What is claimed is:

1. A compound selected from the group consisting of:

(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4,4-dimethylpent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(tetrahydro-2H-pyran-4-yl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(1-methylcyclobutyl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-morpholinopent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(2,2,2-trifluoroethyl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(1-methylpiperidin-4-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-cyclobutylacrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-(4-(2-methoxyethyl)piperazin-1-yl)-4-methylpent-2-enenitrile;
(R)-methyl 4-(5-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidin-1-yl)-4-cyano-2-methyl-5-oxopent-3-en-2-yl)piperazine-1-carboxylate;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-6-hydroxy-4-(2-hydroxyethyl)hex-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4,4-dimethylpent-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4-methyl-4-morpholinopent-2-enenitrile;

(S)-methyl 4-(5-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidin-1-yl)-4-cyano-2-methyl-5-oxopent-3-en-2-yl)piperazine-1-carboxylate;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-methyl-3-oxopiperazin-1-yl)pent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((3R,5S)-3,5-dimethylpiperazin-1-yl)-4-methylpent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(tetrahydro-2H-thiopyran-4-yl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(3-oxopiperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-3-(4-(2,6-difluorophenoxy)phenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-3-(4-(2,3-difluorophenoxy)phenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-3-(3-fluoro-4-phenoxyphenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-3-(2-fluoro-4-phenoxyphenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-3-(3-methyl-4-phenoxyphenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-(5,6-dihydro-[1,2,4]triazolo[4,3-a]pyrazin-7(8H)-yl)-4-methylpent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(3-methyloxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(6-amino-8-oxo-7-(4-phenoxyphenyl)-7H-purin-9(8H)-yl)piperidine-1-carbonyl)-4-

methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(6-amino-8-oxo-7-(4-phenoxyphenyl)-7H-purin-9(8H)-yl)piperidine-1-carbonyl)-3-(4-methyl-1-(oxetan-3-yl)piperidin-4-yl)acrylonitrile;
(R)-2-(3-(6-amino-8-oxo-7-(4-phenoxyphenyl)-7H-purin-9(8H)-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(3-methyloxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4-methyl-4-(4-methylpiperazin-1-yl)pent-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4-methyl-4-(4-methyl-3-oxopiperazin-1-yl)pent-2-enenitrile;
(S)-2-(2-((4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)methyl)pyrrolidine-1-carbonyl)-4-methyl-4-(methyl(oxetan-3-yl)amino)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(4-methyltetrahydro-2H-pyran-4-yl)acrylonitrile;
(R)-2-(3-(4-amino-3-(4-(2-fluorophenoxy)phenyl)-2-oxo-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(oxetan-3-yl)piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(1-oxidotetrahydro-2H-thiopyran-4-yl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-(4-ethyl-3-oxopiperazin-1-yl)-4-methylpent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-cyclopropylacrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(4-methyl-1-(oxetan-3-yl)piperidin-4-yl)acrylonitrile;
(R)-tert-butyl 4-(5-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidin-1-yl)-4-cyano-2-methyl-5-oxopent-3-en-2-yl)piperazine-1-carboxylate;
(R)-4-(4-acetylpiperazin-1-yl)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methylpent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((1R,5S)-3-oxa-8-azabicyclo[3.2.1]octan-8-yl)-4-methylpent-2-enenitrile;

(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(1-phenylcyclopropyl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(piperazin-1-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(1-methylcyclopropyl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4,4-dimethyl-5-(4-methylpiperazin-1-yl)-5-oxopent-2-enenitrile;
(R)-5-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidin-1-yl)-4-cyano-N,N,2,2-tetramethyl-5-oxopent-3-enamide;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4,4-dimethyl-5-(4-(oxetan-3-yl)piperazin-1-yl)-5-oxopent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(2,2-difluorocyclopropyl)acrylonitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-((1R,5S)-3-oxabicyclo[3.1.0]hexan-6-yl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(6-(4-methylpiperazin-1-yl)pyridin-2-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(pyridin-2-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-(4-(4-methylpiperazin-1-yl)pyrimidin-2-yl)pent-2-enenitrile;
(R)-4-amino-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methylpent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-(3,3-difluoropyrrolidin-1-yl)-4-methylpent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((S)-3-methoxypyrrolidin-1-yl)-4-methylpent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((R)-3-methoxypyrrolidin-1-yl)-4-methylpent-2-enenitrile;

