




| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|---|
| | | | Total | C | O | | | |
| 2 | A | 1 | 41 | 30 | 11 | | 0 | 0 |

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|
| | | | Total | K | | |
| 3 | A | 1 | 1 | 1 | 0 | 0 |

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

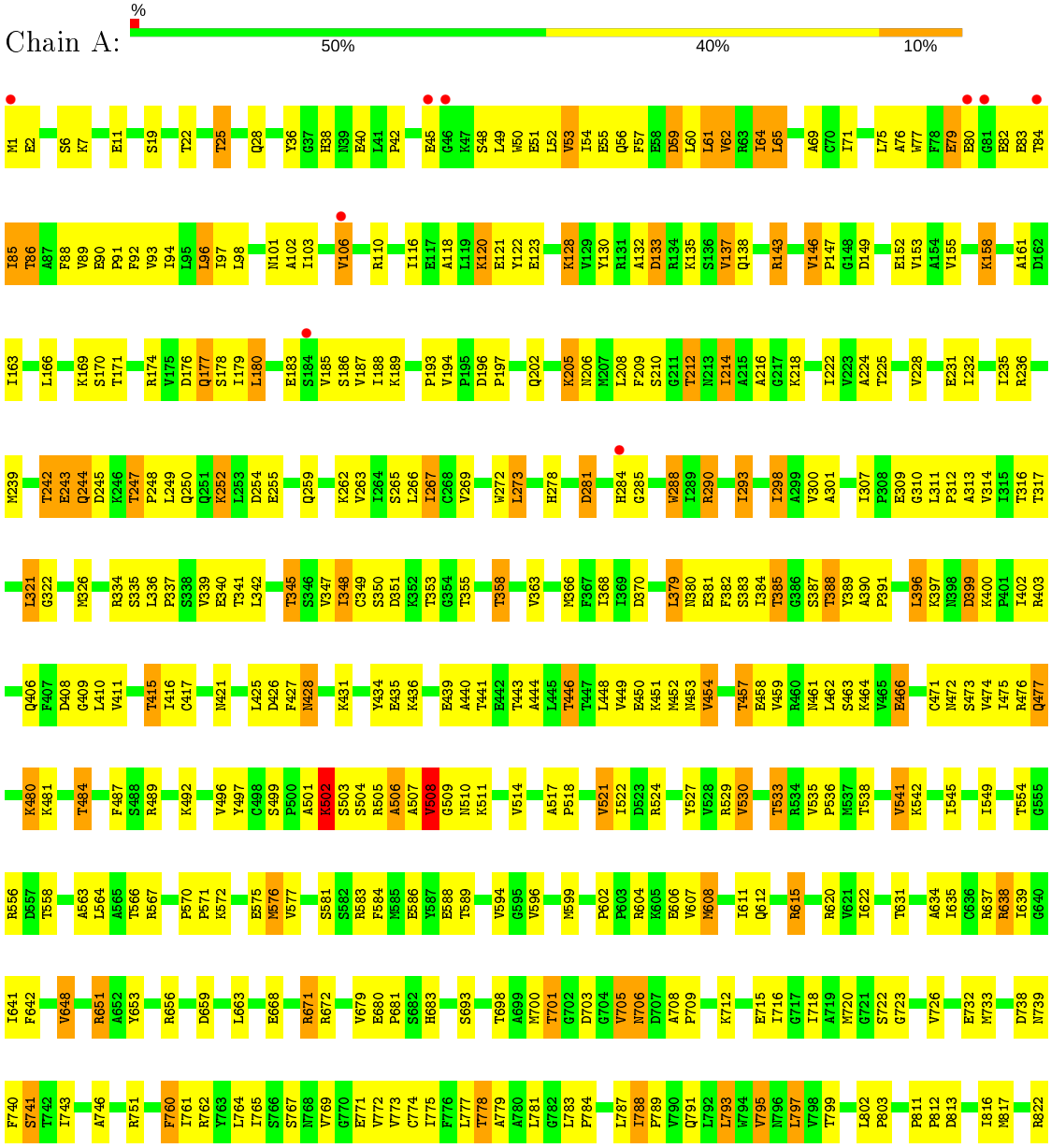
| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 4 | A | 1 | Total Mg<br>1 1 | 0 | 0 |

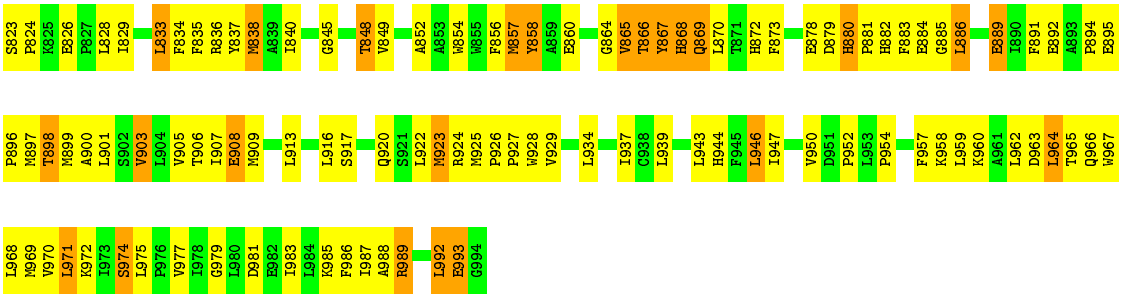
# 3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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: SARCOPLASMIC/ENDOPLASMIC RETICULUM CALCIUM ATPASE 1

Chain A:




S823
P824
K825
E826
P827
L828
I829
L833
F834
F835
R836
Y837
M838
A839
I840
G845
T848
V849
A852
A853
W854
W855
F856
M857
Y858
A859
E860
G864
V865
T866
Y867
H868
Q869
L870
T871
H872
F873
E878
D879
H880
P881
H882
F883
E884
G885
L886
E889
I890
F891
E892
A893
P894
E895
P896
M897
T898
M899
A900
L901
S902
V903
L904
V905
T906
I907
E908
M909
L913
L916
S917
Q920
S921
L922
M923
R924
M925
P926
P927
W928
V929
L934
I937
C938
L939
L943
H944
F945
L946
I947
V950
D951
P952
L953
P954
F957
K958
L959
K960
A961
L962
D963
L964
T965
Q966
W967
L968
M969
V970
L971
K972
I973
S974
L975
P976
V977
I978
G979
L980
D981
E982
I983
L984
K985
F986
I987
A988
R989
L992
E993
G994

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|---|---|---|
| Space group | P 41 21 2 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 71.36Å 71.36Å 587.91Å<br>90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 57.68 – 3.10<br>57.68 – 3.00 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 100.0 (57.68-3.10)<br>100.0 (57.68-3.00) | Depositor<br>EDS |
| $R_{merge}$ | 0.10 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.72 (at 3.01Å) | Xtriage |
| Refinement program | PHENIX (PHENIX.REFINE) | Depositor |
| R, $R_{free}$ | 0.239 , 0.278<br>0.236 , 0.265 | Depositor<br>DCC |
| $R_{free}$ test set | 937 reflections (2.91%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 90.6 | Xtriage |
| Anisotropy | 0.281 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.29 , 55.8 | EDS |
| L-test for twinning[2] | $< \|L\| > = 0.44$, $< L^2 > = 0.27$ | Xtriage |
| Estimated twinning fraction | No twinning to report. | Xtriage |
| $F_o$,$F_c$ correlation | 0.93 | EDS |
| Total number of atoms | 7714 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 99.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.29% 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: 9TN, K, MG

