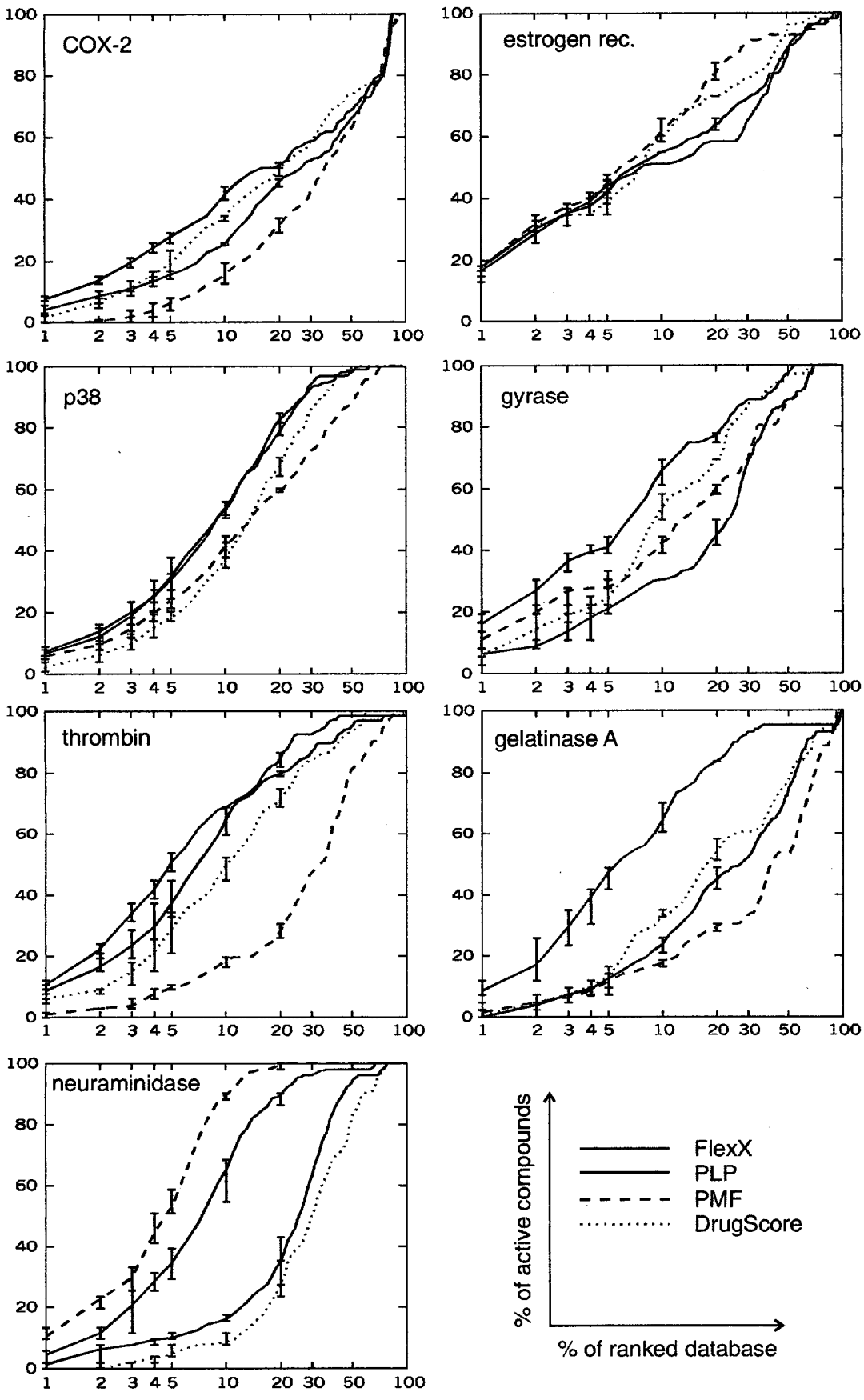

Figure Caption:

The seven panels show the same plots of the percentage of active compounds retrieved versus the percentage of the database as in Figure 1 in the paper, but this time seven random subsets of 1000 WDI compounds have been chosen as the database of inactive compounds. This permits to estimate the fluctuations that are to be expected in virtual screening experiments. The lines correspond to the average enrichment of the seven 1000-compound-databases, the error bars give the maximum deviation at each percentile. The fact that the curves in these plots are generally well separated even when the error bars are considered allows the conclusion that the results in the paper are statistically significant. Note that the average curves cannot be identical to those in Figure 1 for the full database due to its different size (see also Ref.56 in the paper).

