[004] Due to its extensive pathogenic significance, MYC is an important anticancer target. Deregulated Myc gene is found in a wide range of human hematological malignancies and solid tumors, especially in breast cancer, ovarian carcinoma, acute myeloid leukemia, chronic myelogenous leukemia, Hodgkin's and Burkitt's lymphoma, diffuse large Bcell lymphoma, prostate cancer, colon cancer, gastric cancer, primary central nervous system lymphoma, glioblastoma, medulloblastoma, melanoma, non-small cell lung carcinoma, germinal center-derived lymphomas, esophageal squamous cell carcinoma, osteosarcoma, bladder cancer, pancreatic cancer and lung adenocarcinoma. Recent studies also indicate that deregulation of c-MYC is related to the occurrence of BRAF V600E thyroid cancers, choroid plexus carcinoma, and colitis-associated cancer. In addition, amplification of the MYC gene was found in a significant number of epithelial ovarian cancer cases. In TCGA datasets, the amplification of Myc occurs in several cancer types, including breast, colorectal, pancreatic, gastric, and uterine cancers.

[005] Although Myc gene is a very important oncogene and considered as a driver in carcinogenesis and MYC protein is a key transcription factor broadly targeting various genes, rational designing a direct Myc inhibitor is still challenging. This is mainly because MYC protein lacks structural regions amenable to therapeutic inhibition by small molecules and is considered an undruggable target [BioDrugs (**2019**) 33:539–553].

[006] Designing and developing MYC modulators is challenging, primarily because the MYC protein has a disordered structure which lacks a pocket or groove that can act as a binding site for modulators. Interfering with the MYC transcription, blocking the protein–protein interaction (PPI) of MYC and its cofactors, and influencing on signaling pathways related to MYC were used in the past as potential modulatory targets, but failed to be developed as drug candidates. Myc PPI inhibitors failed to show sufficinet efficacy in cell-based assays and animal models due to the requirement of high target occupancy to drive efficacy. Modulators of signaling pathways upstream to myc, for example mTOR modulators, failed due lack of target specificity.

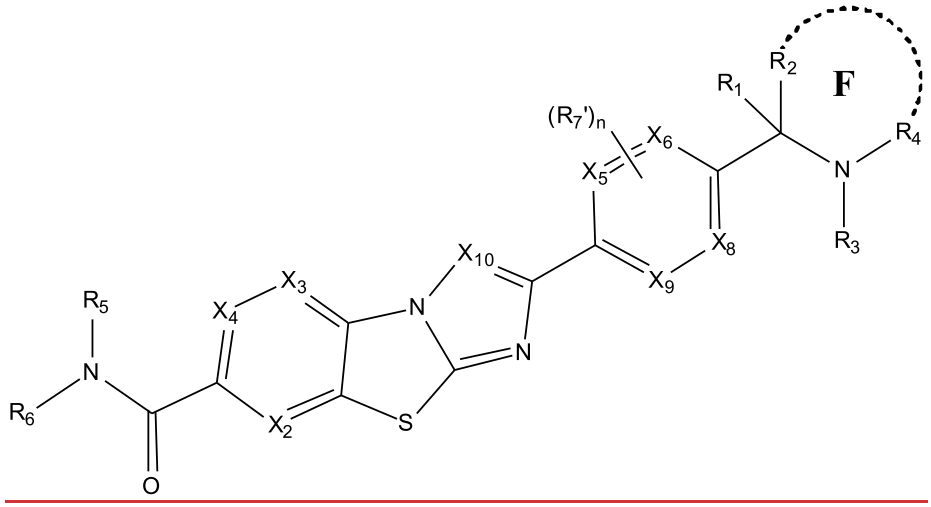
[007] Nevertheless, a therapeutic approach to target c-Myc has remained elusive. The absence of a clear ligand-binding domain establishes a formidable obstacle toward direct inhibition, which is a challenging feature shared among many compelling transcriptional targets in cancer. Thus, alternative modalities that target Myc are required, as outlined herein, namely compounds which regulate Myc mRNA translation.

SUMMARY ~~OF THE INVENTION~~

[008] This ~~invention~~disclosure provides a compound or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, prodrug, isotopic variants (e.g., deuterated analog), PROTAC, pharmaceutical product or any combination thereof, represented by the structure of formula **I, II** and **I(a)-I(h)**, and by the structures listed in Table 1, as defined herein below. In various ~~embodiments~~examples, the compound is a c-MYC mRNA translation modulator. In various ~~embodiments~~examples, the compound is a c-MYC mRNA transcription regulator. In various ~~embodiments~~examples, the compound is a c-

MYC inhibitor. In various ~~embodiments~~examples, the compound is any combination of a c-MYC mRNA transcription regulator, c-MYC mRNA transcription regulator and c-MYC inhibitor.

[008a] In an aspect, there is provided a compound represented by the structure of formula **I(h):**



I(h)

wherein

Ring F is absent or is a substituted or unsubstituted, saturated or unsaturated, 4-8 membered heterocyclic ring, (e.g., pyrrolidine, pyridine, imidazole, pyrimidine, triazole, oxadiazole, pyrazole);

R_1 and R_2 are each independently H, F, Cl, Br, I, OH, SH, or CF_3, substituted or unsubstituted C_1-C_5 alkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy;

or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring (e.g., cyclopropyl);

or R_2 and R_4 are joined to form **Ring F** as defined above (e.g., pyrrolidine, pyridine, pyrimidine, triazole, oxadiazole, pyrazole),

wherein if **Ring F** is aromatic, then R_1 and/or R_3 are absent;

R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl (e.g., methoxyethylene, methylaminoethyl, aminoethyl), $-R_8$-O-R_{10} (e.g., $(CH_2)_2$-O-CH_3), R_8-N(R_{10})(R_{11}) (e.g., $(CH_2)_2$-NH(CH_3)), substituted or unsubstituted C_3-C_8 cycloalkyl (e.g., cyclopropyl), substituted or unsubstituted 5-7 membered heterocyclic ring (e.g., pyrrolidine, methylpyrrolidine, piperidine), or R_{20}; or

R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring (e.g., pyrrolidine, , pyrrolidone, 2-oxopyrrolidine, piperidine, morpholine, piperazine, imidazole);

X_2, X_3, and X_4, are each independently nitrogen or CH;

X_5, X_6, X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

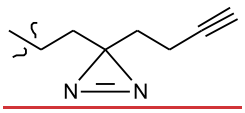
X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

R_6 is R_8-(substituted or unsubstituted, saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) (e.g., $(CH_2)_3$-piperidine, $(CH_2)_3$-4-fluoro-piperidine), R_8-$N(R_{10})(R_{11})$ (e.g., $(CH_2)_3$-$N(CH_2CH_3)_2$);

R_7' is each independently H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., isopropyl, methyl, ethyl), C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl (e.g., CHF_2), C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy (e.g. methoxy), optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl (e.g., cyclopropyl), substituted or unsubstituted 3-8 membered heterocyclic ring (e.g., morpholine, pyran, oxetane, pyrrolidine, imidazole, piperazine, piperidine, diaoxazole, 2-oxopyrrolidine), substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

R_{20} is represented by the following structure:



R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_2-CH_2-O-CH_3, CH_2-O-CH_2-CH_2-O-CH_3), C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl (e.g., CHF_2, CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), -R_8-O-R_8-O-R_{10} (e.g. $(CH_2)_2$-O-$(CH_2)_2$-O-CH_3), -R_8-O-R_{10}, -R_8-R_{10} (e.g., $(CH_2)_2$-O-CH_3), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_2-CH_2-O-CH_3, CH_2-O-CH_2-CH_2-O-CH_3), C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl (e.g., CHF_2, CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), -R_8-O-R_8-O-R_{10} (e.g. $(CH_2)_2$-O-$(CH_2)_2$-O-CH_3), -R_8-O-R_{10}, -R_8-R_{10} (e.g., $(CH_2)_2$-O-CH_3), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

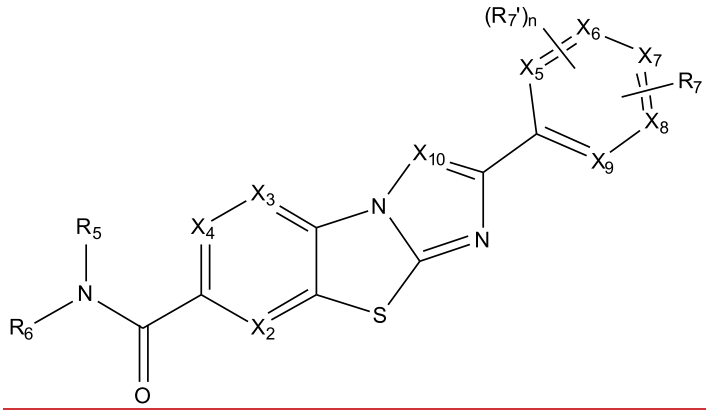
R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_3, CH_2CF_3, C_1-C_5 substituted or unsubstituted linear or branched haloalky, CH_2CF_3, C_1-C_5 linear or branched alkoxy (e.g., O-CH_3), **R_{20}**, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring (e.g., piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), pharmaceutical product or any combination thereof.

[008b] In another aspect, there is provided A compound represented by the structure of formula **I(a):**



I(a)

wherein

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

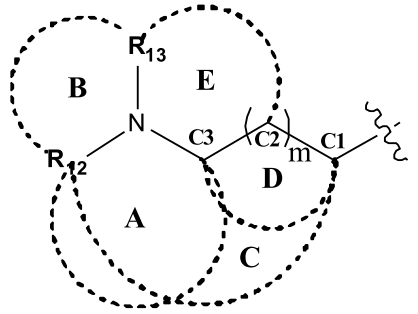
X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl;

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear

or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or $\mathbf{R_6}$ is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

$\mathbf{R_{12}}$ is $\mathbf{R_{20}}$ or C_1-C_5 C(O)-alkyl, and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are both H; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

$\mathbf{R_{12}}$ and **C3** are joined to form ring **A** and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are joined to form ring **B**; or

$\mathbf{R_{12}}$ and **C1** are joined to form ring **C** and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

C1 and **C3** are joined to form ring **D** and $\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are each independently $\mathbf{R_{30}}$; or

$\mathbf{R_{13}}$ and **C2** are joined to form ring **E,** m is 1, and $\mathbf{R_{12}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

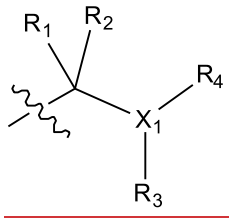
Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or $\mathbf{R_6}$ and $\mathbf{R_5}$ are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

$\mathbf{R_7}$ is O-R_{20}, substituted or unsubstituted 4-7 membered heterocyclic ring (pyrrolidine), substituted or unsubstituted aryl, R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring);

or $\mathbf{R_7}$ is represented by the structure of formula **A**:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring; and

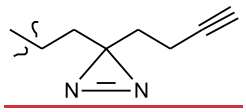
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

AND

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, CHF_2, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl; or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or

branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

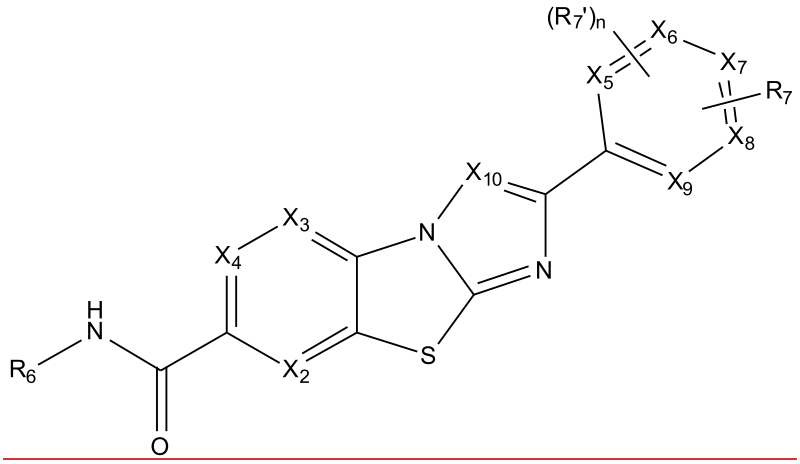
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky , CH_2CF_3, C_1-C_5 linear or branched alkoxy , **R_{20}**, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(b)**:



I(b)

wherein

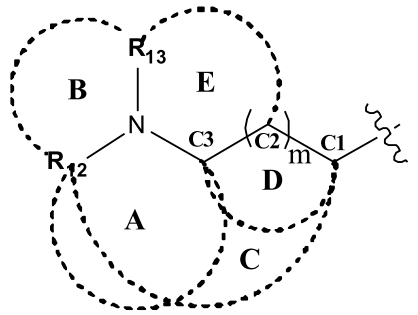
X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_6 is -R_8-O-R_{10}, R_8-S-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), $(CH_2)_3$-pyran, CH_2-tetrahydrofurane, CH_2-dioxane, CH_2-methyl-THF, CH_2-tetrahydrofurane, CH_2-oxa-azaspirodecane, CH_2-azaspiroheptane, $(CH_2)_3$-dimethylpyrazole, CH_2-methyl-azetidine, CH_2-azaspiroheptane, benzyl, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form a substituted or unsubstituted pyrrolidine ring, piperazine, thiomorpholine 1,1-dioxide, 2-oxa-6-azaspiro[3.3]heptane, pyrazole, imidazole, 2,5-diazabicyclo[2.2.1]heptane or a diazabicyclo[2.2.1]heptane; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

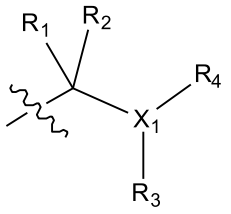
Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

R_7 is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

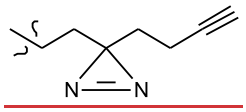
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched

haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

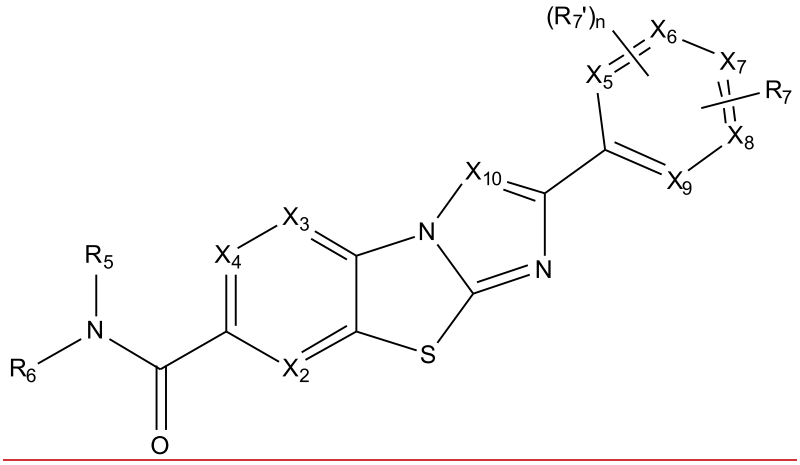
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(c)**:



I(c)

wherein

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

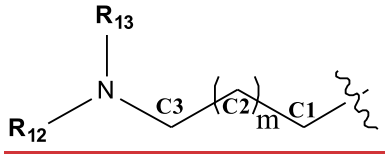
X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8

cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **B**:



B

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O)-alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

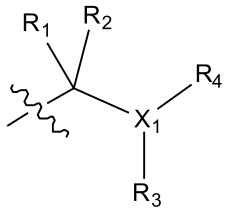
Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R**$_7$ is represented by the structure of formula A:



A

wherein

X$_1$ is N or O;

R$_1$ and **R**$_2$ are each independently H, F, or CF_3; or **R**$_1$ and **R**$_2$ are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R$_3$ and **R**$_4$ are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R**$_3$ and **R**$_4$ are joined to form a 3-8 membered heterocyclic ring;

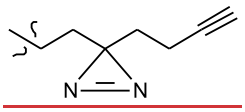
wherein if X_1 is O then R_4 is absent;

R$_7$**'** is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R**$_7$ and **R**$_7$**'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

wherein **R**$_7$**'** is different than **R**$_7$; and

R$_{20}$ is represented by the following structure:



R$_{30}$ is H, **R**$_{20}$, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched

haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

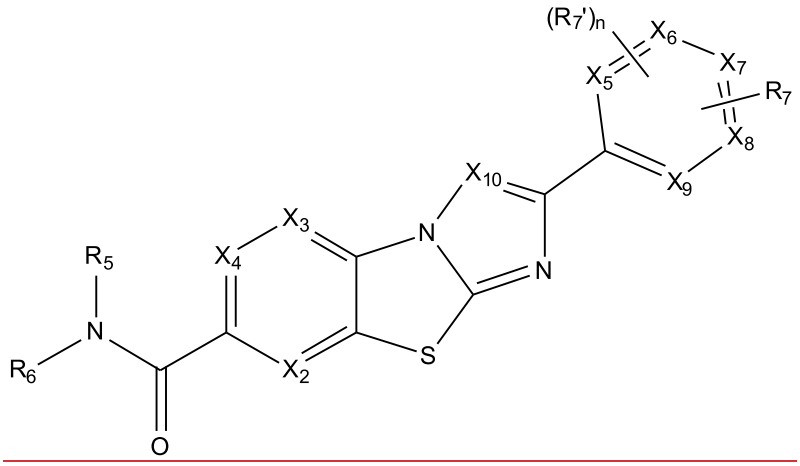
wherein **q** is between 2 and 10;

$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 1 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(d)**:



I(d)

wherein

$\mathbf{X_2}$, $\mathbf{X_3}$, and $\mathbf{X_4}$, are each independently nitrogen or CH;