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 | 0.26 | 0/7812 | 0.44 | 0/10592 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 7671 | 0 | 7764 | 448 | 0 |
| 2 | A | 41 | 0 | 44 | 21 | 0 |
| 3 | A | 1 | 0 | 0 | 0 | 0 |
| 4 | A | 1 | 0 | 0 | 0 | 0 |
| All | All | 7714 | 0 | 7808 | 451 | 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 (451) 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:834:PHE:HD1 | 2:A:1995:9TN:OAH | 0.89 | 1.24 |
| 1:A:772:VAL:HG21 | 2:A:1995:9TN:CAA | 1.73 | 1.17 |
| 1:A:772:VAL:CG2 | 2:A:1995:9TN:HAA3 | 1.79 | 1.12 |
| 1:A:651:ARG:HH11 | 1:A:651:ARG:HG3 | 1.06 | 1.10 |
| 1:A:249:LEU:HB2 | 1:A:340:GLU:OE1 | 1.67 | 0.95 |
| 1:A:772:VAL:CG2 | 2:A:1995:9TN:CAA | 2.40 | 0.94 |
| 1:A:61:LEU:HA | 1:A:64:ILE:HD11 | 1.50 | 0.93 |
| 1:A:957:PHE:HB3 | 1:A:959:LEU:HD13 | 1.51 | 0.92 |
| 1:A:772:VAL:HG21 | 2:A:1995:9TN:HAA3 | 0.91 | 0.89 |
| 1:A:459:VAL:HA | 1:A:462:LEU:HD13 | 1.56 | 0.88 |
| 1:A:869:GLN:HB2 | 1:A:872:HIS:CD2 | 2.09 | 0.87 |
| 1:A:987:ILE:C | 1:A:989:ARG:HH12 | 1.78 | 0.87 |
| 1:A:391:PRO:HD2 | 1:A:434:TYR:CD2 | 2.10 | 0.86 |
| 1:A:390:ALA:HA | 1:A:434:TYR:HD2 | 1.40 | 0.86 |
| 1:A:311:LEU:HD13 | 1:A:764:LEU:HD12 | 1.59 | 0.85 |
| 1:A:651:ARG:HG3 | 1:A:651:ARG:NH1 | 1.85 | 0.84 |
| 1:A:497:TYR:HE1 | 1:A:510:ASN:HD22 | 1.26 | 0.84 |
| 1:A:834:PHE:CD1 | 2:A:1995:9TN:CBA | 2.61 | 0.83 |
| 1:A:502:LYS:HZ2 | 1:A:504:SER:H | 1.22 | 0.83 |
| 1:A:680:GLU:H | 1:A:683:HIS:HD2 | 1.27 | 0.82 |
| 1:A:964:LEU:HD22 | 1:A:964:LEU:H | 1.45 | 0.82 |
| 1:A:901:LEU:HD13 | 1:A:959:LEU:HD21 | 1.62 | 0.82 |
| 1:A:638:ARG:HH11 | 1:A:638:ARG:HG3 | 1.47 | 0.80 |
| 1:A:869:GLN:HB2 | 1:A:872:HIS:HD2 | 1.49 | 0.78 |
| 1:A:989:ARG:CZ | 1:A:989:ARG:H | 1.96 | 0.77 |
| 1:A:288:TRP:CE3 | 1:A:288:TRP:HA | 2.19 | 0.76 |
| 1:A:130:TYR:CZ | 1:A:137:VAL:HG23 | 2.22 | 0.75 |
| 1:A:473:SER:O | 1:A:477:GLN:HG2 | 1.87 | 0.74 |
| 1:A:193:PRO:HA | 1:A:206:ASN:HD22 | 1.53 | 0.74 |
| 1:A:288:TRP:HE3 | 1:A:288:TRP:HA | 1.53 | 0.73 |
| 1:A:988:ALA:N | 1:A:989:ARG:HH12 | 1.86 | 0.73 |
| 1:A:463:SER:HB3 | 1:A:466:GLU:HG2 | 1.71 | 0.73 |
| 1:A:64:ILE:HD13 | 1:A:307:ILE:HD11 | 1.70 | 0.73 |
| 1:A:380:ASN:HB3 | 1:A:382:PHE:HE1 | 1.52 | 0.72 |
| 1:A:988:ALA:H | 1:A:989:ARG:HH22 | 1.34 | 0.72 |
| 1:A:880:HIS:HA | 1:A:884:GLU:HB2 | 1.71 | 0.71 |
| 1:A:865:VAL:HG21 | 1:A:870:LEU:HB2 | 1.73 | 0.71 |
| 1:A:988:ALA:HA | 1:A:992:LEU:HB3 | 1.72 | 0.71 |
| 1:A:899:MET:O | 1:A:903:VAL:HG12 | 1.90 | 0.71 |
| 1:A:760:PHE:C | 1:A:760:PHE:HD1 | 1.94 | 0.71 |
| 1:A:873:PHE:HB2 | 1:A:891:PHE:CE2 | 2.26 | 0.70 |
| 1:A:680:GLU:H | 1:A:683:HIS:CD2 | 2.11 | 0.69 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:79:GLU:OE1 | 1:A:84:THR:HB | 1.93 | 0.69 |
| 1:A:898:THR:HG21 | 1:A:960:LYS:H | 1.58 | 0.69 |
| 1:A:350:SER:HA | 1:A:701:THR:OG1 | 1.93 | 0.69 |
| 1:A:61:LEU:HD13 | 1:A:307:ILE:HG23 | 1.75 | 0.69 |
| 1:A:856:PHE:O | 1:A:864:GLY:HA2 | 1.94 | 0.69 |
| 1:A:6:SER:HA | 1:A:194:VAL:O | 1.93 | 0.68 |
| 1:A:963:ASP:H | 1:A:966:GLN:HE21 | 1.39 | 0.68 |
| 1:A:396:LEU:HD12 | 1:A:399:ASP:HA | 1.76 | 0.68 |
| 1:A:963:ASP:H | 1:A:966:GLN:NE2 | 1.91 | 0.67 |
| 1:A:865:VAL:HB | 1:A:868:HIS:CB | 2.24 | 0.67 |
| 1:A:889:GLU:HG3 | 1:A:889:GLU:O | 1.94 | 0.67 |
| 1:A:829:ILE:HB | 2:A:1995:9TN:HBJ | 1.77 | 0.67 |
| 1:A:89:VAL:O | 1:A:93:VAL:HG23 | 1.94 | 0.67 |
| 1:A:232:ILE:H | 1:A:232:ILE:HD12 | 1.60 | 0.66 |
| 1:A:232:ILE:HD12 | 1:A:232:ILE:N | 2.11 | 0.66 |
| 1:A:865:VAL:HB | 1:A:868:HIS:HB2 | 1.77 | 0.66 |
| 1:A:122:TYR:HE2 | 1:A:726:VAL:HG21 | 1.60 | 0.66 |
| 1:A:59:ASP:O | 1:A:62:VAL:HG13 | 1.94 | 0.66 |
| 1:A:802:LEU:HB2 | 1:A:803:PRO:HD3 | 1.77 | 0.66 |
| 1:A:348:ILE:HD11 | 1:A:740:PHE:CE2 | 2.30 | 0.66 |
| 1:A:313:ALA:O | 1:A:317:THR:HG23 | 1.96 | 0.66 |
| 1:A:415:THR:HG22 | 1:A:475:ILE:HG23 | 1.76 | 0.66 |
| 1:A:989:ARG:CZ | 1:A:989:ARG:N | 2.59 | 0.66 |
| 1:A:252:LYS:O | 1:A:255:GLU:HG2 | 1.96 | 0.66 |
| 1:A:77:TRP:CE3 | 1:A:88:PHE:HZ | 2.14 | 0.66 |
| 1:A:572:LYS:HB2 | 1:A:575:GLU:HG2 | 1.77 | 0.66 |
| 1:A:760:PHE:C | 1:A:760:PHE:CD1 | 2.67 | 0.66 |
| 1:A:845:GLY:O | 1:A:849:VAL:HG22 | 1.95 | 0.66 |
| 1:A:120:LYS:HA | 1:A:123:GLU:HG3 | 1.78 | 0.65 |
| 1:A:480:LYS:HB2 | 1:A:501:ALA:HB2 | 1.77 | 0.65 |
| 1:A:502:LYS:O | 1:A:506:ALA:HB2 | 1.97 | 0.65 |
| 1:A:567:ARG:NH1 | 1:A:571:PRO:HD3 | 2.11 | 0.65 |
| 1:A:857:MET:HA | 1:A:864:GLY:HA3 | 1.79 | 0.65 |
| 1:A:278:HIS:O | 1:A:281:ASP:HB2 | 1.97 | 0.64 |
| 1:A:453:ASN:HB3 | 1:A:471:CYS:SG | 2.36 | 0.64 |
| 1:A:86:THR:O | 1:A:89:VAL:HG22 | 1.96 | 0.64 |
| 1:A:321:LEU:HD13 | 1:A:321:LEU:N | 2.13 | 0.64 |
| 1:A:638:ARG:HG3 | 1:A:638:ARG:NH1 | 2.07 | 0.64 |
| 1:A:822:ARG:HH11 | 1:A:826:GLU:HG2 | 1.63 | 0.64 |
| 1:A:834:PHE:CE1 | 2:A:1995:9TN:CBA | 2.80 | 0.64 |
| 1:A:703:ASP:OD1 | 1:A:723:GLY:HA2 | 1.97 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:907:ILE:HG23 | 1:A:977:VAL:HG21 | 1.79 | 0.64 |
