Target Name	AMPA Receptor
Target TTD ID	TTDS00121

Target Species	Human
Chemical Type	2,3-benzodiazepin-4(thi)one- and 1,2-phthalazine derivatives
Mode of Action	Modulator
QSAR Model 1	$1/ED_{50}\ (\mu mol/kg) = -5.811(3.4e\text{-}9) - 0.125(0.066)\,HOMO + 0.371(2.3e\text{-}8)\ HB_{don} - 0.124(0.093)\ ALOGP + 0.661(0.001)\ I\_ssCH_2 - 0.762(0.001)\ I\_dsN + 0.483(0.032)\ I_{Zagreb}$ $n = 49,\ r^2 = 0.757,\ s = 0.348,\ F = 21.8$
QSAR Model 2	$\ln 1/ED_{50}\ (\mu mol/kg) = -6.395(1.6e\text{-}8) - 0.129(0.115)\,HOMO + 0.398(2.4e\text{-}7)\ HB_{don} - 0.098(0.282)\ ALOGP + 0.701(0.003)\ I\_ssCH_2 - 0.386(0.091)\ I\_dsN + 0.506(0.080)\ I_{Zagreb}$ $n = 61,\ r^2 = 0.597,\ s = 0.460,\ F = 13.3$
QSAR Model 3	$\ln 1/ED_{50}\ (\mu mol/kg) = -4.358(5.74e\text{-}20) + 0.689(2.34e\text{-}6)\,I\_NH_{\&atNH_2} - 0.921(1.7e\text{-}6)\ I\_noOMeO_{PHTZ} + 0.430(0.007)\,I\_NH_{\&noCO} - 0.821(6.66e\text{-}5)\ I\_pNO_2 - 0.615(0.005)\,I\_mono7,8\text{-}O + 0.692(0.004)\ \log P_{o/w} - 0.159(0.001)\ \log P^2_{o/w}$ $n = 49,\ r^2 = 0.786,\ s = 0.330,\ F = 21.6$

QSAR Model 4	$\ln 1/ED_{50}\ (\mu mol/kg) = -4.428(4.62e\text{-}23) + 0.696(3.29e\text{-}7)\,I\_NH_{\&arNH_2}$ $-0.863(1.21e\text{-}6)\ I\_noOMeO_{PHTZ} + 0.526(8.50e\text{-}5)\ I\_NH_{\&noCO}$ $\cong 0.980(6.61e\text{-}7)\,I\_pNO_2 - 0.559(0.011)\ I\_mono7,8\text{-}O$ $+0.787(0.0006)\ \log P_{o/w} - 0.183(5.34e\text{-}5)\ \log P^2_{o/w}$ $n = 61,\ r^2 = 0.779,\ \sigma = 0.344,\ F = 26.7$
Molecular Descriptor	Access the following web-servers to compute molecular descriptors: **MoDel** and **e-dragon** HOMO is the highest occupied molecular orbital energy calculated by a semiempirical MOPAC/AM1 method, HBdon is the number of hydrogen bond donors, ALOGP is a calculated log octanol-water partition coefficient, I_ssCH2 and I_dsN are electrotopological state indices encoding for the presence/absence of -CH2- and –N= type carbon and nitrogen atoms, respectively, and IZagreb is the Zagreb topological index. I_NH&arNH2: an HB donor in the region corresponding to the vicinity of the 3-position of the benzodiazepine skeleton in combination with a (3'- or 4'-positioned) aromatic NH2 group, I_noOMeOPHTZ: phthalazine structures lacking the -OCH2O- methylenedioxy functionality, I_NH&noCO: an endocyclic NH lacking a carbonyl substituent, I_pNO2: a 4'-NO2 substituent, I_mono7,8-O: structures only mono-O-substituted in the 7- or 8-position
Reference	QSAR Study of 2,3-Benzodiazepin-4(thi)one- and 1,2-Phthalazine-Related Negative Allosteric Modulators of the AMPA Receptor: A Structural Descriptors-Based Reassessment. QSAR Comb. Sci. 2005, 24, pp 325-331