$\mathbf{X_5}$, $\mathbf{X_6}$, $\mathbf{X_7}$, $\mathbf{X_8}$ and $\mathbf{X_9}$ are each independently nitrogen or carbon atoms;

$\mathbf{X_{10}}$ is N, CH, or C(R);

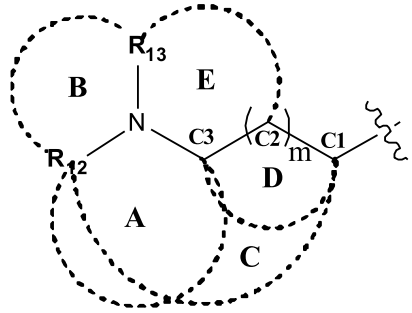
wherein at least one of $\mathbf{X_2}$, $\mathbf{X_3}$, $\mathbf{X_4}$, $\mathbf{X_5}$, $\mathbf{X_6}$, $\mathbf{X_7}$, $\mathbf{X_8}$, $\mathbf{X_9}$ or $\mathbf{X_{10}}$ is N;

$\mathbf{R_5}$ is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

$\mathbf{R_6}$ is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or

unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or $\mathbf{R_6}$ is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

$\mathbf{R_{12}}$ is $\mathbf{R_{20}}$ or C_1-C_5 C(O)-alkyl, and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are both H; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

$\mathbf{R_{12}}$ and **C3** are joined to form ring **A** and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are joined to form ring **B**; or

$\mathbf{R_{12}}$ and **C1** are joined to form ring **C** and $\mathbf{R_{13}}$ is $\mathbf{R_{30}}$; or

C1 and **C3** are joined to form ring **D** and $\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are each independently $\mathbf{R_{30}}$; or

$\mathbf{R_{13}}$ and **C2** are joined to form ring **E,** m is 1, and $\mathbf{R_{12}}$ is $\mathbf{R_{30}}$; or

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

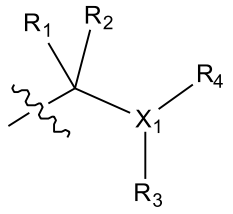
Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or $\mathbf{R_6}$ and $\mathbf{R_5}$ are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, C(O)H, $C(O)$-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

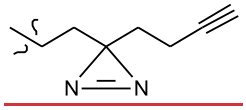
wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, C(O)H, $C(O)$-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8

cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 and R_7' are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each R_8 is independently $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

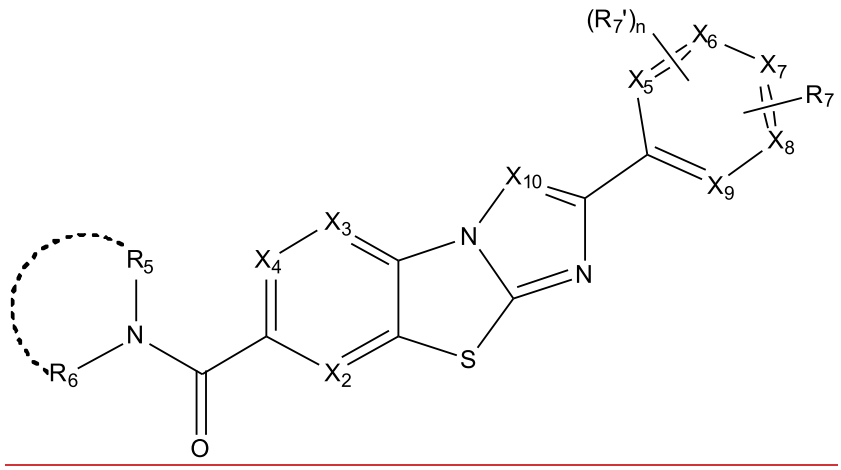
wherein **q** is between 2 and 10;

R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(e)**:



I(e)

3n

wherein

X_2, X_3, and X_4, are each independently nitrogen or CH;

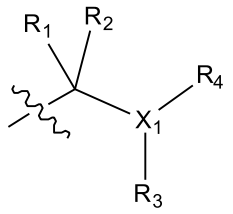
X_5 , X_6 , X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_5 and R_6 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

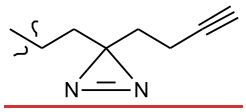
wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-

C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

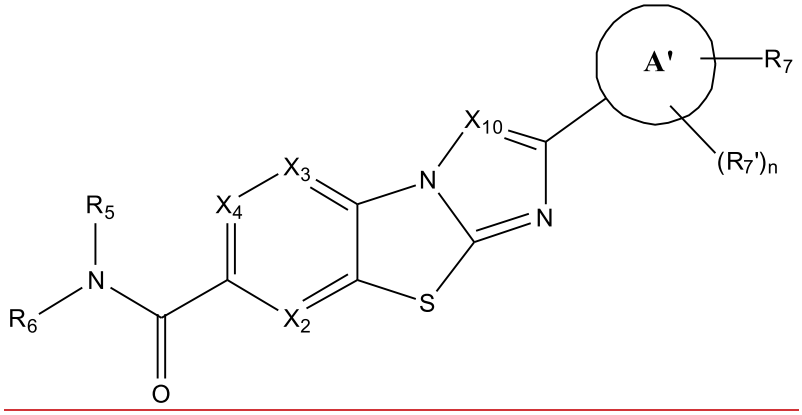
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(f)**:



I(f)

wherein

A' is a 3-8 membered single or fused saturated, unsaturated or aromatic heterocyclic ring;

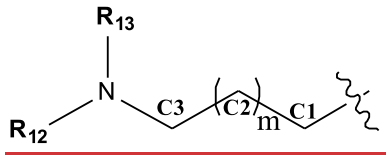
X_2, X_3, and X_4, are each independently nitrogen or CH;

X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl;

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or R_6 is represented by the structure of formula **B**:



B

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

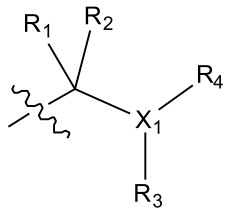
Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or $\mathbf{R_6}$ and $\mathbf{R_5}$ are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

$\mathbf{R_7}$ is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, C(O)N(R_{10})(R_{11}), SO_2R, SO_2N(R_{10})(R_{11}), $CH(CF_3)$(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or $\mathbf{R_7}$ is represented by the structure of formula A:



A

wherein

$\mathbf{X_1}$ is N or O;

$\mathbf{R_1}$ and $\mathbf{R_2}$ are each independently H, F, or CF_3; or $\mathbf{R_1}$ and $\mathbf{R_2}$ are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;

$\mathbf{R_3}$ and $\mathbf{R_4}$ are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or $\mathbf{R_3}$ and $\mathbf{R_4}$ are joined to form a 3-8 membered heterocyclic ring;

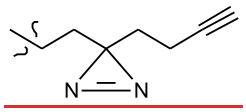
wherein if X_1 is O then R_4 is absent;

$\mathbf{R_7'}$ is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2,

$C(O)NHR$, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or $\mathbf{R_7}$ and $\mathbf{R_7'}$ are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

$\mathbf{R_{20}}$ is represented by the following structure:



$\mathbf{R_{30}}$ is H, $\mathbf{R_{20}}$, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8\text{-}O\text{-}R_8\text{-}O\text{-}R_{10}$, $-R_8\text{-}O\text{-}R_{10}$, $-R_8\text{-}R_{10}$, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

$\mathbf{R}$ is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8\text{-}O\text{-}R_8\text{-}O\text{-}R_{10}$, $-R_8\text{-}O\text{-}R_{10}$, $-R_8\text{-}R_{10}$, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

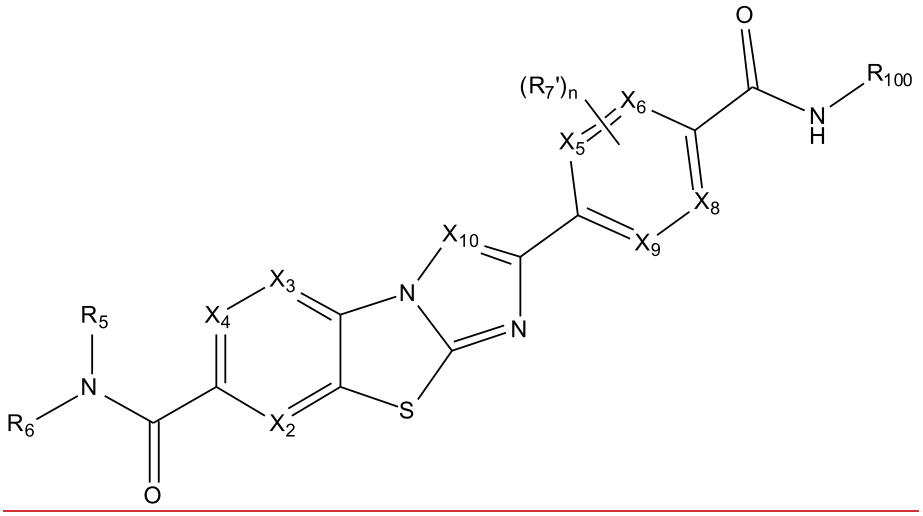
wherein **q** is between 2 and 10;

$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(g)**:



I(g)

wherein

X_2, X_3, and **X_4,** are each independently nitrogen or CH;

X_5 , X_6 , X_7, X_8 and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

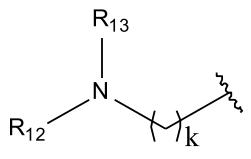
R_{100} is a C_1-C_5 linear or branched, substituted or unsubstituted alkyl, R_8-OH, -R_8-O-R_{10}, R_8-N(R_{10})(R_{11}), **R_{20}**, or a substituted or unsubstituted 3-8 membered heterocyclic ring;

R_5 is H or C_1-C_5 linear or branched alkyl**;**

R_6 is F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-S-R_{10}, R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), **R_8**-(substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, N(R)$_2$, NH(R_{10}), N(R_{10})(R_{11}), R_8-N(R_{10})(R_{11}), R_8-C(O)N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), B(OH)$_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, C(O)N(R_{10})(R_{11}), SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, substituted or unsubstituted benzyl;

or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

or **R_6** is represented by the structure of formula **C**:

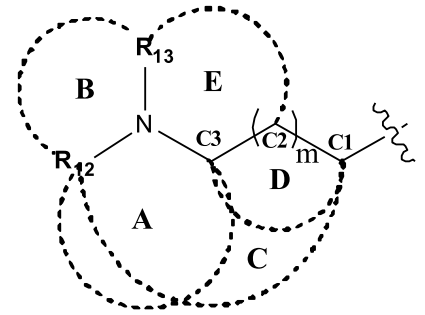


wherein

k is between 1 and 4;

R_{12} and **R_{13}** are each independedntly H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, **R_{20}**, or

R_{12} and **R_{13}** are joined to form a substituted or unsubstituted 4-7 membered heterocyclic ring; or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O)-alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H;

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl;

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single spiro or fused 3-8 membered heterocyclic ring;

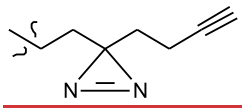
Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or

branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy, optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

$\mathbf{R_{20}}$ is represented by the following structure:



$\mathbf{R_{30}}$ is H, $\mathbf{R_{20}}$, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

$\mathbf{R}$ is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky, C_1-C_5 linear or branched alkoxy, $\mathbf{R_{20}}$, C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring,

n is an integer between 0 and 4;

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, prodrug, isotopic variant, PROTAC, pharmaceutical product or any combination thereof.

[008c] In another aspect, there is provided a compound represented by the structure of any of the following compounds:

Compound No.	Compound Name
101	2-phenyl-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
103	N-(3-(azepan-1-yl)propyl)-2-phenylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide
107	N-(3-(diethylamino)propyl)-2-phenylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide
108	N-propyl-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
109	N-ethyl-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
111	2-(4-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
118	N-(3-(diethylamino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
123	N-(3-(diethylamino)propyl)-2-(o-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
124	2-(2-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
126	N-(3-(diethylamino)propyl)-2-(4-ethylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
129	N-(3-(diethylamino)propyl)-2-(2-fluorophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
130	N-(3-(diethylamino)propyl)-2-(3-fluorophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
131	2-(3-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
132	2-(4-chlorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
133	N-(3-(4,4-difluoropiperidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
134	N-(3-morpholinopropyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
136	N-(3-(diethylamino)propyl)-2-(4-isopropylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate
137	N-(3-(4-fluoropiperidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
142	N-(3-(diethylamino)propyl)-2-(4-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
143	N-(3-(diethylamino)propyl)-2-(2-fluoro-3-methylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
144	N-(3-(diethylamino)propyl)-2-(2-fluoro-5-methylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
145	2-(3-cyanophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
150	N-(3-(2-oxopyrrolidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
152	N-(3-(diethylamino)propyl)-2-(3-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
154	N-(3-(diethylamino)propyl)-2-(4-(dimethylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate
155	N-(3-(ethylamino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
160	2-(4-cyanophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
164	N-(3-(diethylamino)propyl)-2-(4-(methylamino)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
167	N-(3-(diethylamino)propyl)-2-(3-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide
169	N-(3-(diethylamino)propyl)-2-(3-isopropylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide

172	*4-(7-((3-(diethylamino)propyl)carbamoyl)benzo[d]imidazo[2,1-b]thiazol-2-yl)benzoic acid*
177	*N-(3-(ethyl(2,2,2-trifluoroethyl)amino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
178	*2-(m-tolyl)-N-(3-((2,2,2-trifluoroethyl)amino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
181	*N-(3-(diethylamino)propyl)-N-methyl-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
193	*N-(3-(ethyl(2,2,2-trifluoroethyl)amino)propyl)-N-methyl-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
276	*N-(3-(diethylamino)propyl)-2-(4-((dimethylamino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
277	*N-(3-(diethylamino)propyl)-2-(4-(hydroxymethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
384	*2-(4-(aminomethyl)-3-chloro-5-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

[008d] In another aspect, there is provided a pharmaceutical composition comprising the compound as defined above and a pharmaceutically acceptable carrier.

[009] This ~~invention~~ disclosure further provides a pharmaceutical composition comprising a compound or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, prodrug, isotopic variants (e.g., deuterated analog), PROTAC, pharmaceutical product or any combination thereof, represented by the structure of formula **I, II** and **I(a)-I(h)**, and by the structures listed in Table 1, as defined herein below, and a pharmaceutically acceptable carrier.

[009a] In another aspect, the use of a compound as defined above or the pharmaceutical composition as defined above in the manufacture of a medicament for

treating, suppressing, reducing the severity, reducing the risk of developing or inhibiting cancer in a subject

suppressing, reducing or inhibiting tumor growth in a subject;

modulating c-MYC mRNA translation in a cell;

regulating c-MYC mRNA transcription in a cell;

or any combination thereof.

[0010] This ~~invention~~ disclosure further provides a method of treating, suppressing, reducing the severity, reducing the risk of developing or inhibiting cancer in a subject, comprising administering a compound

[0011] represented by the structure of formula **I, II** and **I(a)-I(h)**, and by the structures listed in Table 1, as defined herein below, to a subject suffering from cancer under conditions effective to treat, suppress, reduce the severity, reduce the risk of developing, or inhibit cancer in said subject.

[0012] This ~~invention~~ disclosure further provides a method for suppressing, reducing or inhibiting tumor growth in a subject, comprising administering a compound represented by the structure of formula **I, II** and **I(a)-I(h)**, and by the structures listed in Table 1, as defined herein below, to a subject, under conditions effective to suppress, reduce or inhibit tumor growth in said subject. In some ~~embodiment~~examples, the tumor is cancerous. In some ~~embodiment~~examples, the subject suffers from cancer.

[0013] This ~~invention~~ disclosure further provides a method of modulating c-MYC mRNA translation in a cell, comprising contacting a compound represented by the structure of formula **I, II** and **I(a)-I(h)** and by the

structures listed in Table 1, as defined herein below, with a cell, thereby modulating c-MYC mRNA translation in said cell.

[0014] This ~~invention~~ disclosure further provides a method of regulating c-MYC mRNA transcription in a cell, comprising contacting a compound represented by the structure of formula **I, II** and **I(a)-I(h)** and by the structures listed in Table 1, as defined herein below, with a cell, thereby regulating c-MYC mRNA transcription in said cell.

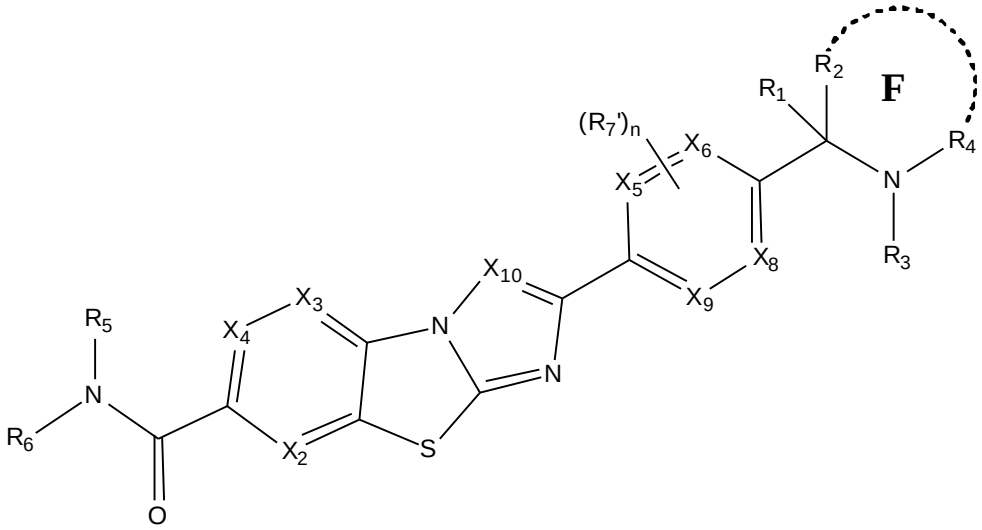
BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The patent of application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the office upon request and payment of the necessary fee.