| 1:A:927:PRO:HB2 | 1:A:934:LEU:HD21 | 1.78 | 0.64 |
| 1:A:989:ARG:N | 1:A:989:ARG:NH1 | 2.46 | 0.64 |
| 1:A:986:PHE:C | 1:A:989:ARG:NH1 | 2.52 | 0.64 |
| 1:A:950:VAL:O | 1:A:954:PRO:HD3 | 1.98 | 0.63 |
| 1:A:98:LEU:HA | 1:A:101:ASN:OD1 | 1.98 | 0.63 |
| 1:A:262:LYS:O | 1:A:266:LEU:HG | 1.99 | 0.63 |
| 1:A:102:ALA:O | 1:A:106:VAL:HG12 | 1.98 | 0.63 |
| 1:A:957:PHE:O | 1:A:958:LYS:HB2 | 1.99 | 0.62 |
| 1:A:380:ASN:HB3 | 1:A:382:PHE:CE1 | 2.33 | 0.62 |
| 1:A:193:PRO:HA | 1:A:206:ASN:ND2 | 2.13 | 0.62 |
| 1:A:907:ILE:HG13 | 1:A:974:SER:HB3 | 1.82 | 0.62 |
| 1:A:391:PRO:HD2 | 1:A:434:TYR:HD2 | 1.64 | 0.62 |
| 1:A:403:ARG:HD3 | 1:A:406:GLN:HE21 | 1.64 | 0.62 |
| 1:A:788:ILE:CD1 | 1:A:789:PRO:HD2 | 2.29 | 0.62 |
| 1:A:608:MET:HE2 | 1:A:608:MET:H | 1.64 | 0.62 |
| 1:A:408:ASP:O | 1:A:411:VAL:HG22 | 2.00 | 0.61 |
| 1:A:481:LYS:O | 1:A:481:LYS:HG3 | 2.00 | 0.61 |
| 1:A:834:PHE:CE1 | 2:A:1995:9TN:OAH | 2.48 | 0.61 |
| 1:A:155:VAL:HA | 1:A:214:ILE:HG22 | 1.81 | 0.61 |
| 1:A:379:LEU:H | 1:A:379:LEU:HD12 | 1.64 | 0.61 |
| 1:A:571:PRO:HG2 | 1:A:576:MET:SD | 2.40 | 0.61 |
| 1:A:146:VAL:HG22 | 1:A:147:PRO:HD2 | 1.83 | 0.61 |
| 1:A:259:GLN:O | 1:A:263:VAL:HG23 | 2.01 | 0.61 |
| 1:A:397:LYS:HB3 | 1:A:402:ILE:HD11 | 1.81 | 0.61 |
| 1:A:522:ILE:HG22 | 1:A:542:LYS:HE3 | 1.81 | 0.61 |
| 1:A:518:PRO:HB3 | 1:A:549:ILE:HD13 | 1.83 | 0.60 |
| 1:A:505:ARG:HG3 | 1:A:505:ARG:O | 1.98 | 0.60 |
| 1:A:298:ILE:HD12 | 1:A:779:ALA:HB2 | 1.84 | 0.60 |
| 1:A:174:ARG:HG2 | 1:A:188:ILE:HD13 | 1.84 | 0.60 |
| 1:A:950:VAL:CG1 | 1:A:952:PRO:HD2 | 2.32 | 0.60 |
| 1:A:80:GLU:HB2 | 1:A:83:GLU:HB3 | 1.83 | 0.59 |
| 1:A:604:ARG:HB2 | 1:A:607:VAL:HG23 | 1.84 | 0.59 |
| 1:A:928:TRP:HA | 1:A:934:LEU:HD11 | 1.84 | 0.59 |
| 1:A:355:THR:HG22 | 1:A:738:ASP:O | 2.03 | 0.59 |
| 1:A:235:ILE:O | 1:A:239:MET:HG3 | 2.03 | 0.59 |
| 1:A:680:GLU:HB3 | 1:A:681:PRO:HD2 | 1.85 | 0.59 |
| 1:A:40:GLU:OE1 | 1:A:143:ARG:HD2 | 2.02 | 0.59 |
| 1:A:761:ILE:O | 1:A:765:ILE:HG12 | 2.02 | 0.59 |
| 1:A:981:ASP:O | 1:A:985:LYS:HB2 | 2.03 | 0.58 |
| 1:A:668:GLU:HG3 | 1:A:672:ARG:NH1 | 2.19 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:870:LEU:HD11 | 1:A:891:PHE:CE1 | 2.39 | 0.58 |
| 1:A:411:VAL:HA | 1:A:454:VAL:HG21 | 1.86 | 0.58 |
| 1:A:583:ARG:O | 1:A:586:GLU:HG2 | 2.04 | 0.58 |
| 1:A:968:LEU:O | 1:A:972:LYS:HG3 | 2.04 | 0.58 |
| 1:A:272:TRP:HE3 | 1:A:273:LEU:HD23 | 1.69 | 0.58 |
| 1:A:50:TRP:CZ3 | 1:A:54:ILE:HD11 | 2.38 | 0.58 |
| 1:A:71:ILE:O | 1:A:75:LEU:HG | 2.03 | 0.58 |
| 1:A:848:THR:HG22 | 1:A:900:ALA:O | 2.04 | 0.58 |
| 1:A:391:PRO:HD2 | 1:A:434:TYR:CE2 | 2.40 | 0.57 |
| 1:A:248:PRO:O | 1:A:252:LYS:HD2 | 2.04 | 0.57 |
| 1:A:322:GLY:O | 1:A:326:MET:HG3 | 2.04 | 0.57 |
| 1:A:50:TRP:O | 1:A:54:ILE:HG12 | 2.05 | 0.57 |
| 1:A:321:LEU:H | 1:A:321:LEU:HD13 | 1.70 | 0.57 |
| 1:A:49:LEU:O | 1:A:53:VAL:HG22 | 2.04 | 0.57 |
| 1:A:615:ARG:HH11 | 1:A:615:ARG:HB3 | 1.70 | 0.57 |
| 1:A:177:GLN:HA | 1:A:212:THR:HG22 | 1.86 | 0.56 |
| 2:A:1995:9TN:OAL | 2:A:1995:9TN:HAG2 | 2.05 | 0.56 |
| 1:A:979:GLY:O | 1:A:983:ILE:HG13 | 2.04 | 0.56 |
| 1:A:436:LYS:CB | 1:A:443:THR:HG21 | 2.36 | 0.56 |
| 1:A:988:ALA:N | 1:A:989:ARG:HH22 | 2.02 | 0.56 |
| 1:A:385:THR:O | 1:A:451:LYS:HE2 | 2.05 | 0.56 |
| 1:A:57:PHE:HA | 1:A:62:VAL:HG21 | 1.88 | 0.56 |
| 1:A:870:LEU:O | 1:A:873:PHE:HB3 | 2.06 | 0.56 |
| 1:A:1:MET:HA | 1:A:224:ALA:O | 2.05 | 0.56 |
| 1:A:988:ALA:N | 1:A:989:ARG:NH1 | 2.53 | 0.56 |
| 1:A:950:VAL:O | 1:A:954:PRO:CD | 2.54 | 0.56 |
| 1:A:285:GLY:O | 1:A:288:TRP:HB2 | 2.05 | 0.56 |
| 1:A:774:CYS:SG | 1:A:787:LEU:HD12 | 2.46 | 0.56 |
| 1:A:963:ASP:N | 1:A:966:GLN:HE21 | 2.03 | 0.56 |
| 1:A:471:CYS:O | 1:A:474:VAL:HG22 | 2.06 | 0.55 |
| 1:A:659:ASP:OD1 | 1:A:683:HIS:HE1 | 1.89 | 0.55 |
| 1:A:767:SER:HB3 | 1:A:908:GLU:OE2 | 2.06 | 0.55 |
| 1:A:92:PHE:O | 1:A:96:LEU:HG | 2.06 | 0.55 |
| 1:A:502:LYS:HD3 | 1:A:504:SER:OG | 2.07 | 0.55 |
| 1:A:854:TRP:O | 1:A:857:MET:O | 2.25 | 0.55 |
| 2:A:1995:9TN:OAH | 2:A:1995:9TN:CAW | 2.55 | 0.55 |
| 1:A:789:PRO:O | 1:A:793:LEU:HD23 | 2.07 | 0.55 |
| 1:A:242:THR:HG21 | 1:A:712:LYS:HG2 | 1.89 | 0.55 |
| 1:A:249:LEU:CB | 1:A:340:GLU:OE1 | 2.49 | 0.55 |
| 1:A:80:GLU:OE1 | 1:A:83:GLU:HB3 | 2.07 | 0.55 |
| 1:A:7:LYS:HD3 | 1:A:11:GLU:OE1 | 2.06 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:170:SER:HB3 | 1:A:218:LYS:H | 1.72 | 0.54 |
| 1:A:866:THR:HG22 | 1:A:867:TYR:N | 2.22 | 0.54 |
| 1:A:122:TYR:O | 1:A:158:LYS:HD3 | 2.07 | 0.54 |
| 1:A:312:PRO:O | 1:A:316:THR:HG23 | 2.08 | 0.54 |
| 1:A:427:PHE:CE2 | 1:A:464:LYS:HB3 | 2.43 | 0.54 |
| 1:A:381:GLU:O | 1:A:397:LYS:HD2 | 2.07 | 0.54 |
| 1:A:795:VAL:HA | 1:A:799:THR:HB | 1.89 | 0.54 |
| 1:A:811:PRO:HG3 | 1:A:929:VAL:HG12 | 1.88 | 0.54 |
| 1:A:894:PRO:O | 1:A:898:THR:HG23 | 2.07 | 0.54 |
| 1:A:769:VAL:HA | 2:A:1995:9TN:CAA | 2.38 | 0.54 |