Ligand structures:

COX-2

CS(=O)(=O)Nc1ccc(cc1OC2CCCCC2)N(=O)=O
CS(=O)(=O)Nc1cc2CCC(=O)c2cc1Oc3ccc(F)cc3F
CS(=O)(=O)Nc1cc2CCC(=O)c2cc1Sc3ccc(F)cc3F
CS(=O)(=O)Nc1ccc(cc1Sc2ccc(F)cc2F)C(=O)N
CS(=O)(=O)Nc1ccc(cc1Sc2ccc(Cl)cc2Cl)S(=O)(=O)N
COc1ccc(cc1)c2sc(nc2c3ccc(cc3)S(=O)(=O)C)c4ccccc4Cl
COc1ccc(cc1)c2sc(nc2c3ccc(SC)cc3)c4ccccc4Cl
CS(=O)(=O)c1ccc(cc1)n2nc(cc2c3ccc(F)cc3)C(F)(F)F
CS(=O)(=O)c1ccc(cc1)n2nc(cc2c3ccc(Br)cc3)C(F)(F)F
Cc1ccc(cc1)c2cc(nn2c3ccc(cc3)S(=O)(=O)N)C(F)(F)F
CS(=O)(=O)c1ccc(cc1)c2snnc2c3ccc(F)cc3
CC(=O)c1nc(c(o1)c2ccc(c(F)c2)S(=O)(=O)N)c3ccccc3
Cc1nc(C2CCCCC2)c(o1)c3ccc(c(F)c3)S(=O)(=O)N
CS(=O)(=O)c1ccc(cc1)c2[nH]c(nc2C3CCCCC3)C(F)(F)F
CS(=O)(=O)c1ccc(cc1)c2[nH]c(nc2c3ccc(F)cc3)C(F)(F)F
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)OC32CC3)c4ccccc4
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)OC32CCCC3)c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2cnn(Cc3ccccc3)c(=O)c2c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2nn(Cc3ccccc3)c(c2c4ccc(F)cc4)C(F)(F)F
NS(=O)(=O)c1ccc(cc1)c2c(CO)onc2c3ccccc3
CS(=O)(=O)c1ccc(cc1)c2cc(Cl)nn2c3ccc(F)cc3
NS(=O)(=O)c1ccc(cc1)c2cc(nn2c3ccc(F)cc3)C(F)(F)F
NS(=O)(=O)c1ccc(cc1)n2nc(cc2c3nc4cccc(F)c4s3)C(F)F
NS(=O)(=O)c1ccc(cc1)n2cccc2c3ccc(F)cc3
Cc1ccc(cc1)n2cccc2c3ccc(cc3)S(=O)(=O)C
NS(=O)(=O)c1ccc(cc1)c2coc(=O)n2c3ccc(Cl)cc3
NS(=O)(=O)c1ccc(cc1)c2coc(=O)n2c3ccc(F)cc3
CS(=O)(=O)c1ccc(cc1)n2cc(nc2c3cccnc3)C(F)(F)F
Cc1cncc(c1)c2nc(cn2c3ccc(cc3)S(=O)(=O)N)C(F)(F)F
NS(=O)(=O)c1ccc(cc1)c2cc(F)c(F)cc2c3ccc(F)c(Cl)c3
CS(=O)(=O)c1ccc(cc1)c2cc(F)c(F)cc2c3ccc(F)c(Cl)c3
COc1nc(c2ccc(F)cc2)c(cc1C#N)c3ccc(cc3)S(=O)(=O)C
COc1cc(c2ccc(cc2)S(=O)(=O)C)c(c3ccc(F)cc3)c(n1)C(F)(F)F
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)CC2)c3cncc(Cl)c3
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)CC2)c3ccc(Cl)cn3
CS(=O)(=O)c1ccc(cc1)C(=C(CO)c2ccc(F)c(F)c2)CO
COC(=O)C(=C(C)c1ccc(cc1)S(=O)(=O)C)c2ccccc2
CN(C)C(=O)C(=C(C)c1ccc(cc1)S(=O)(=O)C)c2ccccc2

CCOC(=O)C(=C(c1ccc(F)cc1)c2ccc(cc2)S(=O)(=O)C)CCO
CS(=O)(=O)c1ccc(cc1)C(=C2CCCC2)c3ccc(F)cc3
NS(=O)(=O)c1ccc(cc1)C(=C2CCOC2=O)c3ccc(Cl)cc3
CC1(C)CC(=C(c2ccc(F)cc2)c3ccc(cc3)S(=O)(=O)C)C(=O)O1
CS(=O)(=O)c1ccc(cc1)c2cc(C#N)ccc2Oc3ccccc3
CCC1OC(=O)C(=C1c2ccc(cc2)S(=O)(=O)C)Sc3ccccc3
CCC1OC(=O)C(=C1c2ccc(cc2)S(=O)(=O)C)C(=O)c3ccccc3
CCC1OC(=O)C(=C1c2ccc(cc2)S(=O)(=O)C)OC(C)CBr
CS(=O)(=O)c1ccc(cc1)c2cn[nH]c(=O)c2Oc3ccc(F)cc3
CN(O)C(=O)Cc1nc(c(o1)c2ccc(cc2)S(=O)(=O)C)c3ccc(F)cc3
COC1(CCOCC1)c2ccc(OCc3nc(c(o3)c4ccc(cc4)S(=O)(=O)C)c5ccc(F)cc5)cc2F
COC1(CCOCC1)c2ccc(OCc3cc(c4ccc(Cl)cc4)n(n3)c5ccc(cc5)S(=O)(=O)C)cc2F
COc1cccc(SCc2cc(c3ccc(Cl)cc3)n(n2)c4ccc(cc4)S(=O)(=O)C)c1
CS(=O)(=O)c1ccc(cc1)c2c(nc3sccn23)c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2c(sc3ncnn23)c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2cc3ccccc3n2c4ccccc4
COc1ccc2c3n(nc(C(F)F)c3ccc2c1)c4ccc(cc4)S(=O)(=O)C
COc1ccc2n(C(=O)c3ccc(Cl)cc3)c(C)c(CC(=O)O)c2c1
COc1ccc2n(C(=O)c3c(Cl)cc(Cl)cc3Cl)c(C)c(CC(=O)O)c2c1