[0016] **Figure 1** demonstrates how Protein Synthesis Monitoring (PSM) specifically monitors c-Myc synthesis. The assay system comprises human non-small cell lung carcinoma cell line A549, which is expressing high level of c-Myc. Two tRNAs (di-tRNA) which decode one specific glutamine codon and one specific serine codon were transfected with control RNAi or an RNAi directed to c-Myc. The FRET signal specifically monitors c-Myc translation, as the FRET signal in c-Myc siRNA treated cells was inhibited. In blue, cell nuclei stained with DAPI; in yellow, FRET signals from tRNA pair which decodes glutamine-serine di-codons.

WHAT IS CLAIMED:

1. A compound represented by the structure of formula **I(h):**



I(h)

wherein

Ring F is absent or is a substituted or unsubstituted, saturated or unsaturated, 4-8 membered heterocyclic ring, (e.g., pyrrolidine, pyridine, imidazole, pyrimidine, triazole, oxadiazole, pyrazole);

R_1 and **R_2** are each independently H, F, Cl, Br, I, OH, SH, or CF_3, substituted or unsubstituted C_1-C_5 alkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy;

or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring (e.g., cyclopropyl);

or **R_2** and **R_4** are joined to form **Ring F** as defined above (e.g., pyrrolidine, pyridine, pyrimidine, triazole, oxadiazole, pyrazole),

wherein if **Ring F** is aromatic, then **R_1** and/or **R_3** are absent;

R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl (e.g., methoxyethylene, methylaminoethyl, aminoethyl), -R_8-O-R_{10} (e.g., $(CH_2)_2$-O-CH_3), R_8-$N(R_{10})(R_{11})$ (e.g., $(CH_2)_2$-NH(CH_3)), substituted or unsubstituted C_3-C_8 cycloalkyl (e.g., cyclopropyl), substituted or unsubstituted 5-7 membered heterocyclic ring (e.g., pyrrolidine, methylpyrrolidine, piperidine), or $R_{20;}$ or

R_3 and **R_4** are joined to form a 3-8 membered heterocyclic ring (e.g., pyrrolidine, , pyrrolidone, 2-oxopyrrolidine, piperidine, morpholine, piperazine, imidazole);

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

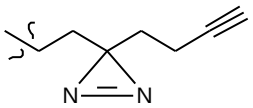
X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl)**;**

R_6 is R_8-(substituted or unsubstituted, saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) (e.g., $(CH_2)_3$-piperidine, $(CH_2)_3$-4-fluoro-piperidine), R_8-$N(R_{10})(R_{11})$ (e.g., $(CH_2)_3$-$N(CH_2CH_3)_2$);

R_7' is each independently H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., isopropyl, methyl, ethyl), C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl (e.g., CHF_2), C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy (e.g. methoxy), optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl (e.g., cyclopropyl), substituted or unsubstituted 3-8 membered heterocyclic ring (e.g., morpholine, pyran, oxetane, pyrrolidine, imidazole, piperazine, piperidine, diaoxazole, 2-oxopyrrolidine), substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

R_{20} is represented by the following structure:



R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_2-CH_2-O-CH_3, CH_2-O-CH_2-CH_2-O-CH_3), C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl (e.g., CHF_2, CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), -R_8-O-R_8-O-R_{10} (e.g. $(CH_2)_2$-O-$(CH_2)_2$-O-CH_3), -R_8-O-R_{10}, -R_8-R_{10} (e.g., $(CH_2)_2$-O-CH_3), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_2-CH_2-O-CH_3, CH_2-O-CH_2-CH_2-O-CH_3), C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl (e.g., CHF_2, CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), -R_8-O-R_8-O-R_{10} (e.g. $(CH_2)_2$-O-$(CH_2)_2$-O-CH_3), -R_8-O-R_{10}, -R_8-R_{10} (e.g., $(CH_2)_2$-O-CH_3), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl (e.g., methyl, ethyl, CH_2-CH_2-O-CH_3, CH_2CF_3, C_1-C_5 substituted or unsubstituted linear or branched haloalky, CH_2CF_3, C_1-C_5 linear or branched alkoxy (e.g., O-CH_3), **R_{20}**, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring (e.g., piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), pharmaceutical product or any combination thereof.

2. The compound of claim 1, wherein

R_1 is H;

R_3 is H;

R_2 is H,

R_4 is H or cyclopropyl, or **R_2** and **R_4** are joined to form a pyrrolidine;

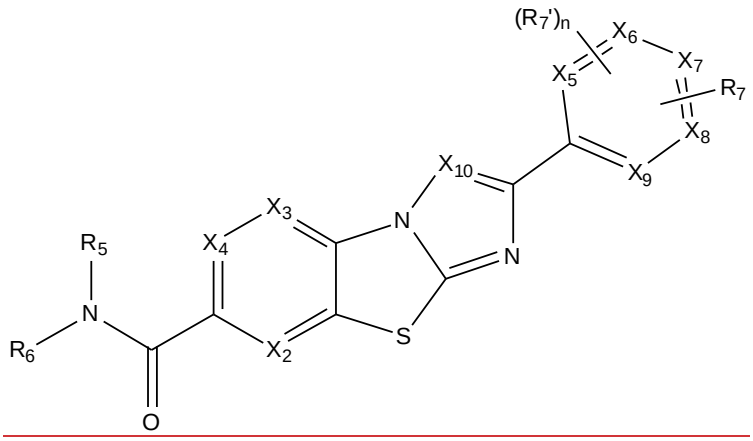
R_7' is H, F, Cl, or CHF_2;

R_6 is $(CH_2)_3$-piperidine, $(CH_2)_3$-4-fluoro-piperidine, or $(CH_2)_3$-$N(CH_2CH_3)_2$;

wherein the compound is a substantially pure single stereoisomer;

or any combination thereof.

3. A compound represented by the structure of formula **I(a):**



I(a)

wherein

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

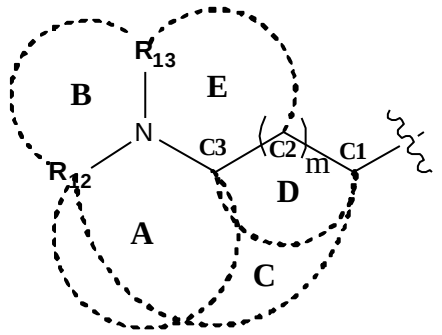
X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl;

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O)-alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

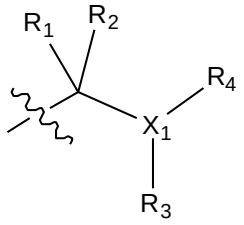
Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is O-R_{20}, substituted or unsubstituted 4-7 membered heterocyclic ring (pyrrolidine), substituted or unsubstituted aryl, R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring);

or R_7 is represented by the structure of formula **A**:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring; and

R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

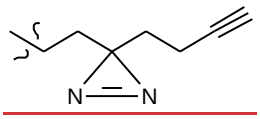
AND

R_7**'** is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, CHF_2, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl,

cyclopropyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or $\mathbf{R_7}$ and $\mathbf{R_7'}$ are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

$\mathbf{R_{20}}$ is represented by the following structure:



$\mathbf{R}$ is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

$\mathbf{R_{30}}$ is H, $\mathbf{R_{20}}$, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein $\mathbf{p}$ is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

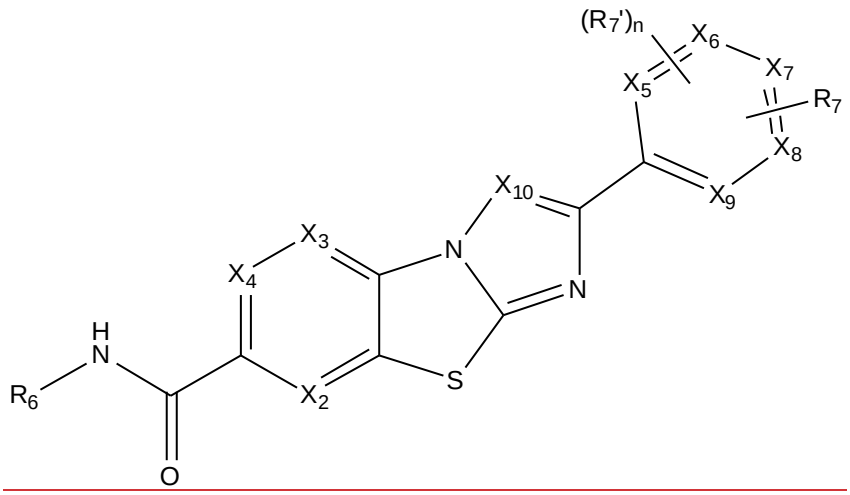
wherein $\mathbf{q}$ is between 2 and 10;

$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky , CH_2CF_3, C_1-C_5 linear or branched alkoxy , $\mathbf{R_{20}}$, C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

$\mathbf{n}$ is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(b)**:



I(b)

wherein

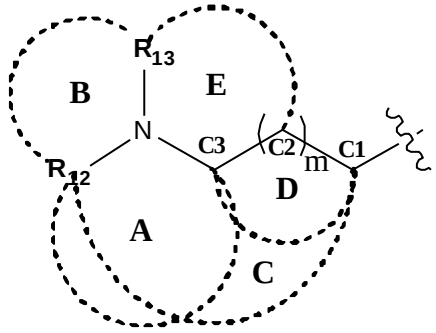
X_2, X_3, and X_4, are each independently nitrogen or CH;

X_5 , X_6 , X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_6 is -R_8-O-R_{10}, R_8-S-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), $(CH_2)_3$-pyran, CH_2-tetrahydrofurane, CH_2-dioxane, CH_2-methyl-THF, CH_2-tetrahydrofurane, CH_2-oxa-azaspirodecane, CH_2-azaspiroheptane, $(CH_2)_3$-dimethylpyrazole, CH_2-methyl-azetidine, CH_2-azaspiroheptane, benzyl, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl;

or R_6 is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form a substituted or unsubstituted pyrrolidine ring, piperazine, thiomorpholine 1,1-dioxide, 2-oxa-6-azaspiro[3.3]heptane, pyrazole, imidazole, 2,5-diazabicyclo[2.2.1]heptane or a diazabicyclo[2.2.1]heptane; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

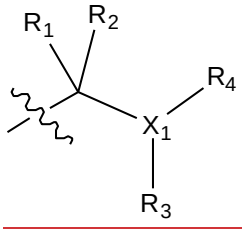
Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

R_7 is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

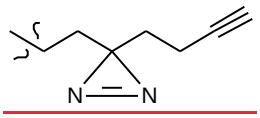
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

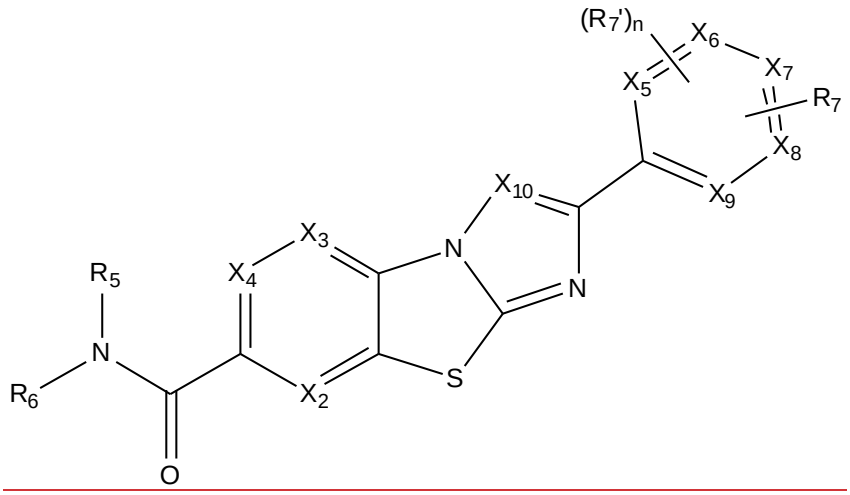
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(c)**:



I(c)

wherein

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

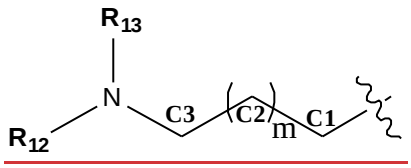
X_5 , **X_6** , **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or R_6 is represented by the structure of formula **B**:



B

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

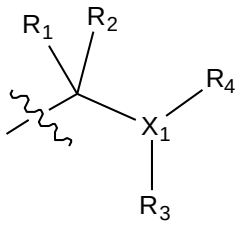
Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or $\mathbf{R_6}$ and $\mathbf{R_5}$ are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

$\mathbf{R_7}$ is Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or $\mathbf{R_7}$ is represented by the structure of formula A:



A

wherein

$\mathbf{X_1}$ is N or O;

$\mathbf{R_1}$ and $\mathbf{R_2}$ are each independently H, F, or CF_3; or $\mathbf{R_1}$ and $\mathbf{R_2}$ are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

$\mathbf{R_3}$ and $\mathbf{R_4}$ are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or $\mathbf{R_3}$ and $\mathbf{R_4}$ are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

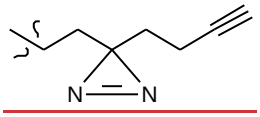
$\mathbf{R_7'}$ is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -$C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5

linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

wherein **R_7'** is different than **R_7**; and

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

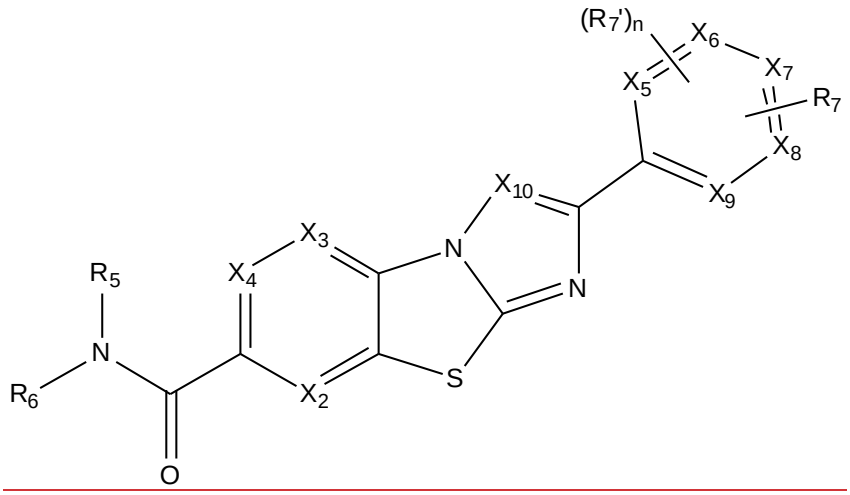
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 1 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(d)**:



I(d)

wherein

X_2, X_3, and **X_4,** are each independently nitrogen or CH;

X_5 , X_6 , X_7, X_8 and **X_9** are each independently nitrogen or carbon atoms;

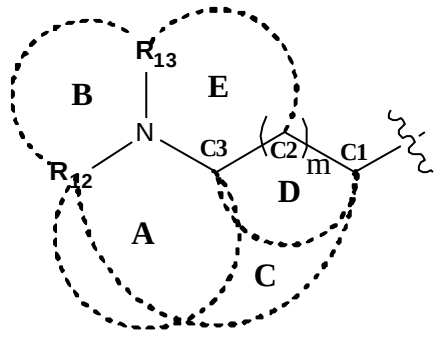
X_{10} is N, CH, or C(R);

wherein at least one of **X_2, X_3, X_4, X_5 , X_6 , X_7, X_8, X_9** or **X_{10}** is N;

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl)**;**

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)$(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

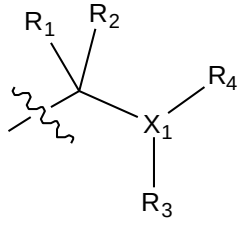
Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or

branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;

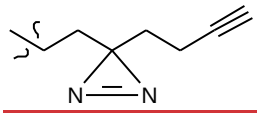
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, C(O)H, $C(O)$-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



$\mathbf{R_{30}}$ is H, $\mathbf{R_{20}}$, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

$\mathbf{R}$ is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

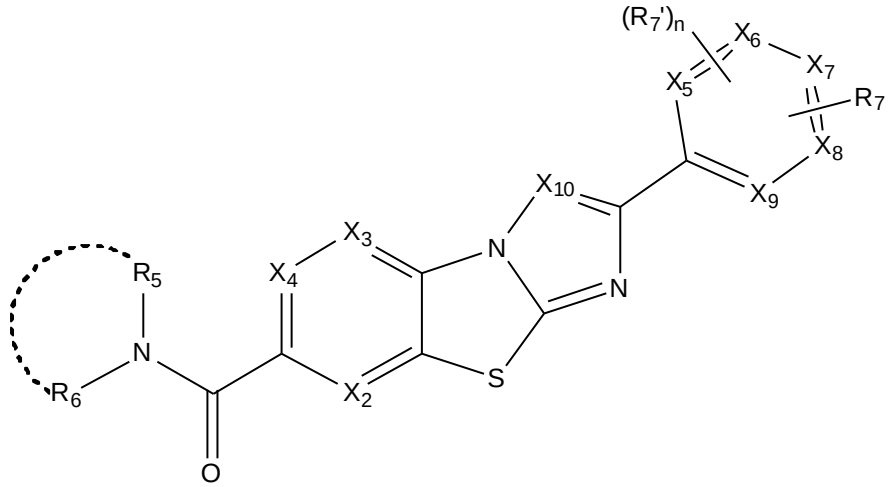
wherein **q** is between 2 and 10;