| 1:A:788:ILE:HD12 | 1:A:789:PRO:HD2 | 1.89 | 0.54 |
| 1:A:209:PHE:CD1 | 1:A:231:GLU:HG3 | 2.42 | 0.54 |
| 1:A:760:PHE:HD1 | 1:A:761:ILE:N | 2.04 | 0.54 |
| 1:A:75:LEU:HD22 | 1:A:293:ILE:HG23 | 1.90 | 0.54 |
| 1:A:865:VAL:O | 1:A:868:HIS:HB2 | 2.08 | 0.54 |
| 1:A:25:THR:HG23 | 1:A:28:GLN:HG3 | 1.89 | 0.54 |
| 1:A:358:THR:OG1 | 1:A:602:PRO:HG2 | 2.08 | 0.54 |
| 1:A:898:THR:HG22 | 1:A:959:LEU:HA | 1.89 | 0.54 |
| 1:A:351:ASP:OD2 | 1:A:701:THR:HB | 2.08 | 0.53 |
| 1:A:873:PHE:HB2 | 1:A:891:PHE:CD2 | 2.42 | 0.53 |
| 1:A:146:VAL:O | 1:A:149:ASP:HB2 | 2.08 | 0.53 |
| 1:A:363:VAL:HG11 | 1:A:448:LEU:HD22 | 1.90 | 0.53 |
| 1:A:656:ARG:HA | 1:A:656:ARG:NE | 2.23 | 0.53 |
| 1:A:235:ILE:HD13 | 1:A:705:VAL:HG13 | 1.89 | 0.53 |
| 1:A:637:ARG:HG2 | 1:A:642:PHE:HB2 | 1.91 | 0.53 |
| 1:A:79:GLU:OE1 | 1:A:83:GLU:HG3 | 2.07 | 0.53 |
| 1:A:651:ARG:CG | 1:A:651:ARG:NH1 | 2.64 | 0.53 |
| 1:A:762:ARG:HB3 | 1:A:837:TYR:CE2 | 2.44 | 0.53 |
| 1:A:84:THR:HG22 | 1:A:86:THR:N | 2.24 | 0.53 |
| 1:A:336:LEU:N | 1:A:337:PRO:CD | 2.72 | 0.53 |
| 1:A:310:GLY:O | 1:A:314:VAL:HG23 | 2.09 | 0.53 |
| 1:A:502:LYS:NZ | 1:A:504:SER:H | 2.02 | 0.53 |
| 1:A:235:ILE:HG23 | 1:A:709:PRO:HG3 | 1.91 | 0.53 |
| 1:A:880:HIS:N | 1:A:881:PRO:HD2 | 2.24 | 0.53 |
| 1:A:348:ILE:HD12 | 1:A:743:ILE:HG21 | 1.91 | 0.53 |
| 1:A:769:VAL:O | 1:A:773:VAL:HG23 | 2.09 | 0.53 |
| 1:A:969:MET:HA | 1:A:969:MET:HE3 | 1.91 | 0.53 |
| 1:A:232:ILE:H | 1:A:232:ILE:CD1 | 2.23 | 0.52 |
| 1:A:774:CYS:SG | 1:A:849:VAL:HG13 | 2.49 | 0.52 |
| 1:A:751:ARG:HD2 | 1:A:817:MET:CE | 2.40 | 0.52 |
| 1:A:865:VAL:HB | 1:A:868:HIS:HB3 | 1.91 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:202:GLN:OE1 | 1:A:489:ARG:HD3 | 2.09 | 0.52 |
| 1:A:762:ARG:HB3 | 1:A:837:TYR:HE2 | 1.74 | 0.52 |
| 1:A:895:GLU:N | 1:A:896:PRO:HD2 | 2.25 | 0.52 |
| 1:A:901:LEU:C | 1:A:901:LEU:HD23 | 2.29 | 0.52 |
| 1:A:909:MET:HE3 | 1:A:937:ILE:HG12 | 1.92 | 0.52 |
| 1:A:981:ASP:O | 1:A:985:LYS:N | 2.40 | 0.52 |
| 1:A:983:ILE:O | 1:A:987:ILE:HG13 | 2.10 | 0.52 |
| 1:A:307:ILE:HB | 1:A:309:GLU:OE2 | 2.09 | 0.52 |
| 1:A:348:ILE:HG12 | 1:A:348:ILE:O | 2.10 | 0.52 |
| 1:A:389:TYR:CE2 | 1:A:436:LYS:HB3 | 2.45 | 0.52 |
| 1:A:865:VAL:O | 1:A:868:HIS:N | 2.43 | 0.51 |
| 1:A:900:ALA:O | 1:A:903:VAL:HG13 | 2.10 | 0.51 |
| 1:A:950:VAL:HG13 | 1:A:952:PRO:HD2 | 1.92 | 0.51 |
| 1:A:985:LYS:C | 1:A:989:ARG:NH2 | 2.64 | 0.51 |
| 1:A:52:LEU:HD21 | 1:A:106:VAL:HB | 1.92 | 0.51 |
| 1:A:946:LEU:C | 1:A:946:LEU:HD12 | 2.31 | 0.51 |
| 1:A:247:THR:HG22 | 1:A:250:GLN:H | 1.75 | 0.51 |
| 1:A:349:CYS:HA | 1:A:622:ILE:O | 2.10 | 0.51 |
| 1:A:52:LEU:CD2 | 1:A:106:VAL:HB | 2.41 | 0.51 |
| 1:A:708:ALA:HB3 | 1:A:709:PRO:HD3 | 1.92 | 0.51 |
| 1:A:852:ALA:HB2 | 1:A:900:ALA:HB2 | 1.93 | 0.51 |
| 1:A:342:LEU:O | 1:A:345:THR:HG23 | 2.11 | 0.50 |
| 1:A:612:GLN:HA | 1:A:615:ARG:HG3 | 1.92 | 0.50 |
| 1:A:865:VAL:CG2 | 1:A:870:LEU:HB2 | 2.40 | 0.50 |
| 1:A:535:VAL:HG13 | 1:A:536:PRO:HD2 | 1.92 | 0.50 |
| 1:A:355:THR:HG23 | 1:A:720:MET:CE | 2.41 | 0.50 |
| 1:A:85:ILE:HG13 | 1:A:86:THR:N | 2.25 | 0.50 |
| 1:A:517:ALA:O | 1:A:521:VAL:HG13 | 2.11 | 0.50 |
| 1:A:926:PRO:O | 1:A:929:VAL:HG23 | 2.12 | 0.50 |
| 1:A:783:LEU:HG | 1:A:784:PRO:HD2 | 1.94 | 0.50 |
| 1:A:239:MET:O | 1:A:242:THR:HG22 | 2.11 | 0.50 |
| 1:A:760:PHE:CD1 | 1:A:761:ILE:N | 2.80 | 0.50 |
| 1:A:992:LEU:HG | 1:A:993:GLU:H | 1.77 | 0.50 |
| 1:A:518:PRO:HA | 1:A:563:ALA:HB2 | 1.93 | 0.50 |
| 1:A:567:ARG:HD3 | 1:A:570:PRO:HA | 1.93 | 0.50 |
| 1:A:379:LEU:HD12 | 1:A:379:LEU:N | 2.27 | 0.50 |
| 1:A:484:THR:HB | 1:A:496:VAL:HG12 | 1.94 | 0.50 |
| 1:A:700:MET:HE3 | 1:A:701:THR:N | 2.26 | 0.50 |
| 1:A:248:PRO:HB2 | 1:A:340:GLU:OE2 | 2.11 | 0.50 |
| 1:A:428:ASN:HD21 | 1:A:431:LYS:H | 1.59 | 0.50 |
| 1:A:607:VAL:O | 1:A:611:ILE:HG12 | 2.11 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:788:ILE:HG12 | 1:A:897:MET:HE1 | 1.92 | 0.49 |
| 1:A:680:GLU:N | 1:A:683:HIS:HD2 | 2.05 | 0.49 |
| 1:A:835:PHE:O | 1:A:838:MET:HB3 | 2.12 | 0.49 |
| 1:A:298:ILE:HD11 | 1:A:778:THR:HG22 | 1.94 | 0.49 |
| 1:A:507:ALA:C | 1:A:509:GLY:H | 2.16 | 0.49 |
| 1:A:958:LYS:C | 1:A:959:LEU:HD12 | 2.32 | 0.49 |
| 1:A:272:TRP:CE3 | 1:A:273:LEU:HD23 | 2.47 | 0.49 |
| 1:A:309:GLU:O | 1:A:312:PRO:HD2 | 2.13 | 0.49 |
| 1:A:368:ILE:HD12 | 1:A:409:GLY:HA3 | 1.94 | 0.49 |
| 1:A:449:VAL:HG13 | 1:A:472:ASN:HD21 | 1.77 | 0.49 |
| 1:A:909:MET:CE | 1:A:937:ILE:HA | 2.43 | 0.49 |
| 1:A:444:ALA:HB3 | 1:A:599:MET:CE | 2.43 | 0.49 |
| 1:A:267:ILE:HD13 | 2:A:1995:9TN:HAP2 | 1.95 | 0.48 |
| 1:A:880:HIS:ND1 | 1:A:881:PRO:HD3 | 2.28 | 0.48 |
| 1:A:342:LEU:HD21 | 1:A:746:ALA:HB1 | 1.95 | 0.48 |
| 1:A:52:LEU:C | 1:A:52:LEU:HD23 | 2.34 | 0.48 |
| 1:A:817:MET:HE2 | 1:A:817:MET:HA | 1.95 | 0.48 |
| 1:A:923:MET:CE | 1:A:924:ARG:HH11 | 2.25 | 0.48 |
| 1:A:639:ILE:HG13 | 1:A:641:ILE:HG13 | 1.95 | 0.48 |
| 1:A:103:ILE:O | 1:A:106:VAL:HG13 | 2.14 | 0.48 |