COc1ccc2n(Cc3ccc(Br)cc3)c(C)c(CC(=O)O)c2c1
CC(C(=O)O)c1c(C)n(Cc2ccc(Br)cc2)c3ccc(Br)cc13
CC(C(=O)O)c1c(C)n(Cc2ccc(Br)cc2)c3ccc(Br)cc13
COc1ccc2n(Cc3ccc(Br)cc3)c(C)c(CC4(CC(=O)O)CC4)c2c1
COc1ccc2n(C(=O)c3ccc(Cl)cc3)c(C)c(Cc4nc(cs4)c5ccc(Br)cc5)c2c1
Cc1c(CC(=O)O)c2ccccc2c1C(=O)c3ccccc3
CSc1ccc(C=C2C(=C(CC(=O)O)c3cc(F)ccc23)C)cc1
CSc1ccc(C=C2C(=C(CC(=O)C3=C(O)COC3=O)c4cc(F)ccc24)C)cc1
Cc1cc(CC(=O)O)n(C)c1C(=O)c2ccc(Cl)cc2
Cc1cc(Cc2ccc(=O)[nH]n2)n(C)c1C(=O)c3ccc(Cl)cc3
OC(=O)Cc1ccccc1Nc2c(Cl)cc(O)cc2Cl
Cc1ccc(Nc2c(F)c(F)cc(F)c2F)c(CC(=O)O)c1
CCc1cccc2c3CCOC(CC)(CC(=O)O)c3[nH]c12
CCc1cccc2c3C(=O)COC(CC)(CC(=O)O)c3[nH]c12
CCc1cccc2c3C(=O)CCC(CC)(CC(=O)O)c3[nH]c12
CC(C(=O)O)c1ccc(c(F)c1)c2ccccc2
CCOc1cc(OCC)cc(c1)c2ccc(cc2F)C(C)C(=O)O
CN1C(=C(O)c2ccccc2S1(=O)=O)C(=O)Nc3ncc(C)s3
CC(C)S(=O)(=O)C1C(=O)N(Cc2ccccc2)C(=O)c3cc(Cl)ccc13
CC(C)S(=O)(=O)c1c(O)n(Cc2ccccc2)c(=O)c3cc(Cl)ccc13
CCSc1nnc(s1)c2cc(c(O)c(c2)C(C)(C)C)C(C)(C)C
CCC1COc2c1cc(cc2C(C)(C)C)C(=O)CCCC#C
CCC1COc2c1cc(cc2C(C)(C)C)C(=O)CCCC3CC3
CCCC(=O)c1cc2C(CC)COc2c(c1)C(C)(C)C
CCCc1cc2cc(cnc2n1CC3CCCCC3)S(=O)(=O)C
CCCCc1cc2nc(cnc2n1Cc3ccc(F)cc3)S(=O)(=O)C
CCCC1=Cc2cc(ccc2C1=Cc3ccc(F)cc3)S(=O)(=O)C
CCCC1=Cc2cc(ccc2C1=Cc3ccc(F)cc3)S(=O)(=O)C
O=N(=O)c1ccc2n(c(C=Cc3ccccc3)nc2c1)c4ccccc4
NC(=O)N1C(=O)C(=C(O)c2cccs2)c3cc(ccc13)c4ccco4
CS(=O)(=O)Nc1ccc(Oc2ccc(F)cc2)s1
COc1ccc(cc1)C(=O)c2cccc(Cc3ccc(=O)[nH]n3)c2C
CS(=O)(=O)c1ccc2c(C(=O)c3ccc(F)cc3)c(C#N)ccc2c1
CSc1ccc2OC(C(=Cc2c1)C(=O)O)C(F)(F)F
CCc1cc2OC(C(=Cc2cc1Cl)C(=O)O)C(F)(F)F
CCc1cc2OC(C(=Cc2cc1Cl)C(=O)O)C(F)(F)F
CC1(C)C(=O)C(=C1c2ccc(cc2)S(=O)(=O)C)c3ccccc3
CC1(C)C(=O)C(=C1c2ccccc2)c3ccc(cc3)S(=O)(=O)C
CS(=O)(=O)c1ccc(cc1)c2cc(Br)sc2c3ccc(F)cc3
Cc1ccc(cn1)c2ncc(Cl)cc2c3ccc(cc3)S(=O)(=O)N

CS(=O)(=O)c1ccc(cc1)c2cc(Cl)cnc2c3ccc(nc3)C4CC4
Cc1ccc(cn1)c2ncc(Cl)cc2c3ccc(cc3)S(=O)(=O)C
Cc1cncc(c1)c2ncc(Cl)cc2c3ccc(cc3)S(=O)(=O)C
Cc1ccncc1c2ncc(Cl)cc2c3ccc(cc3)S(=O)(=O)C
Cc1ncccc1c2ncc(Cl)cc2c3ccc(cc3)S(=O)(=O)C
CS(=O)(=O)c1ccc(cc1)C2=C(C(=C)C2)c3ccccc3
CCC1C(O)C(=C1c2ccc(cc2)S(=O)(=O)C)c3ccccc3
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)C32CCCC3)c4ccccc4
CS(=O)(=O)c1ccc(cc1)C2=C(CC3(CC3)C2)c4ccc(F)cc4
CS(=O)(=O)Nc1cc2CCC(=O)c2cc1Sc3ncc(Cl)cc3Cl
CCc1csc(Sc2cc3C(=O)CCc3cc2NS(=O)(=O)C)n1
CCc1csc(Sc2cc3C(=O)OCc3cc2NS(=O)(=O)C)n1
CC(C)OC1=C(c2ccc(cc2)S(=O)(=O)C)C(C)(C)OC1=O
CS(=O)(=O)c1ccc(cc1)c2c(nc3sccn23)c4ccc(F)cc4
Cc1cn2c(c(nc2s1)c3ccccc3)c4ccc(cc4)S(=O)(=O)C
Cc1csc2nc(c(c3ccc(cc3)S(=O)(=O)C)n12)c4ccccc4
CSc1ccc(cc1)c2c(nc3sccn23)c4ccccc4
Cc1cn2c(c(nc2s1)c3ccc(cc3)S(=O)(=O)C)c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2nc3sccn3c2c4ccccc4
CS(=O)(=O)c1ccc(cc1)c2sc(Cc3ccccc3)nc2c4ccc(F)cc4
COc1ccc(cc1)c2nc(c(s2)c3ccc(cc3)S(=O)(=O)C)c4ccc(F)cc4
CS(=O)(=O)c1ccc(cc1)c2sc(nc2c3ccc(F)cc3)c4ccccc4Cl
CS(=O)(=O)c1ccc(cc1)c2cc3ccccc3cc2c4ccccc4
CC(C)(C)c1cc(C=C2NC(=NC2=O)N)cc(c1O)C(C)(C)C
CC(=C1NC(=NC1=O)NC(=[NH2])N)c2cc(c(O)c(c2)C(C)(C)C)C(C)(C)C