$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(e)**:



I(e)

wherein

$\mathbf{X_2}$, $\mathbf{X_3}$, and $\mathbf{X_4}$, are each independently nitrogen or CH;

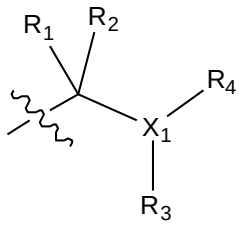
$\mathbf{X_5}$, $\mathbf{X_6}$, $\mathbf{X_7}$, $\mathbf{X_8}$ and $\mathbf{X_9}$ are each independently nitrogen or carbon atoms;

$\mathbf{X_{10}}$ is N, CH, or C(R);

R_5 and **R_6** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

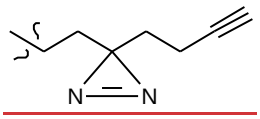
wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OCH_2Ph, COOH, C(O)H, -C(O)NH_2, SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl,

substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

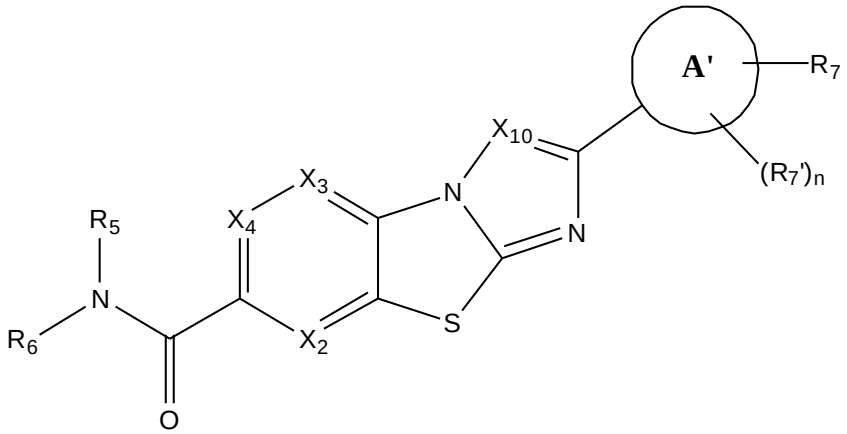
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(f)**:



I(f)

wherein

A' is a 3-8 membered single or fused saturated, unsaturated or aromatic heterocyclic ring;

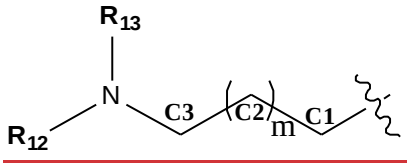
X_2, X_3, and X_4, are each independently nitrogen or CH;

X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl;

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or R_6 is represented by the structure of formula **B**:



B

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

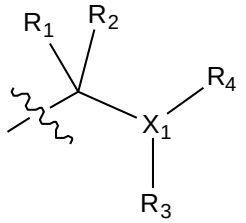
Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, -R_8-O-R_{10}, -R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, C(O)N(R_{10})(R_{11}), SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;

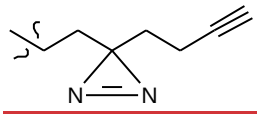
R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, -CH_2CN, -R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, C(O)N(R_{10})(R_{11}), SO_2R, SO_2N(R_{10})(R_{11}), $CH(CF_3)$(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, N(R)$_2$, NH(R_{10}), N(R_{10})(R_{11}), CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , -R_8-O-R_8-O-R_{10} , -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, NH(R_{10}), N(R_{10})(R_{11}), CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

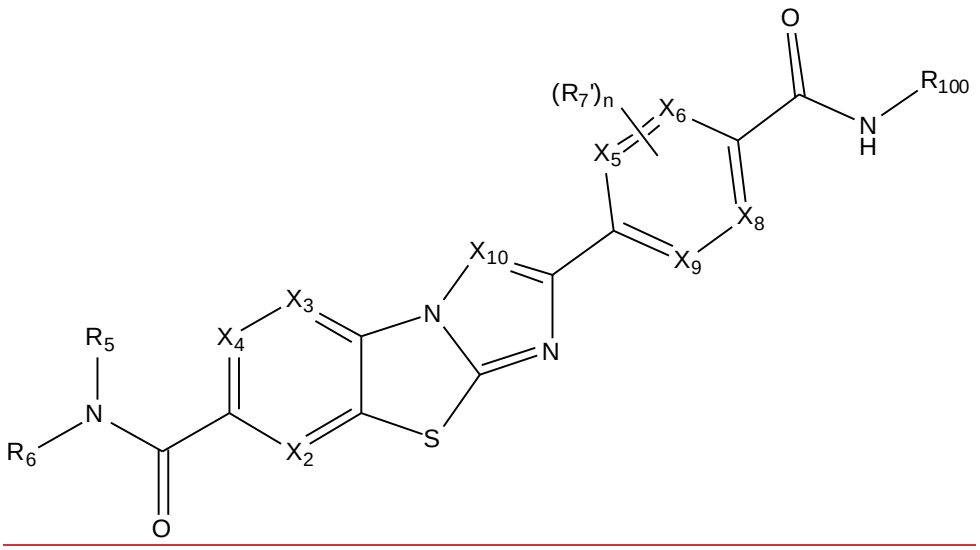
wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2$R;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or a compound represented by the structure of formula **I(g)**:



I(g)

wherein

X_2, X_3, and **X_4,** are each independently nitrogen or CH;

X_5 , X_6 , X_7, X_8 and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

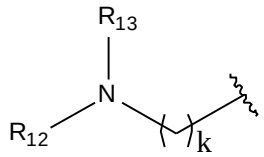
R_{100} is a C_1-C_5 linear or branched, substituted or unsubstituted alkyl, R_8-OH, -R_8-O-R_{10}, R_8-N(R_{10})(R_{11}), **R_{20}**, or a substituted or unsubstituted 3-8 membered heterocyclic ring;

R_5 is H or C_1-C_5 linear or branched alkyl**;**

R_6 is F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-S-R_{10}, R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), **R_8**-(substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, N(R)$_2$, NH(R_{10}), N(R_{10})(R_{11}), R_8-N(R_{10})(R_{11}), R_8-C(O)N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-N(R_{10})(R_{11}), COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, C(O)N(R_{10})(R_{11}), SO_2R, SO_2N(R_{10})(R_{11}), CH(CF_3)(NH-R_{10}), C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, substituted or unsubstituted benzyl;

or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

or **R_6** is represented by the structure of formula **C**:



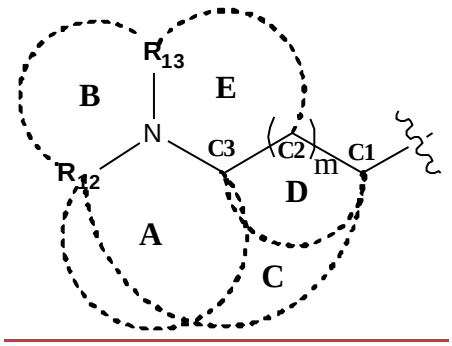
wherein

k is between 1 and 4;

R_{12} and **R_{13}** are each independedntly H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, **R_{20}**, or

R_{12} and **R_{13}** are joined to form a substituted or unsubstituted 4-7 membered heterocyclic ring;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O)-alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H;

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl;

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

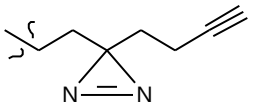
Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single spiro or fuesed 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, -R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, -CH_2CN, -R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -$OC(O)CF_3$, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, $-C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy, optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky, C_1-C_5 linear or branched alkoxy, **R_{20}**, C(O)R, or $S(O)_2R$;

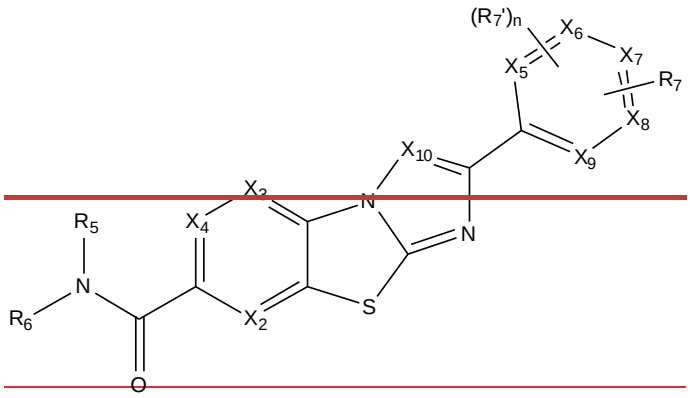
or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring,

n is an integer between 0 and 4;

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, prodrug, isotopic variant, PROTAC, pharmaceutical product or any combination thereof.

3. The compound of claim 1, wherein the compound is a substantially pure single stereoisomer.

4. A compound represented by the structure of formula **(I):**



(I)

wherein

X_2, X_3, and X_4, are each independently nitrogen or CH;

X_5, X_6, X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_5 is H or C_1-C_5 linear or branched alkyl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, R_8-O-R_8-O-R_{10}, R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each R_8 is independently $[CH_2]_p$

wherein **p** is between 1 and 10;

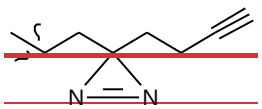
R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky , CH_2CF_3, C_1-C_5 linear or branched alkoxy , R_{20}, C(O)R, or $S(O)_2R$;

or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

R_{20} is represented by the following structure:



n is an integer between 0 and 4 (e.g., 1, 2);

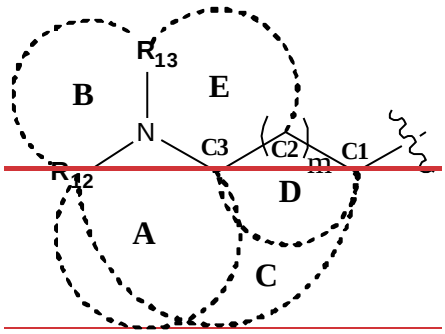
AND

EITHER ONE OF ALTERNATIVES 1-5 TAKES PLACE:

1.

~~R_6 is H, F, Cl, Br, I, OH, SH, R_8OH, R_8SH, R_8OR_{10}, R_8SR_{10}, $(CH_2)_3$S$(CH_2)_2CH_3$), R_8NHC(O)R_{10}, OR_8R_{10}, R_8 (substituted or unsubstituted C_3-C_8 cycloalkyl), R_8 (substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, $R_8N(R_{10})(R_{11})$, $(CH_2)_3N(CH_2CH_3)_2$, $(CH_2)_3NH_2$, $(CH_2)_3N(CH_2CH_3)(CH_2CF_3$, $R_9R_8N(R_{10})(R_{11})$, $B(OH)_2$, $OC(O)CF_3$, OCH_2Ph, NHC(O)R_{10}, NHCON$(R_{10})(R_{11})$, COOH, C(O)Ph, C(O)OR_{10}, R_8C(O)R_{10}, C(O)H, C(O)R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NHR_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8 (substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8 aryl, or substituted or unsubstituted benzyl;~~

~~or **R_6** is represented by the structure of formula **Bi**:~~



~~**Bi**~~

~~wherein~~

~~**m** is 0 or 1; and~~

~~**R_{12}** is **R_{20}** or C_1-C_5 C(O) alkyl, and **R_{13}** is **R_{30}**; or~~

~~**R_{12}** and **R_{13}** are both H; or~~

~~**R_{12}** and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or~~

~~**R_{12}** and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or~~

~~**R_{12}** and **R_{13}** are joined to form ring **B**; or~~

~~**R_{12}** and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or~~

~~**C1** and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or~~

~~**R_{13}** and **C2** are joined to form ring **E**, m is 1, and **R_{12}** is **R_{30}**; or~~

~~R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein~~

~~Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring;~~

~~Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and~~

~~Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;~~

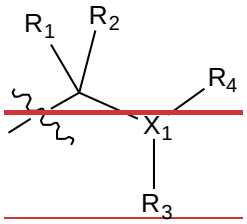
~~or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;~~

~~R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8 aryl , R_8-O-R_8-O-R_{10} , R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;~~

~~**AND**~~

~~R_7 is O-R_{20}, substituted or unsubstituted 4-7 membered heterocyclic ring (pyrrolidine, pyrrolidinone, morpholine, oxetane, imidazole, tetrahydropyran, triazole, oxadiazole, pyrazole), substituted or unsubstituted aryl, R_8 (substituted or unsubstituted, saturated, unsaturated or aromatic, single, fused or spiro 3-8 membered heterocyclic ring);~~

~~or R_7 is represented by the structure of formula **A**:~~



~~**A**~~

~~wherein~~

~~X_1 is N or O;~~

~~R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic (e.g., cyclopropyl) or heterocyclic ring; and~~

~~R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20};~~

~~or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;~~

~~wherein if X_1 is O then R_4 is absent;~~

~~**AND**~~

~~R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH,~~

C(O)H, C(O)NH_2, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\ R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl , methyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, CHF_2, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

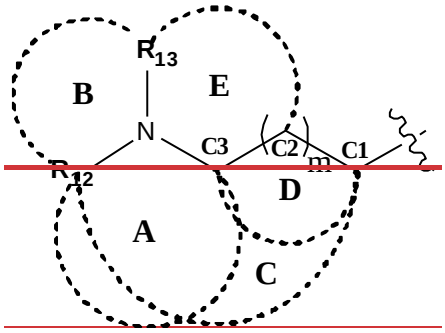
or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

OR

2.

R_6 is R_8-O-R_{10}, R_8-S-R_{10}, R_8-NH_2, R_8-NHC(O)-R_{10}, R_8-C(O)$N(R_{10})(R_{11})$, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), $(CH_2)_3$-pyran, CH_2-tetrahydrofurane, CH_2-dioxane, CH_2-methyl-THF, CH_2-tetrahydrofurane, CH_2-oxa-azaspirodecane, CH_2-azaspiroheptane, $(CH_2)_3$-dimethylpyrazole, CH_2-methyl-azetidine, CH_2-azaspiroheptane, CH_2-pyrrolidine, $(CH_2)_3$-pyrrolidine, which may all be substituted or unsubstituted, benzyl, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8-cycloalkyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O) alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form a substituted or unsubstituted pyrrolidine ring, piperazine, thiomorpholine 1,1-dioxide, 2-oxa-6-azaspiro[3.3]heptane, pyrazole, imidazole, 2,5-diazabicyclo[2.2.1]heptane or a diazabicyclo[2.2.1]heptane; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and C2 are joined to form ring E, m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring B and C1 and C3 are joined to form ring D;

wherein

Ring A, C and E are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring B is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

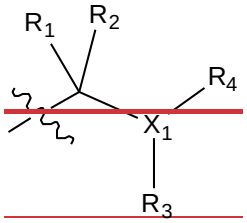
Ring D is a substituted or unsubstituted C_3-C_8 cycloalkyl;

R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8 aryl , R_8-O-R_8-O-R_{10} , R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

AND

R_7 is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-6 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

AND

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OCH_2Ph$, COOH, C(O)H, $-C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

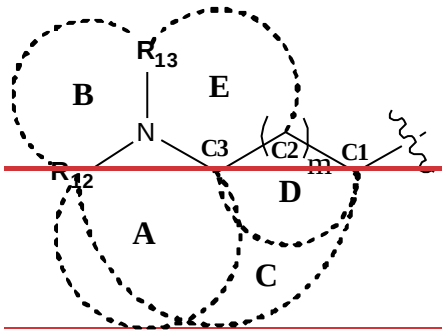
or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

OR

3.

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, $-C(O)Ph$, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, $-C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O) alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

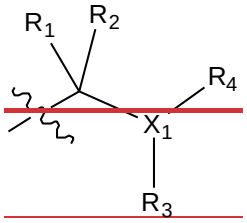
R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8 aryl , R_8-O-R_8-O-R_{10} , R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

AND

R_7 is Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R,

~~$SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~or **R_7** is represented by the structure of formula A:~~



~~**A**~~

~~wherein~~

~~**X_1** is N or O;~~

~~**R_1** and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;~~

~~**R_3** and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;~~

~~wherein if X_1 is O then R_4 is absent;~~

~~**AND**~~

~~**R_7'** is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;~~

~~wherein **R_7'** is different than **R_7**; and~~

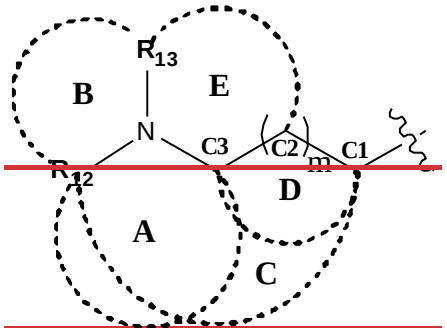
~~wherein **n** is not 0;~~

~~**OR**~~

4.