| 1:A:161:ALA:HA | 1:A:210:SER:HB2 | 1.95 | 0.48 |
| 1:A:93:VAL:O | 1:A:97:ILE:HD13 | 2.14 | 0.48 |
| 1:A:116:ILE:HG23 | 1:A:236:ARG:HG3 | 1.95 | 0.48 |
| 1:A:946:LEU:O | 1:A:946:LEU:HD12 | 2.13 | 0.48 |
| 1:A:901:LEU:HD22 | 1:A:944:HIS:HE1 | 1.79 | 0.48 |
| 1:A:341:THR:O | 1:A:716:ILE:HD11 | 2.14 | 0.47 |
| 1:A:355:THR:HA | 1:A:738:ASP:O | 2.14 | 0.47 |
| 1:A:88:PHE:O | 1:A:92:PHE:HD2 | 1.97 | 0.47 |
| 1:A:923:MET:HG2 | 1:A:924:ARG:N | 2.29 | 0.47 |
| 1:A:760:PHE:CE1 | 1:A:761:ILE:HG13 | 2.49 | 0.47 |
| 1:A:76:ALA:HB1 | 1:A:88:PHE:HD1 | 1.79 | 0.47 |
| 1:A:772:VAL:HG23 | 2:A:1995:9TN:CAA | 2.42 | 0.47 |
| 1:A:439:GLU:HG3 | 1:A:440:ALA:N | 2.28 | 0.47 |
| 1:A:263:VAL:HG11 | 2:A:1995:9TN:HAD1 | 1.96 | 0.47 |
| 1:A:416:ILE:HD11 | 1:A:566:THR:CG2 | 2.45 | 0.47 |
| 1:A:169:LYS:HD2 | 1:A:169:LYS:N | 2.29 | 0.47 |
| 1:A:384:ILE:HD12 | 1:A:384:ILE:N | 2.29 | 0.47 |
| 1:A:417:CYS:O | 1:A:421:ASN:HB2 | 2.14 | 0.47 |
| 1:A:427:PHE:CD1 | 1:A:428:ASN:N | 2.83 | 0.47 |
| 1:A:793:LEU:O | 1:A:797:LEU:HB2 | 2.14 | 0.47 |
| 1:A:905:VAL:O | 1:A:909:MET:HG2 | 2.15 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:967:TRP:O | 1:A:971:LEU:HD23 | 2.15 | 0.47 |
| 1:A:507:ALA:O | 1:A:509:GLY:N | 2.47 | 0.47 |
| 1:A:581:SER:HA | 1:A:584:PHE:CD2 | 2.49 | 0.47 |
| 1:A:428:ASN:OD1 | 1:A:431:LYS:HB2 | 2.15 | 0.47 |
| 1:A:885:GLY:O | 1:A:886:LEU:HG | 2.15 | 0.47 |
| 1:A:300:VAL:HG23 | 1:A:301:ALA:N | 2.30 | 0.47 |
| 1:A:524:ARG:HD3 | 1:A:588:GLU:O | 2.15 | 0.47 |
| 1:A:788:ILE:HG12 | 1:A:897:MET:CE | 2.45 | 0.47 |
| 1:A:133:ASP:N | 1:A:133:ASP:OD1 | 2.49 | 0.46 |
| 1:A:421:ASN:ND2 | 1:A:446:THR:HG22 | 2.30 | 0.46 |
| 1:A:700:MET:HE3 | 1:A:701:THR:H | 1.80 | 0.46 |
| 1:A:781:LEU:HD23 | 1:A:781:LEU:N | 2.31 | 0.46 |
| 1:A:901:LEU:HD22 | 1:A:944:HIS:CE1 | 2.50 | 0.46 |
| 1:A:267:ILE:HD13 | 2:A:1995:9TN:CAP | 2.45 | 0.46 |
| 1:A:606:GLU:HB2 | 1:A:741:SER:OG | 2.15 | 0.46 |
| 1:A:950:VAL:HG12 | 1:A:952:PRO:HD2 | 1.98 | 0.46 |
| 1:A:170:SER:CB | 1:A:218:LYS:H | 2.29 | 0.46 |
| 1:A:943:LEU:O | 1:A:947:ILE:HG23 | 2.15 | 0.46 |
| 1:A:992:LEU:CG | 1:A:993:GLU:H | 2.28 | 0.46 |
| 1:A:80:GLU:HB2 | 1:A:83:GLU:CB | 2.46 | 0.46 |
| 1:A:88:PHE:O | 1:A:92:PHE:CD2 | 2.68 | 0.46 |
| 1:A:249:LEU:HA | 1:A:252:LYS:HD3 | 1.98 | 0.46 |
| 1:A:765:ILE:O | 1:A:769:VAL:HG23 | 2.15 | 0.46 |
| 1:A:706:ASN:O | 1:A:709:PRO:HD2 | 2.16 | 0.46 |
| 1:A:118:ALA:CB | 1:A:726:VAL:HG22 | 2.46 | 0.46 |
| 1:A:928:TRP:HA | 1:A:934:LEU:CD1 | 2.45 | 0.46 |
| 1:A:473:SER:HA | 1:A:476:ARG:HG3 | 1.98 | 0.46 |
| 1:A:530:VAL:CG2 | 1:A:530:VAL:O | 2.64 | 0.46 |
| 1:A:84:THR:HG22 | 1:A:86:THR:H | 1.79 | 0.46 |
| 1:A:903:VAL:HA | 1:A:970:VAL:HG13 | 1.98 | 0.46 |
| 1:A:964:LEU:O | 1:A:968:LEU:HD12 | 2.15 | 0.46 |
| 1:A:879:ASP:O | 1:A:879:ASP:CG | 2.55 | 0.46 |
| 1:A:77:TRP:HE3 | 1:A:88:PHE:HZ | 1.63 | 0.46 |
| 1:A:122:TYR:CE2 | 1:A:726:VAL:HG21 | 2.46 | 0.45 |
| 1:A:80:GLU:N | 1:A:83:GLU:HG2 | 2.31 | 0.45 |
| 1:A:505:ARG:O | 1:A:507:ALA:N | 2.50 | 0.45 |
| 1:A:244:GLN:H | 1:A:244:GLN:HG2 | 1.67 | 0.45 |
| 1:A:50:TRP:CE3 | 1:A:54:ILE:HD11 | 2.51 | 0.45 |
| 1:A:668:GLU:OE1 | 1:A:671:ARG:HD3 | 2.16 | 0.45 |
| 1:A:90:GLU:N | 1:A:91:PRO:HD2 | 2.30 | 0.45 |
| 1:A:965:THR:HA | 1:A:968:LEU:HD12 | 1.97 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:177:GLN:HA | 1:A:212:THR:CG2 | 2.46 | 0.45 |
| 1:A:310:GLY:HA2 | 1:A:797:LEU:HD22 | 1.98 | 0.45 |
| 1:A:80:GLU:CD | 1:A:83:GLU:OE1 | 2.55 | 0.45 |
| 1:A:829:ILE:HD13 | 1:A:837:TYR:HD2 | 1.81 | 0.45 |
| 1:A:265:SER:O | 1:A:269:VAL:HG23 | 2.16 | 0.45 |
| 1:A:427:PHE:CD2 | 1:A:464:LYS:HB3 | 2.51 | 0.45 |
| 1:A:659:ASP:OD1 | 1:A:683:HIS:CE1 | 2.69 | 0.45 |
| 1:A:128:LYS:HG3 | 1:A:152:GLU:O | 2.16 | 0.45 |
| 1:A:45:GLU:HG3 | 1:A:45:GLU:O | 2.17 | 0.45 |
| 1:A:701:THR:HA | 1:A:718:ILE:O | 2.17 | 0.45 |
| 1:A:988:ALA:N | 1:A:989:ARG:NH2 | 2.65 | 0.45 |
| 1:A:436:LYS:HB3 | 1:A:443:THR:HG21 | 1.98 | 0.45 |
| 1:A:858:TYR:CE1 | 1:A:866:THR:O | 2.70 | 0.45 |
| 1:A:769:VAL:HA | 2:A:1995:9TN:HAA1 | 1.99 | 0.45 |
| 1:A:788:ILE:HD13 | 1:A:789:PRO:HD2 | 2.00 | 0.45 |
| 1:A:311:LEU:HB3 | 1:A:312:PRO:HD3 | 1.98 | 0.44 |
| 1:A:988:ALA:HA | 1:A:992:LEU:CB | 2.45 | 0.44 |
| 1:A:163:ILE:HB | 1:A:208:LEU:HB2 | 1.99 | 0.44 |
| 1:A:390:ALA:HA | 1:A:434:TYR:CD2 | 2.32 | 0.44 |
| 1:A:416:ILE:HD11 | 1:A:566:THR:HG22 | 2.00 | 0.44 |
| 1:A:541:VAL:O | 1:A:545:ILE:HG13 | 2.18 | 0.44 |
| 1:A:799:THR:HG21 | 1:A:905:VAL:HG13 | 1.99 | 0.44 |
| 1:A:913:LEU:HB3 | 1:A:922:LEU:HD21 | 1.99 | 0.44 |
| 1:A:391:PRO:HB3 | 1:A:450:GLU:CB | 2.47 | 0.44 |
| 1:A:564:LEU:N | 1:A:564:LEU:HD23 | 2.32 | 0.44 |
| 1:A:80:GLU:H | 1:A:83:GLU:CD | 2.21 | 0.44 |
| 1:A:25:THR:HA | 1:A:132:ALA:HB3 | 1.99 | 0.44 |
| 1:A:811:PRO:HA | 1:A:812:PRO:HD3 | 1.73 | 0.44 |
| 1:A:38:HIS:CG | 1:A:143:ARG:NH1 | 2.86 | 0.44 |
| 1:A:53:VAL:HA | 1:A:56:GLN:CG | 2.48 | 0.44 |