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)CC2)c3cc(F)cc(F)c3
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)CC2)c3cccnc3
CS(=O)(=O)c1ccc(cc1)C2=C(Oc3ccccc3)C(=O)CC2
CS(=O)(=O)c1ccc(cc1)C2=C(C(=O)OC2)c3ccccc3
Cc1ccc(cc1)n2nc(cc2c3ccc(cc3)S(=O)(=O)N)C(F)(F)F
CC1(C)OC(=O)C(=C1c2ccc(cc2)S(=O)(=O)C)Oc3ccc4[nH]ccc4c3

estrogen receptor

CC12CCC3C(CCc4cc(O)ccc34)C2CCC1O
CCC(=C(CC)c1ccc(O)cc1)c2ccc(O)cc2
CC12CCC3C(CCc4cc(O)ccc34)C2CCC1=O
CCC(C(CC)c1ccc(O)cc1)c2ccc(O)cc2
Oc1ccc(cc1)c2coc3cc(O)ccc3c2=O
Oc1ccc2c(c1)oc3c2c(=O)oc4cc(O)ccc34
Oc1ccc2C3CCc4cc(O)ccc4C3CCc2c1
CC12CCC3C(CCc4cc(O)ccc34)C2CCC1O
CC12CCC3C(CCc4cc(O)ccc34)C2CCC1CO
CC12CCC3C(CCc4cc(O)ccc34)C2CC(O)C1O
Cc1cc2C3CCC4(C)C(O)CCC4C3CCc2cc1O
CC1Cc2cc(O)ccc2C3CCC4(C)C(O)CCC4C13
CC12CCC3(C)C(CCc4cc(O)ccc43)C2CCC1O
CC12CCC3C(CCc4cc(O)ccc34)C2CCC1(O)C#C
CC1CC2C(CCc3cc(O)ccc23)C4CCC(O)(C#C)C41C
COC1CC2(C)C(CCC2(O)C#C)C3CCc4cc(O)ccc4C13
CC1(CCC2C(CCc3cc(O)ccc23)C41CCC5C4)C5O
CC12CCC3C(CCc4cc(O)ccc34)C2CCCC1O
CC12CCC3C(=CCc4cc(O)ccc34)C2CCC1=O
CC12CCc3c(ccc4cc(O)ccc34)C2CCC1=O
Oc1ccc(cc1)c2sc3cc(O)ccc3c2C(=O)c4ccc(OCC[NH]5CCCCC5)cc4
CCC(=C(c1ccc(O)cc1)c2ccc(OCC[NH](C)C)cc2)c3ccccc3
CCC(=C(c1ccccc1)c2ccc(OCC[NH](C)C)cc2)c3ccccc3
CCCCN(C)C(=O)CCCCCCCCCCC1Cc2cc(O)ccc2C3CCC4(C)C(O)CCC4C13
Oc1ccc(cc1)c2sc3cc(O)ccc3c2Oc4ccc(OCC[NH]5CCCCC5)cc4

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COc1ccc2C(=C(CCc2c1)c3ccccc3)c4ccc(OCC[NH]5CCCC5)cc4
Oc1ccc(cc1)c2ccc3cc(O)ccc3c2Cc4ccc(OCC[NH]5CCCCC5)cc4
CC1=C(C(Oc2cc(O)ccc12)c3ccc(OCC[NH]4CCCCC4)cc3)c5ccc(O)cc5
Oc1ccc2c(OC(c3ccc(OCC[NH]4CCCCC4)cc3)c5c6ccc(O)cc6ccc52)c1
Cc1c(c2ccc(O)cc2)n(CCCCCC[NH]3CCCC3)c4ccc(O)cc14
COc1ccc2C(C(c3ccccc3)C(C)(C)Oc2c1)c4ccc(OCC[NH]5CCCC5)cc4
CC12CC(C3C(CCc4cc(O)ccc34)C2CCC1O)c5ccc(OCCCCCS(=O)(=O)CCCC(F)(F)C(F)(F)F)cc5
Oc1ccc(cc1)C2=C(Cc3ccc(OCC[NH]4CCCCC4)cc3)c5ccc(O)cc5C2
C[NH](C)CCOc1ccc(cc1)C(=C(CCC1)c2ccccc2)c3ccccc3
Oc1ccc2c(C(=O)c3ccc(OCC[NH]4CCCCC4)cc3)c(sc2c1)c5ccc6ccccc6c5
Oc1ccc2c(C(=O)c3ccc(OCC[NH]4CCCCC4)cc3)c(sc2c1)c5cccs5
Oc1cccc(c1)c2sc3cc(O)ccc3c2C(=O)c4ccc(OCC[NH]5CCCCC5)cc4
Cc1cc(cc(C)c1O)c2sc3cc(O)ccc3c2C(=O)c4ccc(OCC[NH]5CCCCC5)cc4
COc1ccc(cc1)C2=C(C(=O)c3ccc(OCC[NH]4CCCC4)cc3)c5ccccc5CC2
C[NH](C)CCOc1ccc(cc1)C(c2cc(C)c(O)c(C)c2)c3cc(C)c(O)c(C)c3
CCc1c(nn(c1c2ccc(O)cc2)c3ccccc3)c4ccc(O)cc4
CCn1c(c(C)c2ccc(O)cc12)c3ccc(O)cc3
Oc1ccc(cc1)c2oc3cc(O)ccc3c2c4ccc(O)cc4
CCc1c(sc2cc(O)ccc12)c3ccc(O)cc3
CC1=C(C(Oc2ccc(O)cc12)c3ccc(OCC[NH]4CCCCC4)cc3)c5ccc(O)cc5
COc1ccc(cc1)c2coc3cc(O)ccc3c2=O
CCC(c1ccc2cc(OC)ccc2c1)C(C)(C)C(=O)O
CCC(c1cc2ccccc2o1)C(C)(C)C(=O)O
CC[NH](CC)CCOc1ccc(cc1)C(=C(Cl)c2ccccc2)c3ccccc3
O=C1C(Cc2ccccc2)CCCCC1Cc3ccccc3
Oc1ccc(c2cc3cc(Cl)c(O)cc3n2CC1)c(Cl)c1
Oc1ccc(cc1)c2sc3cc(O)ccc3c2Oc4ccc(OCC[NH]5CCCCC5)cc4
Oc1ccc2OC(c3ccc(OCC[NH]4CCCCC4)cc3)c5c6ccc(O)cc6ccc5c2c1
Oc1ccc2c3C(Oc4ccc(O)cc4c3sc2c1)c5ccc(OCC[NH]6CCCCC6)cc5
CC12CC(CCl)C3C(CCc4cc(O)ccc34)C2CCC1O
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gelatinase A