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$, R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3N(CH_2CH_3)_2$, $(CH_2)_3NH_2$, $(CH_2)_3N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5-linear or branched C(O)-haloalkyl, -C(O)NH_2, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5-linear or branched, substituted or unsubstituted alkyl, C_1-C_5-linear or branched, substituted or unsubstituted alkenyl, C_1-C_5-linear or branched, or C_3-C_8-cyclic haloalkyl, substituted or unsubstituted C_1-C_5-linear or branched, or C_3-C_8-cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5-linear or branched thioalkoxy, C_1-C_5-linear or branched haloalkoxy, C_1-C_5-linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8-cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or R_6 is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5-C(O)-alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

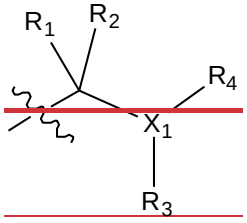
or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

AND

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, $-R_8$-O-R_{10}, $-R_8$-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, $-C(O)Ph$, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, $C(O)H$, $C(O)$-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $-C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

AND

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $OC(O)CF_3$, OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 and R_7' are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

wherein at least one of X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9 or X_{10} is N;

OR

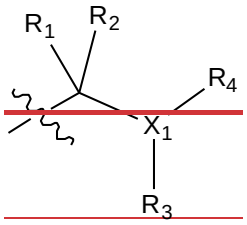
R_5 and R_6 are joined to for a substituted or unsubstituted 5-7 membered heterocyclic ring (e.g., azepam, piperazine);

AND

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, CH_2CN, R_8CN, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the

alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

AND

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, CH_2CN, R_8CN, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

or its pharmaceutically acceptable salt, optical isomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

5.4. The compound of claim 34, selected from the following:

Compound No.	Compound Name
102	*azepan-1-yl(2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)methanone*
104	*azepan-1-yl(2-(4-fluorophenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)methanone*
105	*2-(4-fluorophenyl)-N-(3-(propylthio)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
106	*azepan-1-yl(2-(4-ethoxyphenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)methanone*
110	*N-(3-acetamidopropyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
114	*(S)-N-(pyrrolidin-3-ylmethyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
115	*N-(3-aminopropyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
116	*(R)-N-(pyrrolidin-3-ylmethyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
117	*N-(azetidin-3-ylmethyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
119	*(S)-N-((1-ethylpyrrolidin-2-yl)methyl)-2-(3-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
122	*N-(2-aminoethyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
127	*(R)-N-((1-ethylpyrrolidin-2-yl)methyl)-2-(3-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
135	*N-(3-(1,1-dioxidothiomorpholino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
138	*N-((1s,3s)-3-(piperidin-1-yl)cyclobutyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
139	*N-(3-(tetrahydro-2H-pyran-4-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
140	*N-(piperidin-4-yl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
141	*piperazin-1-yl(2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)methanone*
149	*N-(3-(pyrrolidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
151	*N-((1r,3r)-3-(piperidin-1-yl)cyclobutyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
153	*2-([1,1'-biphenyl]-3-yl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
156	*N-(2-(pyrrolidin-2-yl)ethyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
157	*N-((1s,3s)-3-(methylamino)cyclobutyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
158	*N-((1r,3r)-3-(methylamino)cyclobutyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
159	*N-(3-oxo-3-(pyrrolidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
161	*N-(3-(diethylamino)propyl)-2-(pyridin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
163	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
165	*N-(3-(diethylamino)propyl)-2-(5-methylpyridin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
168	*N-(2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperidine-4-carboxamide*
170	*N-(3-(diethylamino)propyl)-2-(3-morpholinophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
171	*N-(3-(diethylamino)propyl)-2-(3-(pyrrolidin-1-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
173	*N-(3-(diethylamino)propyl)-2-(4-(oxetan-3-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

179	*N-(3-(diethylamino)propyl)-2-(4-(2-oxopyrrolidin-1-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
194	*N-(3-(diethylamino)propyl)-2-(4-methylpyridin-2-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
218	*N-(3-(diethylamino)propyl)-2-(4-(2,2,2-trifluoro-1-(methylamino)ethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
248	*N-(3-(5-methyl-2,5-diazabicyclo[2.2.1]heptan-2-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
265	*N-(2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperazine-1-carboxamide*
266	*4-(diethylamino)-N-(2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)butanamide*
267	*1-(2-(diethylamino)ethyl)-3-(2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)urea*
268	*2-(4-(1H-imidazol-2-yl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
276	*N-(3-(diethylamino)propyl)-2-(4-((dimethylamino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
277	*N-(3-(diethylamino)propyl)-2-(4-(hydroxymethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
288	*N-(3-(diethylamino)propyl)-2-(4-((methylamino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
289	*N-(3-(diethylamino)propyl)-2-(4-(pyrrolidin-1-ylmethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
290	*2-(4-(aminomethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
292	*N-(3-(diethylamino)propyl)-2-(4-(((2-methoxyethyl)amino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
293	*(R)-N-(3-(diethylamino)propyl)-2-(4-(2,2,2-trifluoro-1-(methylamino)ethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
294	*(S)-N-(3-(diethylamino)propyl)-2-(4-(2,2,2-trifluoro-1-(methylamino)ethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
298	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
299	*2-(3-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
300	*2-(4-((cyclopropylamino)methyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
304	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[5,4-b]pyridine-7-carboxamide*
305	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[5,4-b]pyridine-7-carboxamide*
306	*N-(3-(piperidin-1-yl)propyl)-2-(pyridin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
307	*N-(3-(diethylamino)propyl)-2-(4-morpholinophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
308	*N-(3-(diethylamino)propyl)-2-(3-(oxetan-3-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
313	*N-(3-(diethylamino)propyl)-2-(pyridazin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
314	*N-(3-(diethylamino)propyl)-2-(4-(tetrahydro-2H-pyran-4-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
315	*2-(4-(oxetan-3-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
316	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-b]pyridine-7-carboxamide*
317	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-b]pyridine-7-carboxamide*

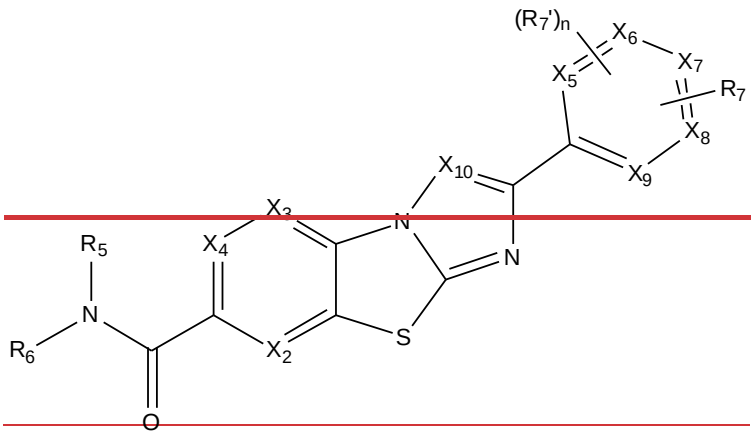
318	*2-(4-(1-aminocyclopropyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
319	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
324	*(R)-N-((1-(2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)pyrrolidin-3-yl)methyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
325	*(S)-N-((1-(2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)pyrrolidin-3-yl)methyl)-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
326	*2-(2-(2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethoxy)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
327	*2-(3-(2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethoxy)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
328	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
330	*N-(3-(diethylamino)propyl)-2-(pyrimidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
331	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
332	*2-(4-(1-aminocyclopropyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
334	*2-(4-((cyclopropylamino)methyl)-2,5-difluorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
338	*2-(4-(aminofluoromethyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
339	*N-(3-(diethylamino)propyl)-2-(4-(5-methyl-4H-1,2,4-triazol-3-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
340	*N-(3-(diethylamino)propyl)-2-(4-(3-methyl-1,2,4-oxadiazol-5-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
341	*2-(4-(1H-pyrazol-5-yl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
342	*N-(3-(diethylamino)propyl)-2-(4-((2-oxopyrrolidin-1-yl)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
343	*N-(3-(diethylamino)propyl)-2-(4-(((2-(methylamino)ethyl)amino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
344	*N-(3-(diethylamino)propyl)-2-(4-(piperidin-1-ylmethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
345	*N-(3-(diethylamino)propyl)-2-(4-(morpholinomethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
346	*N-(3-(diethylamino)propyl)-2-(4-(piperazin-1-ylmethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
347	*2-(4-((1H-imidazol-2-yl)methyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
348	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
349	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
351	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide*
354	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[4,5-b]pyridine-7-carboxamide*
355	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-b]pyridine-7-carboxamide*
356	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[5,4-b]pyridine-7-carboxamide*

357	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[5,4-b]pyridine-7-carboxamide*
358	*N-(3-(diethylamino)propyl)-7-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[5,4-d]pyrimidine-2-carboxamide*
359	*7-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[5,4-d]pyrimidine-2-carboxamide*
360	*N-(3-(diethylamino)propyl)-7-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[5,4-d]pyrimidine-2-carboxamide*
361	*7-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[5,4-d]pyrimidine-2-carboxamide*
366	*N-(3-(diethylamino)propyl)-2-(3-fluoropyridin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
367	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(oxetan-3-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
368	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
369	*2-(4-(aminomethyl)-2-chlorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
370	*2-(4-(aminomethyl)-2-cyclopropylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
371	*2-(4-(aminomethyl)-2-(difluoromethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
372	*2-(4-(aminomethyl)-2-(trifluoromethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
373	*N-(3-(piperidin-1-yl)propyl)-2-(4-(pyrrolidin-2-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
374	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
375	*2-(4-(aminomethyl)-3-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
376	*2-(4-(aminomethyl)-3-chlorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
377	*2-(4-(aminomethyl)-3-cyclopropylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
378	*2-(4-(aminomethyl)-3-(trifluoromethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
379	*2-(4-(aminomethyl)-3-(difluoromethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
380	*2-(4-(aminomethyl)-3-isopropylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
381	*2-(4-(aminomethyl)-3-methylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
382	*2-(4-(aminomethyl)-3,5-dimethylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
383	*2-(4-(aminomethyl)-3,5-difluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
385	*2-(4-(aminomethyl)-3,5-diisopropylphenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
386	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
387	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*

388	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
389	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
390	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
391	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
392	*2-(4-(aminomethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
393	*2-(4-((cyclopropylamino)methyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
394	*2-(4-((cyclopropylamino)methyl)phenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
395	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
396	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
397	*2-(4-(1-aminocyclopropyl)phenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
398	*2-(4-(1-aminocyclopropyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
399	*2-(4-(1-aminocyclopropyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
400	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
401	*2-(4-(aminomethyl)phenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
402	*2-(4-((cyclopropylamino)methyl)phenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
403	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
404	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
405	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(diethylamino)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
406	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
407	*2-(4-(aminomethyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
408	*2-(4-((cyclopropylamino)methyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
409	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
410	*2-(4-(aminomethyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
411	*2-(4-((cyclopropylamino)methyl)-2-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
412	*(R)-N-(3-(piperidin-1-yl)propyl)-2-(4-(pyrrolidin-2-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
413	*(S)-N-(3-(piperidin-1-yl)propyl)-2-(4-(pyrrolidin-2-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
414	*(R)-N-(3-(diethylamino)propyl)-2-(4-(pyrrolidin-2-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

415	*(S)-N-(3-(diethylamino)propyl)-2-(4-(pyrrolidin-2-yl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
416	*2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
417	*(R)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
418	*(S)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
419	*(R)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
420	*(S)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
421	*(R)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
422	*(S)-2-(2-fluoro-4-(pyrrolidin-2-yl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*

~~6. The compound of claim 4, represented by the structure of formula **I(a):**~~



~~**I(a)**~~

~~wherein~~

~~**X_2, X_3,** and **X_4,** are each independently nitrogen or CH;~~

~~**X_5, X_6, X_7, X_8** and **X_9** are each independently nitrogen or carbon atoms;~~

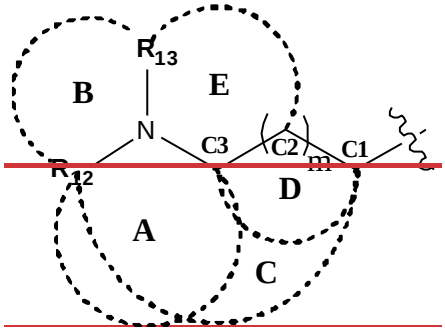
~~**X_{10}** is N, CH, or C(R);~~

~~**R_5** is H or C_1-C_5 linear or branched alkyl;~~

~~**R_6** is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$, R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3N(CH_2CH_3)_2$, $(CH_2)_3NH_2$, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, $C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH-R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or

branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8 (substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **Bi:**



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O) alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

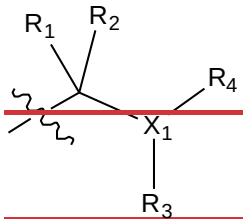
Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is O R_{20}, substituted or unsubstituted 4-7 membered heterocyclic ring (pyrrolidine), substituted or unsubstituted aryl, R_8 (substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring),;

or R_7 is represented by the structure of formula **A**:



A

wherein

X_1 is N or O;

R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form a C_3-C_8 carbocyclic or heterocyclic ring; and

R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

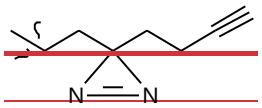
wherein if X_1 is O then R_4 is absent;

AND

R_7' is H, F, Cl, Br, I, OH, O R_{20}, SH, R_8-OH, R_8-SH, R_8-O R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\ R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, CHF_2, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, cyclopropyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 and R_7' are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched

haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently **$[CH_2]_p$**

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

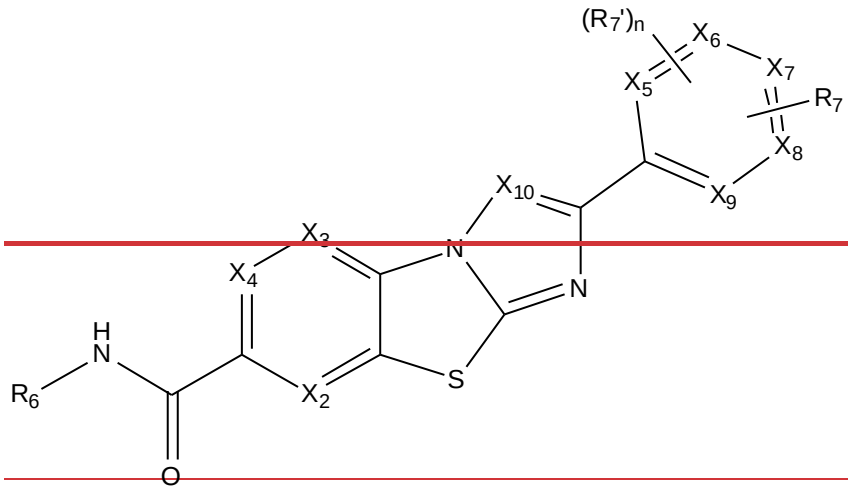
R_{10} and **R_{11}** are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, methyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky, CH_2CF_3, C_1-C_5 linear or branched alkoxy, **R_{20}**, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, optical isomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

7. The compound of claim 4, represented by the structure of formula **I(b)**:



I(b)

wherein

X_2, **X_3**, and **X_4**, are each independently nitrogen or CH;

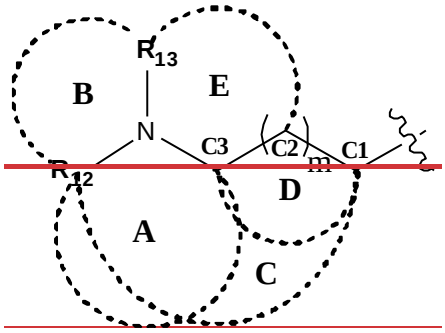
X_5, **X_6**, **X_7**, **X_8** and **X_9** are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_6 is $-R_8$-O-R_{10}, $-R_8$-S-R_{10}, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), $(CH_2)_3$-pyran, CH_2-tetrahydrofurane, CH_2-dioxane, CH_2-methyl-THF, CH_2-tetrahydrofurane, CH_2-oxa-

azaspirodecane, CH_2-azaspiroheptane, $(CH_2)_3$-dimethylpyrazole, CH_2-methyl-azetidine, CH_2-azaspiroheptane, benzyl, C_1-C_5-linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8-cycloalkyl;

or **R_6** is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5-C(O)-alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form a substituted or unsubstituted pyrrolidine ring, piperazine, thiomorpholine 1,1-dioxide, 2-oxa-6-azaspiro[3.3]heptane, pyrazole, imidazole, 2,5-diazabicyclo[2.2.1]heptane or a diazabicyclo[2.2.1]heptane; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E,** m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

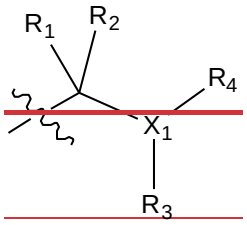
Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8-cycloalkyl;

R_7 is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8-cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OCH_2Ph$, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5-linear or branched, substituted alkyl, C_1-C_5-linear or branched, substituted or unsubstituted alkenyl, C_1-C_5-linear or branched, or C_3-C_8-cyclic haloalkyl, C_1-C_5-linear or branched, or C_3-C_8-cyclic alkoxy optionally wherein at least

one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

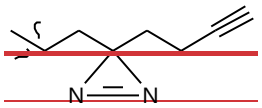
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\ R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5

linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, NH(R_{10}), N(R_{10})(R_{11}), CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each $\mathbf{R_8}$ is independently $[\mathbf{CH_2}]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_9}$ is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