| 1:A:89:VAL:HG23 | 1:A:90:GLU:N | 2.33 | 0.44 |
| 1:A:577:VAL:HB | 1:A:583:ARG:HH21 | 1.83 | 0.44 |
| 1:A:65:LEU:HD23 | 1:A:65:LEU:HA | 1.76 | 0.44 |
| 1:A:527:TYR:HD1 | 1:A:536:PRO:HA | 1.82 | 0.44 |
| 1:A:823:SER:HA | 1:A:824:PRO:HD2 | 1.82 | 0.44 |
| 1:A:487:PHE:C | 1:A:487:PHE:CD1 | 2.91 | 0.43 |
| 1:A:642:PHE:CD2 | 1:A:648:VAL:HG21 | 2.53 | 0.43 |
| 1:A:772:VAL:CG2 | 2:A:1995:9TN:HAA1 | 2.44 | 0.43 |
| 1:A:457:THR:HG21 | 1:A:474:VAL:HG11 | 2.00 | 0.43 |
| 1:A:964:LEU:H | 1:A:964:LEU:CD2 | 2.20 | 0.43 |
| 1:A:196:ASP:HA | 1:A:197:PRO:HD3 | 1.78 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:59:ASP:OD1 | 1:A:61:LEU:N | 2.51 | 0.43 |
| 1:A:608:MET:HB2 | 1:A:608:MET:HE3 | 1.73 | 0.43 |
| 1:A:155:VAL:HG22 | 1:A:216:ALA:HA | 1.99 | 0.43 |
| 1:A:501:ALA:O | 1:A:502:LYS:HG2 | 2.18 | 0.43 |
| 1:A:558:THR:HG22 | 1:A:634:ALA:HB1 | 2.00 | 0.43 |
| 1:A:69:ALA:HB2 | 1:A:94:ILE:CG2 | 2.48 | 0.43 |
| 1:A:235:ILE:HG23 | 1:A:709:PRO:CG | 2.48 | 0.43 |
| 1:A:882:HIS:O | 1:A:882:HIS:CD2 | 2.72 | 0.43 |
| 1:A:390:ALA:CA | 1:A:434:TYR:HD2 | 2.22 | 0.43 |
| 1:A:813:ASP:O | 1:A:816:ILE:HG13 | 2.19 | 0.43 |
| 1:A:93:VAL:HA | 1:A:96:LEU:HD11 | 2.01 | 0.43 |
| 1:A:166:LEU:HD11 | 1:A:222:ILE:HB | 2.01 | 0.43 |
| 1:A:189:LYS:HD2 | 1:A:205:LYS:O | 2.18 | 0.43 |
| 1:A:290:ARG:HD3 | 1:A:290:ARG:O | 2.18 | 0.43 |
| 1:A:425:LEU:CD1 | 1:A:443:THR:HG23 | 2.48 | 0.43 |
| 1:A:69:ALA:HB2 | 1:A:94:ILE:HG21 | 2.01 | 0.43 |
| 1:A:538:THR:O | 1:A:541:VAL:HG23 | 2.17 | 0.43 |
| 1:A:174:ARG:CZ | 1:A:188:ILE:HD11 | 2.49 | 0.43 |
| 1:A:388:THR:HB | 1:A:390:ALA:H | 1.84 | 0.43 |
| 1:A:837:TYR:CB | 2:A:1995:9TN:HAC2 | 2.49 | 0.42 |
| 1:A:209:PHE:O | 1:A:212:THR:OG1 | 2.36 | 0.42 |
| 1:A:249:LEU:O | 1:A:250:GLN:C | 2.57 | 0.42 |
| 1:A:567:ARG:O | 1:A:570:PRO:HD3 | 2.19 | 0.42 |
| 1:A:250:GLN:O | 1:A:254:ASP:OD1 | 2.38 | 0.42 |
| 1:A:606:GLU:OE2 | 1:A:739:ASN:ND2 | 2.51 | 0.42 |
| 1:A:243:GLU:HA | 1:A:243:GLU:OE1 | 2.20 | 0.42 |
| 1:A:51:GLU:O | 1:A:55:GLU:HG3 | 2.20 | 0.42 |
| 1:A:715:GLU:C | 1:A:716:ILE:HG13 | 2.39 | 0.42 |
| 1:A:178:SER:HB3 | 1:A:183:GLU:O | 2.19 | 0.42 |
| 1:A:400:LYS:O | 1:A:402:ILE:HG13 | 2.19 | 0.42 |
| 1:A:679:VAL:HG13 | 1:A:680:GLU:O | 2.19 | 0.42 |
| 1:A:174:ARG:HB3 | 1:A:186:SER:HB2 | 2.02 | 0.42 |
| 1:A:760:PHE:HE1 | 1:A:761:ILE:HG13 | 1.83 | 0.42 |
| 1:A:530:VAL:O | 1:A:533:THR:HG23 | 2.20 | 0.42 |
| 1:A:788:ILE:HB | 1:A:791:GLN:NE2 | 2.35 | 0.42 |
| 1:A:176:ASP:O | 1:A:212:THR:HG22 | 2.20 | 0.42 |
| 1:A:837:TYR:HB3 | 2:A:1995:9TN:HAC2 | 2.01 | 0.42 |
| 1:A:883:PHE:N | 1:A:883:PHE:CD1 | 2.87 | 0.42 |
| 1:A:986:PHE:CD1 | 1:A:986:PHE:O | 2.73 | 0.42 |
| 1:A:777:LEU:O | 1:A:781:LEU:HG | 2.20 | 0.42 |
| 1:A:833:LEU:O | 1:A:836:ARG:HB2 | 2.19 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:837:TYR:HD1 | 1:A:840:ILE:HD12 | 1.85 | 0.42 |
| 1:A:339:VAL:O | 1:A:342:LEU:HB3 | 2.20 | 0.42 |
| 1:A:791:GLN:HB3 | 1:A:901:LEU:HD12 | 2.02 | 0.42 |
| 1:A:345:THR:HG22 | 1:A:716:ILE:CD1 | 2.50 | 0.41 |
| 1:A:461:ASN:ND2 | 1:A:462:LEU:HD12 | 2.35 | 0.41 |
| 1:A:668:GLU:HA | 1:A:668:GLU:OE1 | 2.20 | 0.41 |
| 1:A:788:ILE:HG23 | 1:A:789:PRO:HD2 | 2.01 | 0.41 |
| 1:A:209:PHE:CE1 | 1:A:231:GLU:HG3 | 2.55 | 0.41 |
| 2:A:1995:9TN:OAL | 2:A:1995:9TN:CAG | 2.68 | 0.41 |
| 1:A:368:ILE:HD13 | 1:A:410:LEU:HD23 | 2.01 | 0.41 |
| 1:A:872:HIS:H | 1:A:872:HIS:CD2 | 2.38 | 0.41 |
| 1:A:917:SER:OG | 1:A:920:GLN:HB2 | 2.20 | 0.41 |
| 1:A:939:LEU:O | 1:A:943:LEU:HG | 2.20 | 0.41 |
| 1:A:366:MET:HE2 | 1:A:382:PHE:CG | 2.55 | 0.41 |
| 1:A:606:GLU:OE1 | 1:A:606:GLU:N | 2.54 | 0.41 |
| 1:A:826:GLU:O | 1:A:826:GLU:HG3 | 2.20 | 0.41 |
| 1:A:836:ARG:O | 1:A:840:ILE:HG13 | 2.20 | 0.41 |
| 1:A:988:ALA:HB3 | 1:A:989:ARG:NH2 | 2.35 | 0.41 |
| 1:A:36:TYR:CG | 1:A:147:PRO:HG2 | 2.55 | 0.41 |
| 1:A:382:PHE:CD1 | 1:A:382:PHE:N | 2.88 | 0.41 |
| 1:A:857:MET:HA | 1:A:864:GLY:CA | 2.49 | 0.41 |
| 1:A:501:ALA:O | 1:A:502:LYS:CB | 2.67 | 0.41 |
| 1:A:347:VAL:HA | 1:A:620:ARG:O | 2.20 | 0.41 |
| 1:A:452:MET:O | 1:A:453:ASN:C | 2.58 | 0.41 |
| 1:A:64:ILE:HG13 | 1:A:64:ILE:H | 1.53 | 0.41 |
| 1:A:638:ARG:CG | 1:A:638:ARG:HH11 | 2.23 | 0.41 |
| 1:A:857:MET:SD | 1:A:865:VAL:HG23 | 2.60 | 0.41 |
| 1:A:180:LEU:HA | 1:A:180:LEU:HD12 | 1.85 | 0.41 |
| 1:A:508:VAL:HB | 1:A:511:LYS:HE2 | 2.03 | 0.41 |
| 1:A:518:PRO:HB3 | 1:A:549:ILE:CD1 | 2.50 | 0.41 |
| 1:A:487:PHE:CZ | 1:A:492:LYS:HA | 2.56 | 0.41 |
| 1:A:653:TYR:OH | 1:A:672:ARG:NH2 | 2.54 | 0.41 |
| 1:A:879:ASP:OD2 | 1:A:882:HIS:CD2 | 2.74 | 0.41 |
| 1:A:883:PHE:N | 1:A:883:PHE:HD1 | 2.19 | 0.41 |
| 1:A:118:ALA:HB1 | 1:A:726:VAL:HG22 | 2.03 | 0.40 |
| 1:A:923:MET:HE2 | 1:A:924:ARG:HH11 | 1.85 | 0.40 |
| 1:A:668:GLU:O | 1:A:671:ARG:HG2 | 2.21 | 0.40 |
| 1:A:771:GLU:O | 1:A:775:ILE:HG12 | 2.22 | 0.40 |
| 1:A:50:TRP:CE3 | 1:A:50:TRP:HA | 2.57 | 0.40 |
| 1:A:620:ARG:NH1 | 1:A:622:ILE:HD11 | 2.37 | 0.40 |