2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-((R)-6-oxohexahydropyrrolo[1,2-a]pyrazin-2(1H)-yl)pent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((R)-2-(methoxymethyl)pyrrolidin-1-yl)-4-methylpent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-((S)-2-(methoxymethyl)pyrrolidin-1-yl)-4-methylpent-2-enenitrile;
2-((R)-3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-4-methyl-4-((S)-6-oxohexahydropyrrolo[1,2-a]pyrazin-2(1H)-yl)pent-2-enenitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(4-ethyltetrahydro-2H-pyran-4-yl)acrylonitrile;
(R)-2-(3-(4-amino-2-oxo-3-(4-phenoxyphenyl)-2,3-dihydro-1H-imidazo[4,5-c]pyridin-1-yl)piperidine-1-carbonyl)-3-(4-(methoxymethyl)tetrahydro-2H-pyran-4-yl)acrylonitrile; and

an E or Z isomer, and/or a pharmaceutically acceptable salt of any of the foregoing compounds.

2. A pharmaceutical composition comprising a compound and/or a pharmaceutically acceptable salt of claim 1 and a pharmaceutically acceptable excipient.

3. Use of a therapeutically effective amount of a compound of claim 1 , or an (E) or (Z) isomer thereof, and/or a pharmaceutically acceptable salt of any of the foregoing compounds and a pharmaceutically acceptable excipient in the manufacture of a medicament for inhibiting BTK in a mammal.

4. Use of a therapeutically effective amount of a compound of claim 1, or an (E) or (Z) isomer thereof, and/ or a pharmaceutically acceptable salt of any of the foregoing compounds and a pharmaceutically acceptable excipient in the manufacture of a medicament for treating an autoimmune disease, inflammatory disease, or cancer in a mammal.

5. The use of Claim 4 wherein the disease is acute necrotizing hemorrhagic leukoencephalitis, acute disseminated encephalomyelitis, autoimmune inner ear disease (AIED), autoimmune retinopathy, axonal & neuronal neuropathies, chronic inflammatory demyelinating polyneuropathy (CIDP), demyelinating neuropathies, Devic's disease

(neuromyelitis optica), experimental allergic encephalomyelitis, giant cell arteritis (temporal arteritis), Guillain-Barre syndrome, Lambert-Eaton syndrome, chronic Meniere's disease, myasthenia gravis, neuromyotonia, opsoclonus-myoclonus syndrome, optic neuritis, paraneoplastic cerebellar degeneration, peripheral neuropathy, perivenous encephalomyelitis, restless legs syndrome, stiff person syndrome, sympathetic ophthalmia, Takayasu's arteritis, temporal arteritis/Giant cell arteritis, transverse myelitis, multiple sclerosis, dysautonomia, age-related macular degeneration (wet and dry), corneal transplantation, encephalitis, meningitis, vasculitis, and systemic lupus erythematosus (SLE).

6. The use of claim 4 wherein the disease is rheumatoid arthritis, psoriatic arthritis, lupus, uveitis, myasthenia gravis, warm autoimmune hemolytic anemia, Wegener's granulomatosis, Sjogren's disease, Sjogren's dry eye, non-Sjogren's dry eye disease, psoriasis, pemphigus, urticaria or asthma.

7. The use of Claim 4 wherein the cancer is diffuse large B cell lymphoma, follicular lymphoma, chronic lymphocytic lymphoma, chronic lymphocytic leukemia, B-cell prolymphocytic leukemia, small lymphocytic lymphoma (SLL), multiple myeloma, B-cell non-Hodgkin lymphoma, lymphoplamascytic lymphoma/Waldenstrom macroglobulinemia, splenic marginal zone lymphoma, plasma cell myeloma, plasmacytoma, extranodal marginal zone B cell lymphoma, nodal marginal zone B cell lymphoma, mantle cell lymphoma, mediastinal (thymic) large B cell lymphoma, intravascular large B cell lymphoma, primary effusion lymphoma, burkitt lymphoma/leukemia, and lymphomatoid granulomatosis.

8. The use of any of claims 3-7 wherein the compound and/or a pharmaceutically acceptable salt thereof is to be administered in combination with one or more anti-cancer or anti-inflammatory agents.