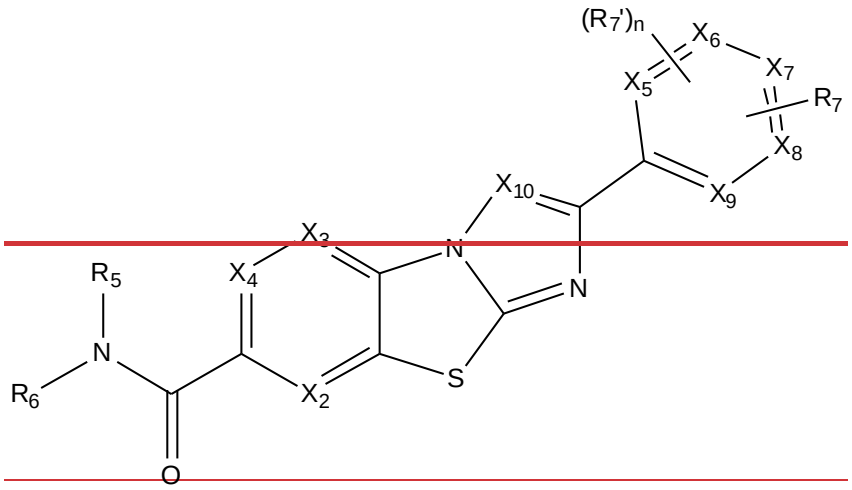
$\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or $\mathbf{R_{10}}$ and $\mathbf{R_{11}}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

8. The compound of claim 4, represented by the structure of formula **I(c)**:



I(c)

wherein

$\mathbf{X_2}$, $\mathbf{X_3}$, and $\mathbf{X_4}$, are each independently nitrogen or CH;

$\mathbf{X_5}$, $\mathbf{X_6}$, $\mathbf{X_7}$, $\mathbf{X_8}$ and $\mathbf{X_9}$ are each independently nitrogen or carbon atoms;

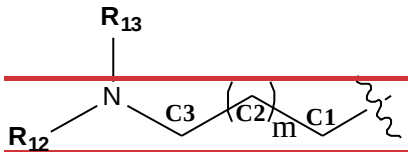
$\mathbf{X_{10}}$ is N, CH, or C(R);

$\mathbf{R_5}$ is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

$\mathbf{R_6}$ is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, $-R_8$-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, $-O-R_8$-R_{10}, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, NH(R_{10}),

~~$N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $OC(O)CF_3$, OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, $C(O)Ph$, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, $C(O)H$, $C(O)$-R_{10}, C_1-C_5 linear or branched $C(O)$-haloalkyl, $C(O)NH_2$, $C(O)NHR$, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;~~

~~or **R_6** is represented by the structure of formula **B**:~~



~~**B**~~

~~wherein~~

~~**m** is 0 or 1; and~~

~~**R_{12}** is **R_{20}** or C_1-C_5 $C(O)$-alkyl, and **R_{13}** is **R_{30}**; or~~

~~**R_{12}** and **R_{13}** are both H; or~~

~~**R_{12}** and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or~~

~~**R_{12}** and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or~~

~~**R_{12}** and **R_{13}** are joined to form ring **B**; or~~

~~**R_{12}** and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or~~

~~**C1** and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or~~

~~**R_{13}** and **C2** are joined to form ring **E**, m is 1, and **R_{12}** is **R_{30}**; or~~

~~**R_{12}** and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein~~

~~Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;~~

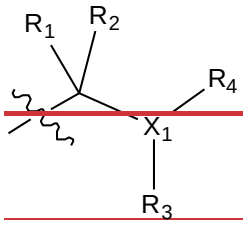
~~Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and~~

~~Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;~~

~~or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;~~

~~$\mathbf{R_7}$ is Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, CH_2CN, R_8CN, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~or $\mathbf{R_7}$ is represented by the structure of formula A:~~



~~A~~

~~wherein~~

~~$\mathbf{X_1}$ is N or O;~~

~~$\mathbf{R_1}$ and $\mathbf{R_2}$ are each independently H, F, or CF_3; or $\mathbf{R_1}$ and $\mathbf{R_2}$ are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;~~

~~$\mathbf{R_3}$ and $\mathbf{R_4}$ are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or $\mathbf{R_3}$ and $\mathbf{R_4}$ are joined to form a 3-8 membered heterocyclic ring;~~

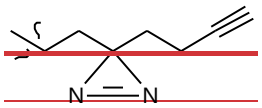
~~wherein if X_1 is O then R_4 is absent;~~

~~$\mathbf{R_7'}$ is F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~or $\mathbf{R_7}$ and $\mathbf{R_7'}$ are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;~~

~~wherein $\mathbf{R_7'}$ is different than $\mathbf{R_7}$; and~~

R_{20} is represented by the following structure:



R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , $-R_8$-O-R_8-O-R_{10} , $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, $-R_8$-O-R_8-O-R_{10}, $-R_8$-O-R_{10}, $-R_8$-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each R_8 is independently $[CH_2]_p$

wherein p is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein q is between 2 and 10;

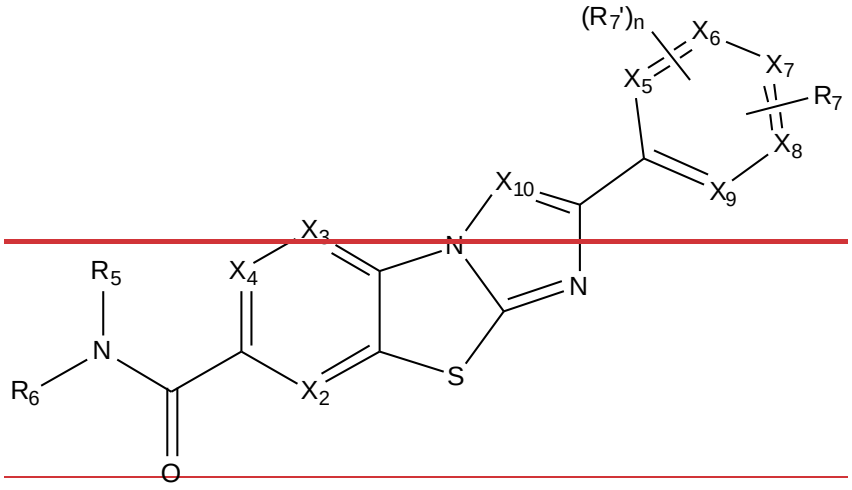
R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring;

n is an integer between 1 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

9. The compound of claim 4, represented by the structure of formula I(d):



I(d)

wherein

X_2, X_3, and X_4, are each independently nitrogen or CH;

X_5 , X_6 , X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

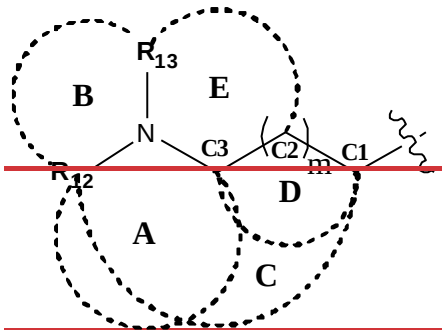
X_{10} is N, CH, or C(R);

wherein at least one of X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9 or X_{10} is N;

R_5 is H or C_1-C_5 linear or branched alkyl (e.g. methyl);

R_6 is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, $-R_8$-O-R_{10}, R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, $-C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH-R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or R_6 is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O) alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H; or

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

~~**C1** and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or~~

~~R_{13} and **C2** are joined to form ring **E**, m is 1, and R_{12} is R_{30}; or~~

~~R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;~~

~~wherein~~

~~Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;~~

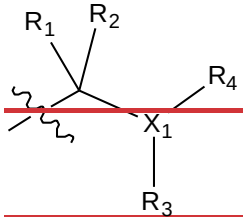
~~Ring **B** is a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring; and~~

~~Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;~~

~~or R_6 and R_5 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;~~

~~R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, R_8-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, $-CH_2CN$, $-R_8CN$, NH_2, NHR, $N(R)_2$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, $NHC(O)$-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, $-C(O)Ph$, $C(O)O$-R_{10}, R_8-$C(O)$-R_{10}, $C(O)H$, $C(O)$-R_{10}, C_1-C_5 linear or branched $C(O)$-haloalkyl, $-C(O)NH_2$, $C(O)NHR$, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~or R_7 is represented by the structure of formula A:~~



~~**A**~~

~~wherein~~

~~X_1 is N or O;~~

~~R_1 and R_2 are each independently H, F, or CF_3; or R_1 and R_2 are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;~~

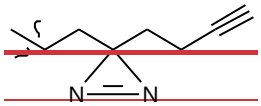
R_3 and R_4 are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or R_3 and R_4 are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $-C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 and R_7' are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl , R_8-O-R_8-O-R_{10} , R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, R_8-O-R_8-O-R_{10}, R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each R_8 is independently $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

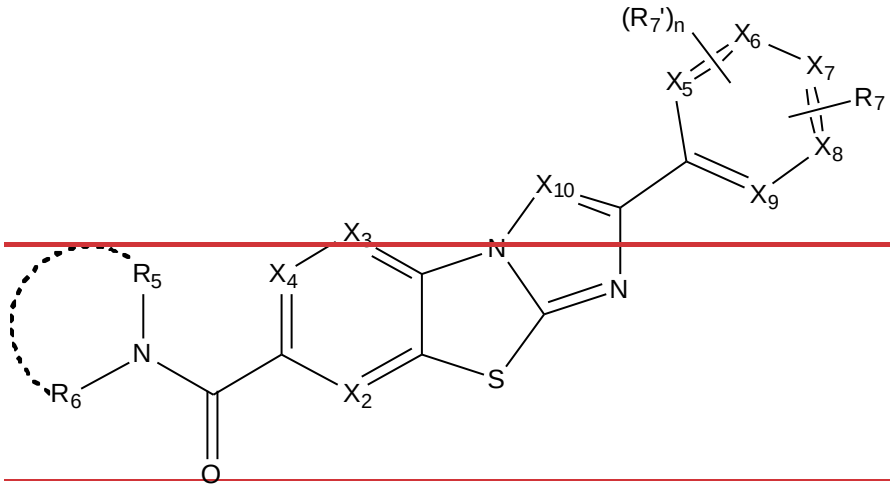
R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

10. The compound of claim 4, represented by the structure of formula **I(e)**:



I(e)

wherein

X_2, X_3, and X_4, are each independently nitrogen or CH;

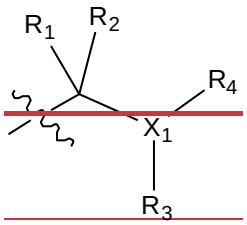
X_5, X_6, X_7, X_8 and X_9 are each independently nitrogen or carbon atoms;

X_{10} is N, CH, or C(R);

R_5 and R_6 are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, $-R_8$-O-R_{10}, R_8-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8 (substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, $-CH_2CN$, R_8CN, R_8-N(R_{10})(R_{11}), R_9-R_8-N(R_{10})(R_{11}), $B(OH)_2$, $-OCH_2Ph$, COOH, C(O)H, $-C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or R_7 is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form a C_3-C_8 carbocyclic or heterocyclic ring;

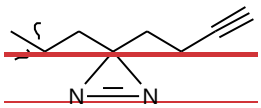
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, CH_2CN, R_8CN, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, OCH_2Ph, COOH, C(O)H, $C(O)NH_2$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH\text{-}R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



R_{30} is H, **R_{20}**, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, R_8-O-R_8-O-R_{10}, R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

R is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, R_8-O-R_8-O-R_{10}, R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

each **R_8** is independently **$[CH_2]_p$**

wherein **p** is between 1 and 10;

R$_9$ is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

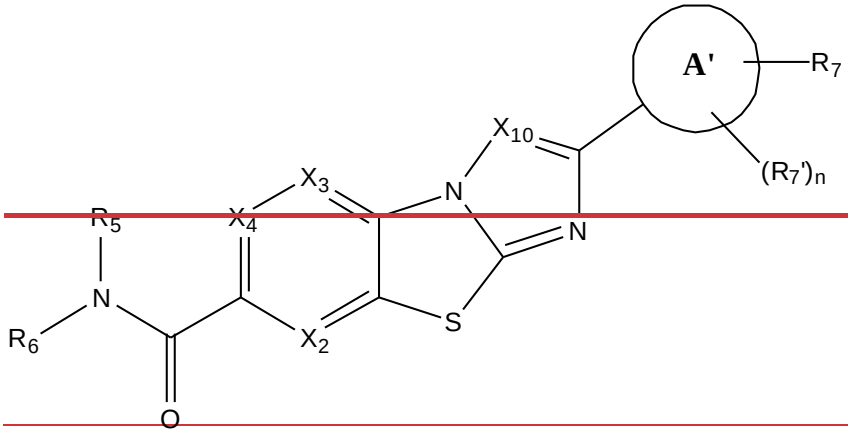
R$_{10}$ and **R**$_{11}$ are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;

or **R**$_{10}$ and **R**$_{11}$ are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),

n is an integer between 0 and 4 (e.g., 1, 2);

or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant such as: deuterated analog), pharmaceutical product or any combination thereof.

11. A compound represented by the structure of formula **I(f)**:



I(f)

wherein

A' is a 3-8 membered single or fused saturated, unsaturated or aromatic heterocyclic ring;

X$_2$, **X**$_3$, and **X**$_4$, are each independently nitrogen or CH;

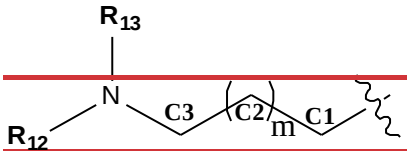
X$_{10}$ is N, CH, or C(R);

R$_5$ is H or C_1-C_5 linear or branched alkyl**;**

R$_6$ is H, F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, R_8-O-R_{10} , R_8-S-R_{10}, $(CH_2)_3$-S-$(CH_2)_2CH_3$), R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8-cycloalkyl), R_8-(substituted or unsubstituted saturated, unsaturated or aromatic, single, fused or spiro 3-10 membered heterocyclic ring) , CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, $(CH_2)_3$-$N(CH_2CH_3)_2$, $(CH_2)_3$-NH_2, $(CH_2)_3$-$N(CH_2CH_3)(CH_2CF_3$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O)-haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched

thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl , R_8 (substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, or substituted or unsubstituted benzyl;

or **R_6** is represented by the structure of formula **B**:



B

wherein

m is 0 or 1; and

R_{12} is **R_{20}** or C_1-C_5 C(O) alkyl, and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are both H; or

R_{12} and **R_{13}** are each independently H or substituted or unsubstituted C_1-C_5 alkyl; or

R_{12} and **C3** are joined to form ring **A** and **R_{13}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and **R_{13}** is **R_{30}**; or

C1 and **C3** are joined to form ring **D** and **R_{12}** and **R_{13}** are each independently **R_{30}**; or

R_{13} and **C2** are joined to form ring **E**, m is 1, and **R_{12}** is **R_{30}**; or

R_{12} and **R_{13}** are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**; wherein

Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single, spiro or fused 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

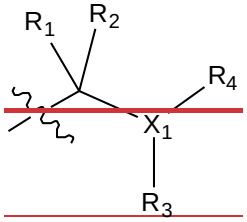
Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

or **R_6** and **R_5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

R_7 is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, SR_{10}, $-R_8$-O-R_{10}, $-R_8$-S-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8 (substituted or unsubstituted single, fused or spiro 3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, $-CH_2CN$, $-R_8CN$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $-OC(O)CF_3$, $-OCH_2Ph$, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, $-C(O)Ph$, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $-C(O)NH_2$, C(O)NHR, $-C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH-R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or

unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkyl, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 4-7 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** is represented by the structure of formula A:



A

wherein

X_1 is N or O;

R_1 and **R_2** are each independently H, F, or CF_3; or **R_1** and **R_2** are joined to form =O, or a C_3-C_8 carbocyclic or heterocyclic ring;

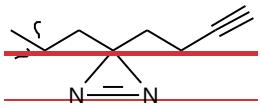
R_3 and **R_4** are each independently H, Me, substituted or unsubstituted C_1-C_5 alkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 5-7 membered heterocyclic ring, or R_{20}; or **R_3** and **R_4** are joined to form a 3-8 membered heterocyclic ring;

wherein if X_1 is O then R_4 is absent;

R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8 cycloalkyl), R_8-(3-8 membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, CH_2CN, R_8CN, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, $OC(O)CF_3$, OCH_2Ph, $NHC(O)$-R_{10}, $NHCO$-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, $C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH$-$R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;

or **R_7** and **R_7'** are joined to form a 5 or 6 membered substituted or unsubstituted, saturated, unsaturated or aromatic, carbocyclic or heterocyclic ring;

R_{20} is represented by the following structure:



~~R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8 aryl , R_8-O-R_8-O-R_{10} , R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;~~

~~**R** is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8 aryl, R_8-O-R_8-O-R_{10}, R_8-O-R_{10}, R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;~~

~~each R_8 is independently $[CH_2]_p$~~

~~wherein **p** is between 1 and 10;~~

~~R_9 is $[CH]_q$, $[C]_q$~~

~~wherein **q** is between 2 and 10;~~

~~R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl , methyl, CH_2CF_3, C_1-C_5 linear or branched alkoxy , C(O)R, or $S(O)_2R$;~~

~~or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring such as: piperazine, piperidine),~~

~~**n** is an integer between 0 and 4 (e.g., 1, 2);~~

~~or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), pharmaceutical product or any combination thereof.~~

~~12.~~ The compound according to any ~~one~~ of claims 1-~~11~~3, wherein $\mathbf{R_6}$ is represented by the structure of formula **Bi**~~.~~, prefereably

~~13.~~5. ~~The compound of claim 12,~~ wherein

$\mathbf{R_{12}}$ and $\mathbf{R_{13}}$ are joined to form a pyrrolidine ring or a substituted or unsubstituted piperidine ring;

C3 and $\mathbf{R_{12}}$ are joined to form a pyrrolidine (ring A); or

C2 and $\mathbf{R_{13}}$ are joined to form a piperidine (ring E)~~.~~;

wherein $\mathbf{R_7}$ is represented by the structure of formula **A**, or wherein $\mathbf{R_7}$ is CH_2-NH_2;

wherein $\mathbf{R_1}$ is H; $\mathbf{R_2}$ is H or CF_3, or R_1 and R_2 are joined to form a cyclopropyl; $\mathbf{X_1}$ is N; $\mathbf{R_3}$ is H; and $\mathbf{R_4}$ is H or cycloalkyl;

wherein $\mathbf{R_7}$**'** is H or F;

or any combination thereof.