There are no symmetry-related clashes.

## 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 | 992/994 (100%) | 935 (94%) | 47 (5%) | 10 (1%) | 15 49 |

All (10) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 866 | THR |
| 1 | A | 506 | ALA |
| 1 | A | 508 | VAL |
| 1 | A | 993 | GLU |
| 1 | A | 992 | LEU |
| 1 | A | 502 | LYS |
| 1 | A | 2 | GLU |
| 1 | A | 335 | SER |
| 1 | A | 865 | VAL |
| 1 | A | 42 | PRO |

### 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 | 840/840 (100%) | 690 (82%) | 150 (18%) | 2 8 |

All (150) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 19 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 22 | THR |
| 1 | A | 25 | THR |
| 1 | A | 48 | SER |
| 1 | A | 53 | VAL |
| 1 | A | 59 | ASP |
| 1 | A | 60 | LEU |
| 1 | A | 61 | LEU |
| 1 | A | 62 | VAL |
| 1 | A | 64 | ILE |
| 1 | A | 65 | LEU |
| 1 | A | 79 | GLU |
| 1 | A | 82 | GLU |
| 1 | A | 85 | ILE |
| 1 | A | 86 | THR |
| 1 | A | 96 | LEU |
| 1 | A | 106 | VAL |
| 1 | A | 110 | ARG |
| 1 | A | 120 | LYS |
| 1 | A | 121 | GLU |
| 1 | A | 128 | LYS |
| 1 | A | 133 | ASP |
| 1 | A | 135 | LYS |
| 1 | A | 137 | VAL |
| 1 | A | 138 | GLN |
| 1 | A | 143 | ARG |
| 1 | A | 146 | VAL |
| 1 | A | 153 | VAL |
| 1 | A | 158 | LYS |
| 1 | A | 171 | THR |
| 1 | A | 177 | GLN |
| 1 | A | 179 | ILE |
| 1 | A | 180 | LEU |
| 1 | A | 185 | VAL |
| 1 | A | 187 | VAL |
| 1 | A | 205 | LYS |
| 1 | A | 212 | THR |
| 1 | A | 214 | ILE |
| 1 | A | 225 | THR |
| 1 | A | 228 | VAL |
| 1 | A | 242 | THR |
| 1 | A | 243 | GLU |
| 1 | A | 244 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 245 | ASP |
| 1 | A | 247 | THR |
| 1 | A | 252 | LYS |
| 1 | A | 267 | ILE |
| 1 | A | 273 | LEU |
| 1 | A | 281 | ASP |
| 1 | A | 284 | HIS |
| 1 | A | 288 | TRP |
| 1 | A | 290 | ARG |
| 1 | A | 293 | ILE |
| 1 | A | 298 | ILE |
| 1 | A | 321 | LEU |
| 1 | A | 334 | ARG |
| 1 | A | 345 | THR |
| 1 | A | 348 | ILE |
| 1 | A | 353 | THR |
| 1 | A | 358 | THR |
| 1 | A | 370 | ASP |
| 1 | A | 379 | LEU |
| 1 | A | 383 | SER |
| 1 | A | 385 | THR |
| 1 | A | 387 | SER |
| 1 | A | 388 | THR |
| 1 | A | 396 | LEU |
| 1 | A | 399 | ASP |
| 1 | A | 415 | THR |
| 1 | A | 426 | ASP |
| 1 | A | 428 | ASN |
| 1 | A | 435 | GLU |
| 1 | A | 441 | THR |
| 1 | A | 446 | THR |
| 1 | A | 454 | VAL |
| 1 | A | 457 | THR |
| 1 | A | 458 | GLU |
| 1 | A | 466 | GLU |
| 1 | A | 477 | GLN |
| 1 | A | 480 | LYS |
| 1 | A | 484 | THR |
| 1 | A | 499 | SER |
| 1 | A | 502 | LYS |
| 1 | A | 503 | SER |
| 1 | A | 508 | VAL |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 514 | VAL |
| 1 | A | 521 | VAL |
| 1 | A | 529 | ARG |
| 1 | A | 530 | VAL |
| 1 | A | 533 | THR |
| 1 | A | 541 | VAL |
| 1 | A | 554 | THR |
| 1 | A | 556 | ARG |
| 1 | A | 576 | MET |
| 1 | A | 589 | THR |
| 1 | A | 594 | VAL |
| 1 | A | 596 | VAL |
| 1 | A | 608 | MET |
| 1 | A | 615 | ARG |
| 1 | A | 631 | THR |
| 1 | A | 635 | ILE |
| 1 | A | 638 | ARG |
| 1 | A | 648 | VAL |
| 1 | A | 651 | ARG |
| 1 | A | 663 | LEU |
| 1 | A | 671 | ARG |
| 1 | A | 693 | SER |
| 1 | A | 698 | THR |
| 1 | A | 701 | THR |
| 1 | A | 705 | VAL |
| 1 | A | 706 | ASN |
| 1 | A | 722 | SER |
| 1 | A | 732 | GLU |
| 1 | A | 733 | MET |
| 1 | A | 741 | SER |
| 1 | A | 760 | PHE |
| 1 | A | 778 | THR |
| 1 | A | 788 | ILE |
| 1 | A | 793 | LEU |
| 1 | A | 795 | VAL |
| 1 | A | 797 | LEU |
| 1 | A | 828 | LEU |
| 1 | A | 833 | LEU |
| 1 | A | 838 | MET |
| 1 | A | 848 | THR |
| 1 | A | 857 | MET |
| 1 | A | 858 | TYR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 860 | GLU |
| 1 | A | 867 | TYR |
| 1 | A | 868 | HIS |
| 1 | A | 869 | GLN |
| 1 | A | 878 | GLU |
| 1 | A | 880 | HIS |
| 1 | A | 886 | LEU |
| 1 | A | 889 | GLU |
| 1 | A | 892 | GLU |
| 1 | A | 898 | THR |
| 1 | A | 903 | VAL |
| 1 | A | 906 | THR |
| 1 | A | 908 | GLU |
| 1 | A | 916 | LEU |
| 1 | A | 923 | MET |
| 1 | A | 925 | MET |
| 1 | A | 946 | LEU |
| 1 | A | 962 | LEU |
| 1 | A | 964 | LEU |
| 1 | A | 971 | LEU |
| 1 | A | 974 | SER |
| 1 | A | 975 | LEU |
| 1 | A | 989 | ARG |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 138 | GLN |
| 1 | A | 213 | ASN |
| 1 | A | 398 | ASN |
| 1 | A | 406 | GLN |
| 1 | A | 472 | ASN |
| 1 | A | 683 | HIS |
| 1 | A | 759 | GLN |
| 1 | A | 872 | HIS |
| 1 | A | 882 | HIS |
| 1 | A | 944 | HIS |
| 1 | A | 966 | GLN |

### 5.3.3 RNA

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates

There are no carbohydrates in this entry.

## 5.6 Ligand geometry

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 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 | $\#\|Z\| > 2$ |
| 2 | 9TN | A | 1995 | 1 | 39,43,43 | 2.20 | 9 (23%) | 42,66,66 | 1.67 | 6 (14%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 2 | 9TN | A | 1995 | 1 | - | 10/26/92/92 | 0/3/3/3 |

All (9) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 2 | A | 1995 | 9TN | OAV-CBF | 8.84 | 1.48 | 1.35 |
| 2 | A | 1995 | 9TN | OAV-CBH | 6.72 | 1.57 | 1.46 |
| 2 | A | 1995 | 9TN | CAW-CBM | -2.73 | 1.49 | 1.54 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 2 | A | 1995 | 9TN | CBO-CBJ | 2.70 | 1.57 | 1.53 |
| 2 | A | 1995 | 9TN | OAY-CBM | -2.61 | 1.43 | 1.48 |
| 2 | A | 1995 | 9TN | CBN-CBI | 2.58 | 1.58 | 1.54 |
| 2 | A | 1995 | 9TN | OAZ-CBL | -2.52 | 1.40 | 1.44 |
| 2 | A | 1995 | 9TN | OAX-CBC | 2.21 | 1.40 | 1.34 |
| 2 | A | 1995 | 9TN | OAN-CBO | -2.15 | 1.39 | 1.43 |

All (6) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 2 | A | 1995 | 9TN | OAY-CBA-OAH | -5.03 | 114.37 | 123.61 |
| 2 | A | 1995 | 9TN | OAY-CBA-CAC | 4.38 | 118.65 | 110.68 |
| 2 | A | 1995 | 9TN | OAK-CBF-CBK | -4.05 | 124.21 | 128.28 |
| 2 | A | 1995 | 9TN | OAV-CBF-OAK | 3.17 | 125.83 | 121.62 |
| 2 | A | 1995 | 9TN | CAT-CAU-CBC | -2.83 | 103.34 | 113.62 |
| 2 | A | 1995 | 9TN | CBL-OAZ-CBD | 2.05 | 121.44 | 117.07 |

There are no chirality outliers.