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COc1ccc(cc1)S(=O)(=O)N(Cc2cccnc2)C(C(C)C)C(=O)NO
CC1(C)SCCN(C1C(=O)NO)S(=O)(=O)c2ccc(Oc3ccncc3)cc2
CC(C)(C)C(NC(=O)C(CC1CCCC1)C([NH3+])C(=O)NO)C(=O)Nc2ccc3OCOc3c2
CNC(=O)C(Cc1ccc(OC)cc1)NS(=O)(=O)C(CC(C)C)CC(=O)NO
OCC(Cc1ncc[nH]1)NC(=O)C(CCCc2ccc(cc2)c3ccccc3)CC(=O)NO
CNC(=O)C(Cc1ccccc1)N2CCC(CC3CCCC3)(CC(=O)NO)C2=O
CC(C)CC1(CCN(CCc2ccccc2)C1=O)C(CCN3C(=O)c4ccc(F)cc4C3=O)C(=O)NO
ONC(=O)C1Cc2ccccc2CN1S(=O)(=O)c3ccc(cc3)c4ccc(Cl)cc4
CC(NS(=O)(=O)c1ccc(C=Cc2ccc(C)cc2)cc1)C(=O)NO
COc1ccc(cc1)N2CCN(CC2)c3ccc(cc3)S(=O)(=O)NC(Cc4ccccc4)C(=O)[O-]
ONC(=O)C1(CS(=O)(=O)c2ccc(Oc3ccc(Cl)cc3)cc2)CCOCC1
ON=C(CCC(=O)[O-])c1ccc2c(c1)oc3ccccc32
[O-]C(=O)C(CCN1C(=O)c2ccccc2C1=O)CC(=O)c3ccc(cc3)c4ccc(Cl)cc4
[O-]C(=O)C(CCC(=O)c1ccccc1)CC(=O)c2ccc(cc2)c3ccc(Cl)cc3
[O-]C(=O)C1CCC(Cn2nnc3ccccc3c2=O)C1C(=O)c4ccc(cc4)c5ccc(Cl)cc5
CCCCC(CC(CCc1ccc(cc1)c2ccc(F)cc2)C(=O)NC(C(=O)NC)C(C)(C)C)C(=O)[O-]
[NH3+]C(CC[NH2+]C(CC[NH+]1CCC1C(=O)[O-])C(=O)[O-])C(=O)[O-]
[O-]C(=O)CCC1=CC(=CC=CC=C)COC1=O
CNC(=O)C(NC(=O)C(CC(C)C)C(O)C(=O)NO)C(C)(C)C
CN1C(=O)N(CC(C(CC2CCCC2)C(=O)N3CCCCC3)C(=O)NO)C(=O)C1(C)C
CC(CS(=O)(=O)c1ccc(cc1)c2cc3ccccc3o2)C(=O)NO
CNC(=O)C(Cc1ccccc1)NC(=O)C(CC(C)C)C(CSc2cccs2)C(=O)NO
OCC#Cc1ccc(cc1)c2ccc(cc2)C(=O)CC(CCN3C(=O)c4ccccc4C3=O)C(=O)[O-]
CNC(=O)C(Cc1ccccc1)NC(=O)C(CC(C)C)C(CSc2cccs2)C(=O)NO
CNC(=O)C(NC(=O)C(CC(C)C)C(=O)C(=O)NO)C(C)(C)C
[O-]C(=O)C(CSCc1ccccc1)NS(=O)(=O)c2ccc(cc2)c3ccc(Cl)cc3
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[O-]C(=O)C(CSc1ccccc1)CC(=O)c2ccc(cc2)c3ccc(Cl)cc3
CC(C)CC(NC(=O)C1CCC[NH2+]1)C(=O)NCC(=O)NO
[O-]C(=O)C(Cc1c[nH]c2ccccc12)NC(=O)Oc3ccccc3
CC1C2C(O)C3C(N(C)C)C(=C(C(=O)N)C(=O)C3C(=C2C(=O)c4c(O)cccc14)O)O
COc1ccc(cc1)S(=O)(=O)N(CC(=O)NO)Cc2ccccc2
CNC(=O)C(Cc1ccccc1)NC(=O)C(CC(C)C)NC(CCN2C(=O)c3ccc(cc3C2=O)c4ccccc4)C(=O)[O-
]
CC(C)C(NC(=O)CNC(=O)C(CS)NC(=O)C(CC[NH+]=C(N)N)NC(=O)C)C(=O)N1CCCC1C(=O)[O-]
CNC(=O)C(Cc1ccc(OC)cc1)NC(=O)C(CC(C)C)C(S)CC(=O)OCc2ccccc2
CC1(C)SCCN(C1C(=O)NO)S(=O)(=O)c2ccc(Oc3ccncc3)cc2
[O-]C(=O)CNS(=O)(=O)c1ccc(cc1)N2CCC(CC2)c3ccccc3
COCCN1CCCCC(NC(=O)C(C=C(C)C)C(CCCO)C(=O)NO)C1=O
COc1ccc(cc1)S(=O)(=O)N2CC(C)(C)CN(C2C(=O)NO)S(=O)(=O)c3ccc(OC)cc3
[O-]C(=O)C(Cc1c[nH]c2ccccc12)NS(=O)(=O)c3ccc(cc3)N4CCC(CC4)c5ccccc5
[O-]C(=O)C(Cc1c[nH]c2ccccc12)NS(=O)(=O)c3ccc(cc3)N4CCC(CC4)c5ccccc5
CC(C)CC(NC(=O)C(CCc1ccc(cc1)c2ccc(F)cc2)CC(CCCCN3Cc4ccccc4C3=O)C(=O)[O-
])C(=O)Nc5ccccc5
CC([NH2+]C(CCc1ccccc1)C(=O)NC(CCC[NH+]=C(N)N)C(=O)Nc2ccccc2)C(=O)[O-]
O=C(CC(NC(=O)OCc1ccccc1)c2ccccc2)[NH+]=C3SC(=S)N=N3
```

neuraminidase

```
CC(=O)NC1C(OC(=CC1[NH+]=C(N)N)C(=O)[O-])C(=O)C(O)CO
CCC(CC)C(=O)Nc1cc(ccc1NC(=O)C)C(=O)[O-]
NC(N)[NH+]=C1C=C(C=CC1N2C(=O)CCC2(CO)CO)C(=O)[O-]
CCC(CC)Nc1cc(ccc1N2C(=O)CCC2(CO)CO)C(=O)[O-]
CCCN(CCc1ccccc1)C(=O)C2OC(=CC([NH3+])C2NC(=O)C)C(=O)[O-]
CC(=O)NC1C=CC(=CC1=[NH+]C(N)N)C(=O)[O-]
CC(=O)Nc1ccc(cc1NC(=O)CO)C(=O)[O-]
CC(=O)Nc1ccc(cc1NC(=O)C[NH3+])C(=O)[O-]