~~14. The compound according to any one of claims 1-13, wherein R_7 is represented by the structure of formula **A.**~~

~~15. The compound of claim 14, wherein R_1 is H; R_2 is H or CF_3, or R_1 and R_2 are joined to form a cyclopropyl; X_1 is N; R_3 is H; and R_4 is H or cycloalkyl.~~

~~16.~~6. The compound ~~of any one of~~according to claim~~s 4, 9 or 11-13~~3 as defined by formula **I(d)** or **I(f)**, wherein R_7 is $C(O)N(R_{10})(R_{11})$, preferably $C(O)N(H)(CH_3)$.

~~17. The compound of any one of claims 4-15, wherein R_7 is CH_2-NH_2;~~

~~18. The compound of any one of the preceding claims, wherein R_7' is H or F.~~

~~19.~~7. The compound of any of the preceding claim~~s, 1-11 or 16-18~~ as defined by **I(h), I(a), I(c), I(d),** or **I(f),** wherein R_5 is H and R_6 is R_8-$N(R_{10})(R_{11})$; preferably wherein R_8 is $(CH_2CH_2CH_2)$, and R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring; preferably piperidine, or are C_1-C_5 unsubstituted linear alkyl preferably ethyl.

8. The compound of claim 3 as defined by formula **I(g)**, wherein R_{100} is a methyl; R_5 is H; R_6 is substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring, R_8-(substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring), substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), or R_8-$N(R_{10})(R_{11})$; R_7' is H or F; or any combination thereof.

~~20.~~9. The compound of claim 3~~11~~, as defined by **I(f),** represented by the following structure:

Compound No.	Compound name
162	*N-(3-(diethylamino)propyl)-2-morpholinobenzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
335	*N-(3-(diethylamino)propyl)-2-(piperazin-1-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
336	*N-(3-(diethylamino)propyl)-2-(piperidin-1-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
337	*N-(3-(diethylamino)propyl)-2-(4-methylpiperazin-1-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

or as defined by **I(g),** represented by the following structure:

Compound No.	Compound Name
125	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
166	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
174	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
175	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperazin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
176	*2-(4-(methylcarbamoyl)phenyl)-N-((1-methylpyrrolidin-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
180	*N-(3-(diethylamino)propyl)-N-methyl-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
182	*(S)-N-((1,4-dioxan-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
183	*N-(2-(2-oxa-6-azaspiro[3.3]heptan-6-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
184	*2-(4-(methylcarbamoyl)phenyl)-N-(2-(4-methylpiperazin-1-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

185	*2-(4-(methylcarbamoyl)phenyl)-N-(piperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
186	*(S)-N-(1-methoxypropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
187	*N-(4-hydroxybutan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
188	*(S)-N-(1-hydroxybutan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
189	*N-(3-methoxypropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
190	*N-(1-(cyclopropanecarbonyl)piperidin-4-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
191	*2-(4-(methylcarbamoyl)phenyl)-N-(3-oxo-3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
192	*(R)-N-(1-hydroxy-4-methylpentan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
195	*N-((3-hydroxyoxetan-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
196	*N-(((3R,4R)-3-hydroxypiperidin-4-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
197	*N-(1-(dimethylamino)-1-oxopropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
198	*N-(1-methylazetidin-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
199	*N-(1-(aminomethyl)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
200	*(S)-N-(3-aminobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
201	*N-(2-methoxyethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
202	*N-(2-(1-methyl-1H-pyrazol-4-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
203	*N-(2-methoxypropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
204	*2-(4-(methylcarbamoyl)phenyl)-N-((tetrahydrofuran-2-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
205	*N-(2-aminocyclohexyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
206	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(trifluoromethyl)oxetan-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
207	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpiperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
208	*N-(2-(dimethylamino)butyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
209	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-(tetrahydro-2H-pyran-4-yl)pyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
210	*2-(4-(methylcarbamoyl)phenyl)-N-((3-methyltetrahydrofuran-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
211	*N-(2-isopropoxyethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
212	*(R)-2-(4-(methylcarbamoyl)phenyl)-N-((1-methylpiperidin-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
213	*(R)-N-(2-hydroxy-1-phenylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

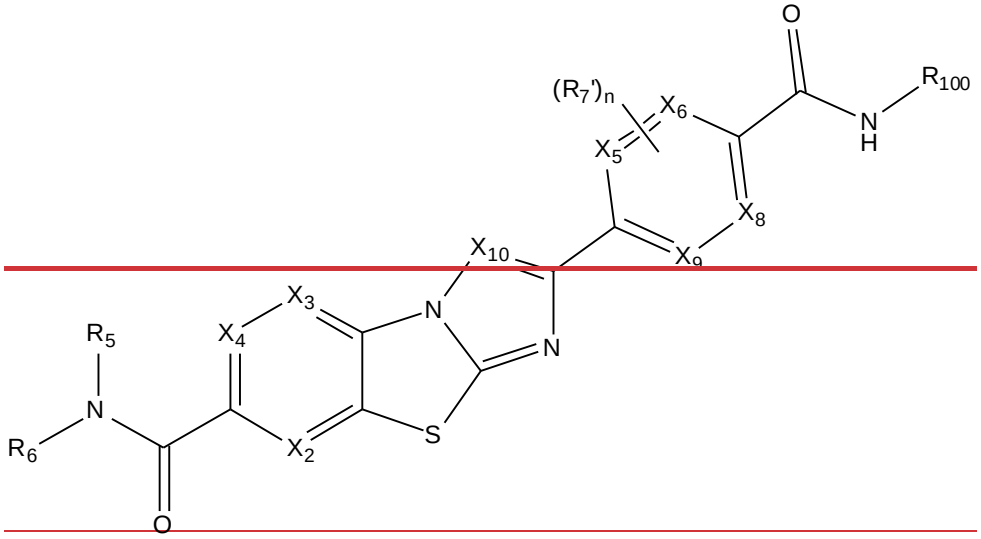
214	*(R)-N-((1-ethylpyrrolidin-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
215	*N-((1-ethylpiperidin-4-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
216	*N-((1-(dimethylamino)cyclohexyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
217	*N-(2-(diisopropylamino)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
219	*N-((3S,4R)-4-hydroxytetrahydrofuran-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
220	*(S)-N-(1-aminopropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
221	*N-(1-(1H-pyrazol-1-yl)propan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
222	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(pyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
223	*N-((4-cyclopropyl-4H-1,2,4-triazol-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
224	*(R)-2-(4-(methylcarbamoyl)phenyl)-N-(pyrrolidin-2-ylmethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
225	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
226	*N-((3-hydroxycyclobutyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
227	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(piperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
228	*(S)-N-(1-methyl-2-oxoazepan-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
229	*N-(4-(methylamino)butyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
230	*N-((1-oxa-8-azaspiro[4.5]decan-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
231	*(R)-2-(4-(methylcarbamoyl)phenyl)-N-(quinuclidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
232	*N-(3-(3,5-dimethyl-1H-pyrazol-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
233	*N-((1-ethylpyrrolidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
234	*2-(4-(methylcarbamoyl)phenyl)-N-(1-(tetrahydro-2H-pyran-4-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
235	*N-(3-(1H-imidazol-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
236	*N-(1-methyl-5-oxopyrrolidin-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
237	*N-(4-(hydroxymethyl)tetrahydro-2H-pyran-4-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
238	*N-((1R,4R,5S)-2-azabicyclo[2.1.1]hexan-5-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
239	*N-(2-(dimethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
240	*N-(2-methoxycyclopropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
241	*2-(4-(methylcarbamoyl)phenyl)-N-(2-azaspiro[3.3]heptan-6-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

242	*(S)-N-(1-(1-methyl-1H-pyrazol-5-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
243	*N-(2-(2-ethyl-1H-imidazol-1-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
244	*N-(2-methyl-2-morpholinopropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
245	*N-((1s,3s)-3-methoxycyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
246	*N-((1s,3s)-3-(methylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
247	*N-((1r,3r)-3-(methylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
249	*N-(3-(5-methyl-2,5-diazabicyclo[2.2.1]heptan-2-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
250	*4-(7-(4-(2-amino-2-oxoethyl)piperazine-1-carbonyl)benzo[d]imidazo[2,1-b]thiazol-2-yl)-N-methylbenzamide*
251	*N-((1-aminocyclopropyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
252	*N-((1-methyl-5-oxopyrrolidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
253	*N-((1R,5S,6s)-3-azabicyclo[3.1.0]hexan-6-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
254	*N-((1-methyl-5-oxopyrrolidin-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
255	*2-(4-(methylcarbamoyl)phenyl)-N-(2-oxo-2-((2,2,2-trifluoroethyl)amino)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
256	*(R)-N-(2-hydroxy-2-phenylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
257	*2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
258	*N-(3-hydroxy-2,2-dimethylcyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
259	*N-((2,2-difluorocyclopropyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
260	*N-(2-(1-hydroxycyclopentyl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
261	*2-(4-(methylcarbamoyl)phenyl)-N-((1-methylcyclopropyl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
262	*2-(4-(methylcarbamoyl)phenyl)-N-(2-(2-methylpiperidin-1-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
263	*N-((1S,2R)-2-hydroxy-2,3-dihydro-1H-inden-1-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
264	*2-(4-(methylcarbamoyl)phenyl)-N-(1-propylpiperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
269	*N-(3-(dimethylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
270	*N-(3-aminocyclohexyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
271	*N-(3-(2-(hydroxymethyl)pyrrolidin-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
272	*N-((2-azaspiro[3.3]heptan-6-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
273	*N-(((1r,4r)-4-hydroxycyclohexyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

274	*(R)-N-(1-cyclopropylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
275	*N-benzyl-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
278	*N-((3-methylazetidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
279	*N-((5-azaspiro[2.4]heptan-6-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
280	*2-(4-(methylcarbamoyl)phenyl)-N-(3-methylcyclobutyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
281	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
282	*N-(3-(diethylamino)propyl)-2-(4-(ethylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
283	*N-(3-(diethylamino)propyl)-2-(4-(isopropylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
284	*N-(3-(diethylamino)propyl)-2-(4-((2-methoxyethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
285	*N-(3-(diethylamino)propyl)-2-(4-((2-hydroxyethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
286	*N-(3-(diethylamino)propyl)-2-(4-((1-methylpyrrolidin-3-yl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
287	*N-(3-(diethylamino)propyl)-2-(4-(piperidin-4-ylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
291	*N-(3-(diethylamino)propyl)-2-(3-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
295	*N-(3-(diethylamino)propyl)-2-(4-((2-(methylamino)ethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
296	*N-(3-(diethylamino)propyl)-2-(4-(pyrrolidin-3-ylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
297	*2-(4-((2-aminoethyl)carbamoyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
301	*(R)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpiperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
302	*(R)-2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
303	*(S)-2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
309	*N-(3-(4-fluoropiperidin-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
310	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
311	*N-(2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperidine-4-carboxamide*
312	*N-methyl-4-(7-(4-(piperidin-1-yl)butanamido)benzo[d]imidazo[2,1-b]thiazol-2-yl)benzamide*
320	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
321	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
322	*2-(4-((2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)carbamoyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

323	*N-(3-((2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)(ethyl)amino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
329	*N-methyl-2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
333	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-methylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
350	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide*
352	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide*
353	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide*
362	*N-(3-(ethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
363	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(piperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
364	*N-(2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperidine-4-carboxamide*
365	*4-(7-(4-(diethylamino)butanamido)benzo[d]imidazo[2,1-b]thiazol-2-yl)-3-fluoro-N-methylbenzamide*
386	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
389	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
391	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide*
400	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
403	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
406	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*
409	*2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide*

21. A compound represented by the structure of formula **I(g)**:



I(g)

wherein

X2, **X3**, and **X4**, are each independently nitrogen or CH;

X5 , **X6** , **X7**, **X8** and **X9** are each independently nitrogen or carbon atoms;

X10 is N, CH, or C(R);

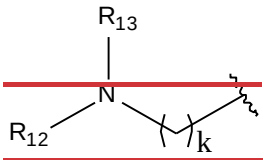
R100 is a C_1-C_5 linear or branched, substituted or unsubstituted alkyl, R_8-OH, R_8-O-R_{10}, R_8-$N(R_{10})(R_{11})$, **R20**, or a substituted or unsubstituted 3-8 membered heterocyclic ring;

R5 is H or C_1-C_5 linear or branched alkyl;

R6 is F, Cl, Br, I, OH, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-S-R_{10}, R_8-NHC(O)-R_{10}, -O-R_8-R_{10}, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), **R8** (substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_8-C(O)$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched C(O) haloalkyl, -$C(O)NH_2$, C(O)NHR, $C(O)N(R_{10})(R_{11})$, SO_2R, $SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH-R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, substituted or unsubstituted C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, R_8-(substituted or unsubstituted C_3-C_8 cycloalkyl), substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted R_8-aryl, substituted or unsubstituted benzyl;

or **R6** and **R5** are joined to for a substituted or unsubstituted 5-8 membered heterocyclic ring;

or **R6** is represented by the structure of formula **C**:



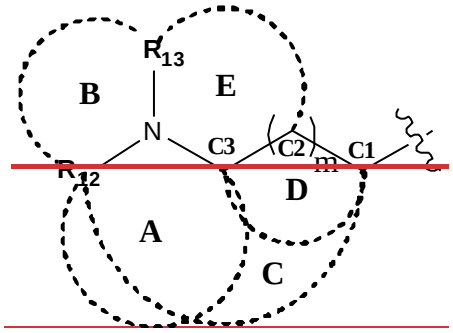
wherein

k is between 1 and 4;

R_{12} and R_{13} are each independedntly H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, R_{20}, or

R_{12} and R_{13} are joined to form a substituted or unsubstituted 4-7 membered heterocyclic ring;

or R_6 is represented by the structure of formula **Bi**:



Bi

wherein

m is 0 or 1; and

R_{12} is R_{20} or C_1-C_5 C(O) alkyl, and R_{13} is R_{30}; or

R_{12} and R_{13} are both H;

R_{12} and R_{13} are each independently H or substituted or unsubstituted C_1-C_5 alkyl;

R_{12} and **C3** are joined to form ring **A** and R_{13} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B**; or

R_{12} and **C1** are joined to form ring **C** and R_{13} is R_{30}; or

C1 and **C3** are joined to form ring **D** and R_{12} and R_{13} are each independently R_{30}; or

R_{13} and **C2** are joined to form ring **E**, m is 1, and R_{12} is R_{30}; or

R_{12} and R_{13} are joined to form ring **B** and **C1** and **C3** are joined to form ring **D**;

wherein

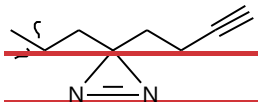
Ring **A**, **C** and **E** are each independently a substituted or unsubstituted single spiro or fuesed 3-8 membered heterocyclic ring;

Ring **B** is a substituted or unsubstituted single, spiro or fuesed 3-8 membered heterocyclic ring; and

Ring **D** is a substituted or unsubstituted C_3-C_8 cycloalkyl;

~~R_7' is H, F, Cl, Br, I, OH, O-R_{20}, SH, R_8-OH, R_8-SH, R_8-O-R_{10}, R_8-(C_3-C_8-cycloalkyl), R_8-(3-8-membered heterocyclic ring), CF_3, CD_3, OCD_3, CN, NO_2, CH_2CN, R_8CN, NH_2, NHR, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, R_8-$N(R_{10})(R_{11})$, R_9-R_8-$N(R_{10})(R_{11})$, $B(OH)_2$, -OC(O)CF_3, -OCH_2Ph, NHC(O)-R_{10}, NHCO-$N(R_{10})(R_{11})$, COOH, -C(O)Ph, C(O)O-R_{10}, R_8-C(O)-R_{10}, C(O)H, C(O)-R_{10}, C_1-C_5 linear or branched -C(O)-haloalkyl, -C(O)NH_2, -C(O)NHR, -C(O)$N(R_{10})(R_{11})$, -SO_2R, -$SO_2N(R_{10})(R_{11})$, $CH(CF_3)(NH-R_{10})$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched, substituted or unsubstituted alkenyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched, or C_3-C_8 cyclic alkoxy, optionally wherein at least one methylene group (CH_2) in the alkoxy is replaced with an oxygen atom, C_1-C_5 linear or branched thioalkoxy, C_1-C_5 linear or branched haloalkoxy, C_1-C_5 linear or branched alkoxyalkyl, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted 3-8 membered heterocyclic ring, substituted or unsubstituted aryl, substituted or unsubstituted benzyl;~~

~~R_{20} is represented by the following structure:~~



~~R_{30} is H, R_{20}, F, Cl, Br, I, OH, SH, OH, alkoxy, $N(R)_2$, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;~~

~~**R** is H, F, Cl, Br, I, OH, SH, OH, alkoxy, $NH(R_{10})$, $N(R_{10})(R_{11})$, CF_3, CN, NO_2, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched alkoxy, C_1-C_5 linear or branched haloalkyl, R_8-aryl, -R_8-O-R_8-O-R_{10}, -R_8-O-R_{10}, -R_8-R_{10}, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;~~