All (10) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 2 | A | 1995 | 9TN | CAA-CAO-CBB-CBD |
| 2 | A | 1995 | 9TN | CAC-CBA-OAY-CBM |
| 2 | A | 1995 | 9TN | CAG-CBM-OAY-CBA |
| 2 | A | 1995 | 9TN | CAW-CBM-OAY-CBA |
| 2 | A | 1995 | 9TN | CBN-CBM-OAY-CBA |
| 2 | A | 1995 | 9TN | CBE-CBL-OAZ-CBD |
| 2 | A | 1995 | 9TN | OAH-CBA-OAY-CBM |
| 2 | A | 1995 | 9TN | CAU-CBC-OAX-CBI |
| 2 | A | 1995 | 9TN | OAI-CBC-OAX-CBI |
| 2 | A | 1995 | 9TN | CAP-CAQ-CAR-CAS |

There are no ring outliers.

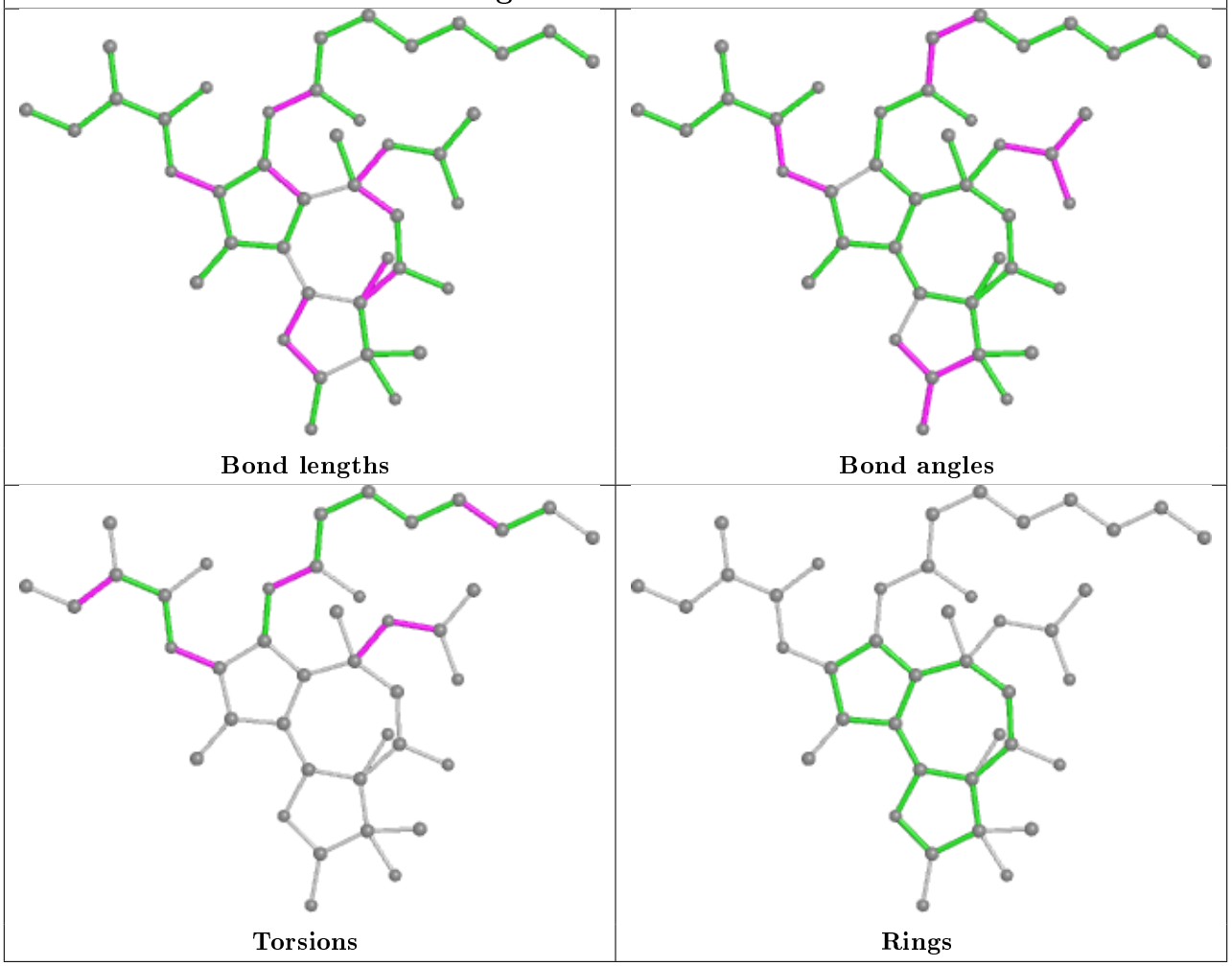
1 monomer is involved in 21 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 2 | A | 1995 | 9TN | 21 | 0 |

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

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

**Ligand 9TN A 1995**




## 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 | 994/994 (100%) | -0.15 | 9 (0%) 84 69 | 67, 89, 158, 319 | 0 |

All (9) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | A | 81 | GLY | 3.9 |
| 1 | A | 184 | SER | 3.0 |
| 1 | A | 45 | GLU | 3.0 |
| 1 | A | 46 | GLY | 2.9 |
| 1 | A | 80 | GLU | 2.9 |
| 1 | A | 106 | VAL | 2.8 |
| 1 | A | 284 | HIS | 2.7 |
| 1 | A | 1 | MET | 2.5 |
| 1 | A | 84 | THR | 2.4 |

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

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

## 6.3 Carbohydrates

There are no carbohydrates in this entry.

## 6.4 Ligands

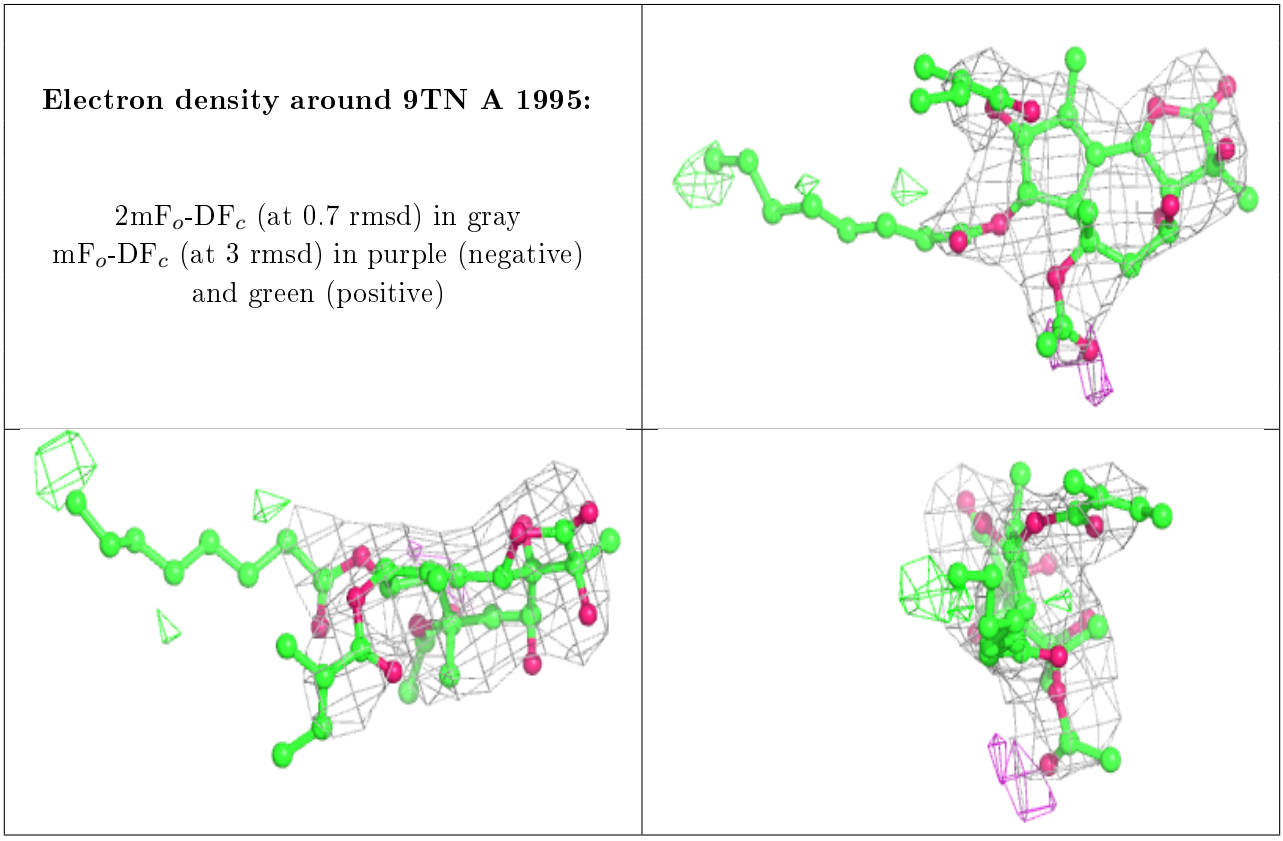
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, $95^{th}$ percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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 |
|---|---|---|---|---|---|---|---|---|
| 4 | MG | A | 1997 | 1/1 | 0.53 | 0.45 | 82,82,82,82 | 0 |
| 3 | K | A | 1996 | 1/1 | 0.59 | 0.61 | 166,166,166,166 | 0 |
| 2 | 9TN | A | 1995 | 41/41 | 0.88 | 0.39 | 92,114,135,164 | 41 |

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

**Electron density around 9TN A 1995:**

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



## 6.5 Other polymers (i)

There are no such residues in this entry.