CC(=O)NC1C(O)CC(OC1C(O)C(O)CO)P(=O)(O)O
CC(=O)Nc1c(O)cc(cc1N(=O)=O)C(=O)[O-]
CC(=O)Nc1c(N)cc(cc1O)C(=O)[O-]
CC(=O)Nc1ccc(cc1N)C(=O)[O-]
CC(=O)NC1C(OC(=CC1[NH+]=C(N)N)C(=O)[O-])C(O)C(O)CO
CC(=O)NC1C(O)C=C(OC1C(O)C(O)CO)C(=O)[O-]
CC(=O)NC1C(O)CC(O)(OC1C(O)C(O)CO)C(=O)[O-]
CCCN(C)C(=O)C1OC(=CC([NH+]=C(N)N)C1NC(=O)C)C(=O)[O-]
CCN(CC)C(=O)C1OC(=CC([NH3+])C1NC(=O)C)C(=O)[O-]
```

p38 MAP kinase

```
CCS(=O)c1ccc(cc1)c2nc(c([nH]2)c3ccncc3)c4ccc(F)cc4
CCC(CC)(CC)c1nc(c([nH]1)c2ccncc2)c3ccccc3
COc1ccc(cc1)c2nc([nH]c2c3ccncc3)c4ccc(Cl)cc4
Fc1ccc(cc1)c2nc3S(=O)CCn3c2c4ccncc4
Fc1ccc(cc1)c2nc([nH]c2c3ccncc3)c4ccccc4
[NH3]Cc1ccc(cc1)c2nc(c([nH]2)c3ccncc3)c4ccccc4
C(C[NH]1CCOCC1)Cc2ccc(cc2)c3nc(c([nH]3)c4ccncc4)c5ccccc5
CCC(CC)Nc1nccc(n1)c2c(ncn2C3CC[NH](C)CC3)c4ccc(F)cc4
CNc1nccc(n1)c2c(ncn2C3CCC4(CC3)OCCO4)c5ccc(F)cc5
Fc1ccc(cc1)c2ncn(CCC[NH]3CCOCC3)c2c4ccnc5ccccc45
Fc1ccc(cc1)c2ncn(CCC[NH]3CCOCC3)c2c4ccnc5ccccc45
C[NH]1CCC(CC1)n2cnc(c2c3ccnc(NCc4ccccc4)n3)c5ccc(F)cc5
CCC(CC)(CC)OC(=O)N1CCC(CC1)c2nc(c([nH]2)c3ccncn3)c4ccc(F)cc4
CCc1nc(c(o1)c2cccc(OC)c2)c3ccncc3
Fc1ccc(cc1)c2nc(oc2c3ccncc3)c4ccccc4
CCS(=O)c1ccc(cc1)n2cc(c(n2)c3ccc(F)cc3)c4ccncc4
CCC(CC)(CC)C1[NH2]C(C(=C1)c2ccncc2)c3ccc(F)cc3
```

CC[NH]1CCC(CC1)C2[NH2]C(C(=C2)c3ccncc3)c4ccc(F)cc4
COC1CCC(CC1)C2[NH2]C(C(=C2)c3ccncc3)c4ccc(F)cc4
CCS(=C)c1ccc(cc1)c2nc(c([nH]2)c3ccncc3)c4ccc(F)cc4
Nc1ccc2c(c([nH]c2n1)c3ccc(F)cc3)c4ccncc4
CCc1ccc(cc1)c2cc(nn2c3ccc(cc3)C(=O)N)C(F)(F)F
CCn1cc(c([nH]1)c2ccncc2)c3ccc(F)cc3
Fc1ccc(cc1)c2cn[nH]c2c3ccnc(NC4CC[NH](Cc5ccccc5)CC4)c3
CC(Nc1nccc(n1)c2c(nc(C3CC[NH2]CC3)n2C)c4cccc(c4)C(F)(F)F)c5ccccc5

thrombin

CC1(C)C2CCC1(C(=O)C2)S(=O)(=O)N3CCCC3C(=O)NCCCC[NH+]=C(N)N
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2ccccc2)N
[NH3+]Cc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)cc1
[NH3+]CC1CCC(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)CC1
Nc1ccc(CCNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)cc1
[NH3+]CC1CCCC(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)C1
[NH3+]C(Cc1ccccc1)C(=O)N2CCCC2C(=O)NCCc3c[nH]c4ccccc34
Nc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)cc1
[NH3+]Cc1cccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)c1
[NH3+]CCCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2ccccc2
Nc1cccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)c1
Nc1ccc(NCCNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)nc1
NC(=S)Nc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)cc1
Nc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccccc3)cn1
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2ccc3ccccc3c2)N
[NH3+]Cc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc4ccccc4c3)cc1
[NH3+]CC1CCC(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc4ccccc4c3)CC1
Nc1ccc(CCNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc4ccccc4c3)cc1
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2ccc(Br)cc2)N