~~each R_8 is independently $[CH_2]_p$~~

~~wherein **p** is between 1 and 10;~~

~~R_9 is $[CH]_q$, $[C]_q$~~

~~wherein **q** is between 2 and 10;~~

~~R_{10} and R_{11} are each independently H, C_1-C_5 substituted or unsubstituted linear or branched alkyl, C_1-C_5 substituted or unsubstituted linear or branched haloalky, C_1-C_5 linear or branched alkoxy, R_{20}, C(O)R, or $S(O)_2$R;~~

~~or R_{10} and R_{11} are joined to form a substituted or unsubstituted 3-8 membered heterocyclic ring,~~

~~**n** is an integer between 0 and 4;~~

~~or its pharmaceutically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, prodrug, isotopic variant, PROTAC, pharmaceutical product or any combination thereof.~~

~~22. The compound of claim 21, wherein R_{100} is a methyl; R_5 is H; R_6 is substituted or unsubstituted 3 to 8 membered single, fused or spiro heterocyclic ring, R_8 (substituted or unsubstituted 3 to 8 membered~~

~~single, fused or spiro heterocyclic ring), substituted or unsubstituted C_3-C_8 cycloalkyl, R_8 (substituted or unsubstituted C_3-C_8 cycloalkyl), or R_8 N(R_{10})(R_{11}); **R_7' is H or F; or any combination thereof.**~~

~~23. The compound of claim 21 or 22, represented by the structure of any one of the following compounds:~~

Compound No.	**Compound Name**
125	*N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
166	*N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
174	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
175	*2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperazin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
176	*2-(4-(methylcarbamoyl)phenyl)-N-((1-methylpyrrolidin-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
180	*N-(3-(diethylamino)propyl)-N-methyl-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
182	*(S)-N-((1,4-dioxan-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
183	*N-(2-(2-oxa-6-azaspiro[3.3]heptan-6-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
184	*2-(4-(methylcarbamoyl)phenyl)-N-(2-(4-methylpiperazin-1-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
185	*2-(4-(methylcarbamoyl)phenyl)-N-(piperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
186	*(S)-N-(1-methoxypropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
187	*N-(4-hydroxybutan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
188	*(S)-N-(1-hydroxybutan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
189	*N-(3-methoxypropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
190	*N-(1-(cyclopropanecarbonyl)piperidin-4-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
191	*2-(4-(methylcarbamoyl)phenyl)-N-(3-oxo-3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
192	*(R)-N-(1-hydroxy-4-methylpentan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
195	*N-((3-hydroxyoxetan-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
196	*N-(((3R,4R)-3-hydroxypiperidin-4-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
197	*N-(1-(dimethylamino)-1-oxopropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
198	*N-(1-methylazetidin-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
199	*N-(1-(aminomethyl)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
200	*(S)-N-(3-aminobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
201	*N-(2-methoxyethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

~~202~~	~~N-(2-(1-methyl-1H-pyrazol-4-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~203~~	~~N-(2-methoxypropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~204~~	~~2-(4-(methylcarbamoyl)phenyl)-N-((tetrahydrofuran-2-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~205~~	~~N-(2-aminocyclohexyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~206~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(3-(trifluoromethyl)oxetan-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~207~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpiperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~208~~	~~N-(2-(dimethylamino)butyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~209~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-(tetrahydro-2H-pyran-4-yl)pyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~210~~	~~2-(4-(methylcarbamoyl)phenyl)-N-((3-methyltetrahydrofuran-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~211~~	~~N-(2-isopropoxyethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~212~~	~~(R)-2-(4-(methylcarbamoyl)phenyl)-N-((1-methylpiperidin-3-yl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~213~~	~~(R)-N-(2-hydroxy-1-phenylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~214~~	~~(R)-N-((1-ethylpyrrolidin-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~215~~	~~N-((1-ethylpiperidin-4-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~216~~	~~N-((1-(dimethylamino)cyclohexyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~217~~	~~N-(2-(diisopropylamino)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~219~~	~~N-((3S,4R)-4-hydroxytetrahydrofuran-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~220~~	~~(S)-N-(1-aminopropan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~221~~	~~N-(1-(1H-pyrazol-1-yl)propan-2-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~222~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(pyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~223~~	~~N-((4-cyclopropyl-4H-1,2,4-triazol-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~224~~	~~(R)-2-(4-(methylcarbamoyl)phenyl)-N-(pyrrolidin-2-ylmethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~225~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpyrrolidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~226~~	~~N-((3-hydroxycyclobutyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~227~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(piperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~228~~	~~(S)-N-(1-methyl-2-oxoazepan-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~229~~	~~N-(4-(methylamino)butyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~

~~230~~	~~N-((1-oxa-8-azaspiro[4.5]decan-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~231~~	~~(R)-2-(4-(methylcarbamoyl)phenyl)-N-(quinuclidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~232~~	~~N-(3-(3,5-dimethyl-1H-pyrazol-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~233~~	~~N-((1-ethylpyrrolidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~234~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(1-(tetrahydro-2H-pyran-4-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~235~~	~~N-(3-(1H-imidazol-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~236~~	~~N-(1-methyl-5-oxopyrrolidin-3-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~237~~	~~N-(4-(hydroxymethyl)tetrahydro-2H-pyran-4-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~238~~	~~N-((1R,4R,5S)-2-azabicyclo[2.1.1]hexan-5-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~239~~	~~N-(2-(dimethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~240~~	~~N-(2-methoxycyclopropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~241~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(2-azaspiro[3.3]heptan-6-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~242~~	~~(S)-N-(1-(1-methyl-1H-pyrazol-5-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~243~~	~~N-(2-(2-ethyl-1H-imidazol-1-yl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~244~~	~~N-(2-methyl-2-morpholinopropyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~245~~	~~N-((1s,3s)-3-methoxycyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~246~~	~~N-((1s,3s)-3-(methylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~247~~	~~N-((1r,3r)-3-(methylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~249~~	~~N-(3-(5-methyl-2,5-diazabicyclo[2.2.1]heptan-2-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~250~~	~~4-(7-(4-(2-amino-2-oxoethyl)piperazine-1-carbonyl)benzo[d]imidazo[2,1-b]thiazol-2-yl)-N-methylbenzamide~~
~~251~~	~~N-((1-aminocyclopropyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~252~~	~~N-((1-methyl-5-oxopyrrolidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~253~~	~~N-((1R,5S,6s)-3-azabicyclo[3.1.0]hexan-6-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~254~~	~~N-((1-methyl-5-oxopyrrolidin-2-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~255~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(2-oxo-2-((2,2,2-trifluoroethyl)amino)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~256~~	~~(R)-N-(2-hydroxy-2-phenylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~257~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~

~~258~~	~~N-(3-hydroxy-2,2-dimethylcyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~259~~	~~N-((2,2-difluorocyclopropyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~260~~	~~N-(2-(1-hydroxycyclopentyl)ethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~261~~	~~2-(4-(methylcarbamoyl)phenyl)-N-((1-methylcyclopropyl)methyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~262~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(2-(2-methylpiperidin-1-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~263~~	~~N-((1S,2R)-2-hydroxy-2,3-dihydro-1H-inden-1-yl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~264~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(1-propylpiperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~269~~	~~N-(3-(dimethylamino)cyclobutyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~270~~	~~N-(3-aminocyclohexyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~271~~	~~N-(3-(2-(hydroxymethyl)pyrrolidin-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~272~~	~~N-((2-azaspiro[3.3]heptan-6-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~273~~	~~N-(((1r,4r)-4-hydroxycyclohexyl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~274~~	~~(R)-N-(1-cyclopropylethyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~275~~	~~N-benzyl-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~278~~	~~N-((3-methylazetidin-3-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~279~~	~~N-((5-azaspiro[2.4]heptan-6-yl)methyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~280~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(3-methylcyclobutyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~281~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~282~~	~~N-(3-(diethylamino)propyl)-2-(4-(ethylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~283~~	~~N-(3-(diethylamino)propyl)-2-(4-(isopropylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~284~~	~~N-(3-(diethylamino)propyl)-2-(4-((2-methoxyethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~285~~	~~N-(3-(diethylamino)propyl)-2-(4-((2-hydroxyethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~286~~	~~N-(3-(diethylamino)propyl)-2-(4-((1-methylpyrrolidin-3-yl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~287~~	~~N-(3-(diethylamino)propyl)-2-(4-(piperidin-4-ylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~291~~	~~N-(3-(diethylamino)propyl)-2-(3-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~295~~	~~N-(3-(diethylamino)propyl)-2-(4-((2-(methylamino)ethyl)carbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~296~~	~~N-(3-(diethylamino)propyl)-2-(4-(pyrrolidin-3-ylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~

~~297~~	~~2-(4-((2-aminoethyl)carbamoyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~301~~	~~(R)-2-(4-(methylcarbamoyl)phenyl)-N-(1-methylpiperidin-3-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~302~~	~~(R)-2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~303~~	~~(S)-2-(4-(methylcarbamoyl)phenyl)-N-(2-(1-methylpyrrolidin-2-yl)ethyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~309~~	~~N-(3-(4-fluoropiperidin-1-yl)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~310~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~311~~	~~N-(2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperidine-4-carboxamide~~
~~312~~	~~N-methyl-4-(7-(4-(piperidin-1-yl)butanamido)benzo[d]imidazo[2,1-b]thiazol-2-yl)benzamide~~
~~320~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~321~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~322~~	~~2-(4-((2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)carbamoyl)phenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~323~~	~~N-(3-((2-(3-(but-3-yn-1-yl)-3H-diazirin-3-yl)ethyl)(ethyl)amino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~329~~	~~N-methyl-2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~333~~	~~N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-methylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~350~~	~~N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide~~
~~352~~	~~N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide~~
~~353~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]imidazo[2,1-b]thiazole-7-carboxamide~~
~~362~~	~~N-(3-(ethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~363~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(piperidin-4-yl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide~~
~~364~~	~~N-(2-(2-fluoro-4-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazol-7-yl)piperidine-4-carboxamide~~
~~365~~	~~4-(7-(4-(diethylamino)butanamido)benzo[d]imidazo[2,1-b]thiazol-2-yl)-3-fluoro-N-methylbenzamide~~
~~386~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide~~
~~389~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(4-fluoropiperidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide~~
~~391~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(pyrrolidin-1-yl)propyl)benzo[4,5]thiazolo[3,2-b][1,2,4]triazole-6-carboxamide~~
~~400~~	~~N-(3-(diethylamino)propyl)-2-(4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide~~
~~403~~	~~N-(3-(diethylamino)propyl)-2-(2-fluoro-4-(methylcarbamoyl)phenyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide~~
~~406~~	~~2-(4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide~~

~~409~~	~~2-(2-fluoro-4-(methylcarbamoyl)phenyl)-N-(3-(piperidin-1-yl)propyl)imidazo[2',1':2,3]thiazolo[4,5-c]pyridine-7-carboxamide~~

~~24.~~10. A compound represented by the structure of any ~~one~~ of the following compounds:

Compound No.	Compound Name
101	*2-phenyl-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
103	*N-(3-(azepan-1-yl)propyl)-2-phenylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
107	*N-(3-(diethylamino)propyl)-2-phenylbenzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
108	*N-propyl-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
109	*N-ethyl-2-(p-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
111	*2-(4-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
118	*N-(3-(diethylamino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
123	*N-(3-(diethylamino)propyl)-2-(o-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
124	*2-(2-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
126	*N-(3-(diethylamino)propyl)-2-(4-ethylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
129	*N-(3-(diethylamino)propyl)-2-(2-fluorophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
130	*N-(3-(diethylamino)propyl)-2-(3-fluorophenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
131	*2-(3-chlorophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
132	*2-(4-chlorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
133	*N-(3-(4,4-difluoropiperidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
134	*N-(3-morpholinopropyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
136	*N-(3-(diethylamino)propyl)-2-(4-isopropylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
137	*N-(3-(4-fluoropiperidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
142	*N-(3-(diethylamino)propyl)-2-(4-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
143	*N-(3-(diethylamino)propyl)-2-(2-fluoro-3-methylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
144	*N-(3-(diethylamino)propyl)-2-(2-fluoro-5-methylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
145	*2-(3-cyanophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
150	*N-(3-(2-oxopyrrolidin-1-yl)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
152	*N-(3-(diethylamino)propyl)-2-(3-methoxyphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
154	*N-(3-(diethylamino)propyl)-2-(4-(dimethylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide formate*
155	*N-(3-(ethylamino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
160	*2-(4-cyanophenyl)-N-(3-(diethylamino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

164	*N-(3-(diethylamino)propyl)-2-(4-(methylamino)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
167	*N-(3-(diethylamino)propyl)-2-(3-(methylcarbamoyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
169	*N-(3-(diethylamino)propyl)-2-(3-isopropylphenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
172	*4-(7-((3-(diethylamino)propyl)carbamoyl)benzo[d]imidazo[2,1-b]thiazol-2-yl)benzoic acid*
177	*N-(3-(ethyl(2,2,2-trifluoroethyl)amino)propyl)-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
178	*2-(m-tolyl)-N-(3-((2,2,2-trifluoroethyl)amino)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
181	*N-(3-(diethylamino)propyl)-N-methyl-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
193	*N-(3-(ethyl(2,2,2-trifluoroethyl)amino)propyl)-N-methyl-2-(m-tolyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
276	*N-(3-(diethylamino)propyl)-2-(4-((dimethylamino)methyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
277	*N-(3-(diethylamino)propyl)-2-(4-(hydroxymethyl)phenyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*
384	*2-(4-(aminomethyl)-3-chloro-5-fluorophenyl)-N-(3-(piperidin-1-yl)propyl)benzo[d]imidazo[2,1-b]thiazole-7-carboxamide*

~~25.~~11. The compound according to any ~~one~~ of claims 1-10~~24~~, wherein the compound is a c-MYC mRNA translation modulator, a c-MYC mRNA transcription regulator, a c-MYC inhibitor or any combination thereof.

~~26.~~12. A pharmaceutical composition comprising the compound of any ~~one~~ of the prece~~i~~ding claims and a pharmaceutically acceptable carrier.

~~27.~~13. Use of ~~A method of treating, suppressing, reducing the severity, reducing the risk of developing or inhibiting cancer in a subject, comprising administering~~ a compound ~~compound~~ according to any one of claims 1 to 11~~25~~ or the pharmaceutical composition ~~of~~according to claim ~~26~~12 in the manufacture of a medicament for

treating, suppressing, reducing the severity, reducing the risk of developing or inhibiting cancer in a subject

suppressing, reducing or inhibiting tumor growth in a subject;

modulating c-MYC mRNA translation in a cell;

regulating c-MYC mRNA transcription in a cell;

or any combination thereof~~, to a subject suffering from cancer under conditions effective to treat, suppress, reduce the severity, reduce the risk of developing, or inhibit cancer in said subject~~.

~~28.~~ The ~~method~~ use of claim ~~27~~13, wherein the cancer is selected from ~~the list of:~~ breast cancer, ovarian carcinoma, acute myeloid leukemia, chronic myelogenous leukemia, Hodgkin's and Burkitt's lymphoma, diffuse large Bcell lymphoma, prostate cancer, colon cancer, gastric cancer, primary central nervous system lymphoma, glioblastoma, medulloblastoma, melanoma, non-small cell lung carcinoma, germinal center-derived lymphomas, esophageal squamous cell carcinoma, osteosarcoma, bladder cancer, pancreatic cancer, lung adenocarcinoma, BRAF V600E thyroid cancer, choroid plexus

carcinoma, colitis-associated cancer, epithelial ovarian cancer, colorectal cancer, pancreatic cancer and uterine cancer.

29.14. The method of claim 27 or 28,; optionally wherein the cancer is early cancer, advanced cancer, invasive cancer, metastatic cancer, drug resistant cancer or any combination thereof.

30. The method use ofaccording to any one of claims 2713 toor 2914, wherein the subject has been previously treated with chemotherapy, immunotherapy, radiotherapy, biological therapy, surgical intervention, or any combination thereof.;

31. The method of any one of claims 27 to 30or wherein the compound is administered in combination with an anti-cancer therapy, preferably.;

32. The method of claim 31, wherein the anti-cancer therapy is chemotherapy, immunotherapy, radiotherapy, biological therapy, surgical intervention, or any combination thereof.; or

33. A method for suppressing, reducing or inhibiting tumor growth in a subject, comprising administering a compound according to any one of claims 1 to 25 or the pharmaceutical composition of claim 26, to a subject under conditions effective to suppress, reduce or inhibit tumor growth in said subject.

34. A method of modulating c-MYC mRNA translation in a cell, comprising contacting a compound according to any one of claims 1-25 with a cell, thereby modulating c-MYC mRNA translation in said cell.

35. A method of regulating c-MYC mRNA transcription in a cell, comprising contacting a compound according to any one of claims 1-25 with a cell, thereby regulating c-MYC mRNA transcription in said cell.

36.15. The method of claims 34 or 35, wherein saidthe method use is to be carried out:

(a) by regulating c-MYC mRNA splicing (inclusion or exclusion of untranslated region or alternative usage of exons);

(b) by regulation of c-MYC mRNA modifications;

(c) by regulation of the interaction of RNA binding protein with c-MYC mRNA thereby changing mRNA localization;

(d) by regulating c-MYC mRNA localization in the cytoplasm;

(e) by regulating ribosomes or ribosome accessory factor to c-MYC mRNA; and/or

(f) by reducing the amount of c-MYC protein in the cell;

or any combination thereof.