[NH3+]Cc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc(Br)cc3)cc1
[NH3+]CC1CCC(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc(Br)cc3)CC1
Nc1ccc(CCNC(=O)C2CCCN2C(=O)C([NH3+])Cc3ccc(Br)cc3)cc1
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2cccc(O)c2)N
[NH3+]Cc1ccc(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3cccc(O)c3)cc1
[NH3+]CC1CCC(CNC(=O)C2CCCN2C(=O)C([NH3+])Cc3cccc(O)c3)CC1
Nc1ccc(CCNC(=O)C2CCCN2C(=O)C([NH3+])Cc3cccc(O)c3)cc1
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])CC(=O)c2cccc(N)c2)N
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2ccc(N)cc2)N
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C([NH3+])Cc2c[nH]c3ccccc23)N
NC(=[NH+]CCCCNC(=O)C1CCCN1C(=O)C(O)Cc2ccccc2)N
NC(=[NH+]CCCCNC(=O)C1CCCN1S(=O)(=O)Cc2ccccc2)N
CCOc1oc(=O)c2cc([NH+]=C(N)N)ccc2c1Cl
CCS(=O)(=O)NC(Cc1ccccc1)C(=O)N2CCCC2C(=O)NCC3CC[N+](=C(N)N)CC3
NC(=[NH2+])N1CCC(CC1)OCCC2CCCCN2C(=O)C(CC(=O)[O-])[NH2+]C3CCCCCCC3
CC(=O)NC(COc1ccccc1)C(=O)N2CCCC2C(=O)NCC3CCC([NH3+])CC3
NC(=[NH2+])c1cccc(CC(NC(=O)CNS(=O)(=O)c2ccc3ccccc3c2)C(=O)N4CCCCC4)c1
NC(=[NH2+])c1ccc(CC(NC(=O)CNS(=O)(=O)c2ccc3ccccc3c2)C(=O)N4CCCCC4)cc1
CCC1CCN(C(C1)C(=O)[O-
])C(=O)C(CCCCc2[nH+]c[nH]c2C)NS(=O)(=O)c3ccc(cc3NC(=O)C)c4ccccc4
CC1=CCN(C(C1)C(=O)[O-
])C(=O)C(Cc2ccc(cc2)C(=[NH2+])N)NS(=O)(=O)c3ccc4CC[NH+](Cc5ccccc5)Cc4c3
NC(=[NH2+])N1CCCC(CNC(=O)CC(NS(=O)(=O)c2ccc3ccccc3c2)C(=O)N(CC(=O)[O-
])C4CC4)C1
CC1CCN(C(C1)C(=O)[O-])C(=O)C(CCC[NH+]=C(N)N)NS(=O)(=O)c2cccc3CC(C)C[NH2+]c23
NC(=[NH+]CCCC(NC(=O)C1CCCN1C(=O)C([NH3+])C(c2ccccc2)c3ccccc3)C(=O)CCC(=O)N4CC
CCC4)N
NC(=[NH2+])c1ccc(CNC(=O)C2CCN2C(=O)C([NH2+]CC(=O)[O-])C3CCCCC3)cc1

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NC(=[NH2+])NCCCC(NC(=O)C1CCN2CCC([NH3+])(Cc3ccccc3)C(=O)N12)C(=O)c4nc5ccccc5s
4
CC1CCN(CC1)C(=O)C(CCC[NH+]=c2cccc[nH]2)NS(=O)(=O)c3ccc4ccccc4c3
NC(=[NH2+])c1ccc(CC(N2CCC(NS(=O)(=O)c3ccc4ccccc4c3)C2=O)C(=O)N5CCCCC5)cc1
Cc1cc(OCCNc2ccnnc2)cc(OS(=O)(=O)c3cccnc3)c1
[NH3+]C1CCC(CNC(=O)C2CCCN2C(=O)C(NS(=O)(=O)Cc3ccccc3)C(c4ccccc4)c5ccccc5)CC1
Cc1cnc(NCCc2ccccc2)c(=O)n1CC(=O)NCc3ccc(N)nc3C
NC(=[NH2+])c1ccc(NCc2ccc(Oc3ccccc3)cc2)cc1
Oc1ccc2c(Cc3ccc(OCC[NH+]4CCCC4)nc3)c(sc2c1)c5ccc(OCC[NH+]6CCCC6)cc5
CN(C1CCCC1)C(=O)C(Cc2ccc(s2)C(=[NH2+])N)NS(=O)(=O)c3ccc4ccccc4c3
CN(c1cccc(OCCNc2ccncc2)c1)S(=O)(=O)c3ccccc3
NC(=[NH2+])c1ccc2[nH]c(Cc3ccccc3)cc2c1
CN(C1CCCC1)C(=O)C(Cc2ccc(C[NH3+])cc2)CS(=O)(=O)c3ccc4CCCCCc4c3
NC(=[NH2+])c1ccc(cc1)C2C3C(C4CCC[NH+]24)C(=O)N(Cc5cccc6OCOc65)C3=O
NC(=[NH2+])NCCCC(NC(=O)CN1CCCC(NS(=O)(=O)Cc2ccccc2)C1=O)C(=O)[O-]
Cc1cc(OCC2CC[N+](=C(N)N)CC2)cc(OS(=O)(=O)c3ccccc3Cl)c1
Cc1ccc(NS(=O)(=O)Cc2ccccc2)c(=O)n1CC(=O)NCC3CCC([NH3+])CC3
[NH3+]C(C(c1ccccc1)c2ccccc2)C(=O)N3CCCC3C(=O)NCc4cc(Cl)ccc4Cl
C[NH2+]C(Cc1ccccc1)C(=O)N2CCCC2C(=O)NCC3CCC([NH3+])CC3
NC(=[NH2+])N1CCC(CC1)C(=O)NCC2CCCN2C(=O)C(CO)NS(=O)(=O)c3ccc4ccccc4c3
[NH3+]C1CCC(CNC(=O)C2CCCN2C(=O)C3(O)c4ccccc4c5ccccc53)CC1
[O-]C(=O)C[NH2+]C(CC1CCCCC1)C(=O)N2CCCC2C(=O)NCCCc3c[nH+]c[nH]3
Cc1cc2CC(CC3CCC3)C(=O)Nc2c(=O)n1CC(=O)NCc4ccc(=[NH2+])[nH]c4C
CN(C(=O)c1ccc2N(CCCc2c1)C(=O)CCc3ccc(cc3)C(=[NH2+])N)c4ccccc4
Nc1ccc(CC(NS(=O)(=O)c2cnccc2NC(CO)Cc3ccccc3)C(=O)N4CCC(CCF)CC4)cc1

Scoring function parameters:

Settings for FlexX (placement and scoring):

@scoring_parameters
  G_constant                  5.4     0
  G_rotbonds                  1.4     1
  G_match                     1.0     1
  G_lipo_contacts             -0.17    1
  G_ambig_contacts            -0.17    1
  G_close_contacts            -0.34    1
  G_pmf_pairs                 0.0     0
  G_pmf_sas                   0.0     0
  G_plp_steric                0.4     0
  G_plp_hbond                 2.0     0
  G_plp_rep                   20.0     0
  lipo_contact_scaling        0.0     0.4     0.8     1.2     spline
  ambig_contact_scaling       0.0     0.4     0.8     1.2     spline
  entropy_term                chemscore
  hydrophobic_definition      C_hydrophob surface
  sas_radius                  1.2
  plp_steric_scaling          3.4     3.6     4.5     5.5     all
  plp_hbond_scaling           2.3     2.6     3.1     3.4     restricted

Settings for FlexX (placement) and PLP (scoring):

@scoring_parameters
  G_constant                  5.4     0
  G_rotbonds                  3.0     final
  G_match                     1.0     partial
  G_lipo_contacts             -0.17    partial
  G_ambig_contacts            -0.17    partial
  G_close_contacts            -0.34    partial
```

```
  G_pmf_pairs                0.0    0
  G_pmf_sas                  0.0    0
  G_plp_steric               0.4    final
  G_plp_hbond                2.0    final
  G_plp_rep                  20.0    final
  lipo_contact_scaling       0.0    0.4    0.8    1.2    spline
  ambig_contact_scaling      0.0    0.4    0.8    1.2    spline
  entropy_term               boehm
  hydrophobic_definition     NO_hydrophil surface
  sas_radius                 1.2
  plp_steric_scaling         3.4    3.6    4.5    5.5    all
  plp_hbond_scaling          2.3    2.6    3.1    3.4    all

Settings for ScreenScore (placement and scoring):

@scoring_parameters
  G_constant                 5.4    0
  G_rotbonds                 1.6    1
  G_match                    1.0    1
  G_lipo_contacts            -0.07   1
  G_ambig_contacts           -0.07   1
  G_close_contacts           -0.34   partial
  G_pmf_pairs                0.0    0
  G_pmf_sas                  0.0    0
  G_plp_steric               0.12   1
  G_plp_hbond                0.6    1
  G_plp_rep                  6.0    1
  lipo_contact_scaling       0.0    0.4    0.8    1.2    spline
  ambig_contact_scaling      0.0    0.4    0.8    1.2    spline
  entropy_term               boehm
  hydrophobic_definition     NO_hydrophil surface
  sas_radius                 1.2
  plp_steric_scaling         3.4    3.6    4.5    5.5    all
  plp_hbond_scaling          2.3    2.6    3.1    3.4    restricted
```