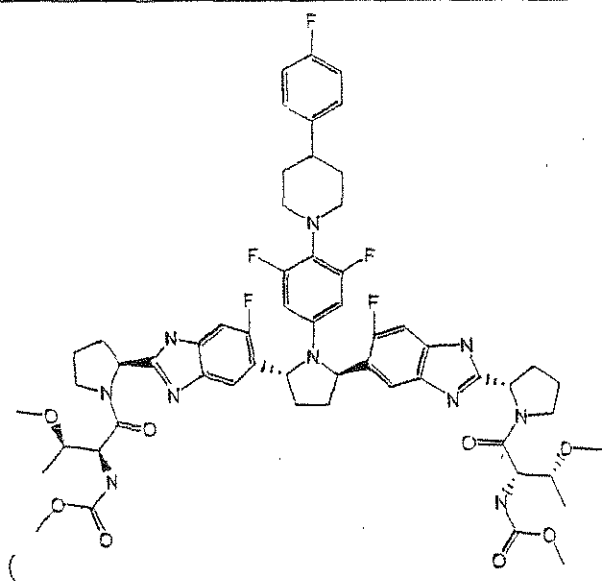


## SUMMARY

The present invention features compounds of Formulae I, I<sub>A</sub>, I<sub>B</sub>, I<sub>C</sub>, I<sub>D</sub>, I<sub>E</sub>, I<sub>F</sub> and I<sub>G</sub> and pharmaceutically acceptable salts thereof. These compounds and salts can inhibit the replication of HCV and therefore are useful for treating HCV infection.

In one aspect, the present invention provides methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-(3,5-difluoro-4-[4-(4-fluorophenyl)piperidin-1-yl]phenyl)-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl)-1*H*-benzimidazol-5-yl]pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl}carbamate



), or a pharmaceutically acceptable salt thereof.

In one aspect, the present invention provides a pharmaceutical composition comprising methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-(3,5-difluoro-4-[4-(4-fluorophenyl)piperidin-1-yl]phenyl)-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl)-1*H*-benzimidazol-5-yl]pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl}carbamate.

In one aspect, the present invention provides the use of the compound as defined above, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating a patient infected with HCV.

The present invention also features compositions comprising the compounds or salts of the present invention. The compositions can also include additional therapeutic agents, such as HCV helicase inhibitors, HCV polymerase inhibitors, HCV protease inhibitors, HCV NS5A inhibitors, CD81 inhibitors, cyclophilin inhibitors, or internal ribosome entry site (IRES) inhibitors.

The present invention further features methods of using the compounds or salts of the present invention to inhibit HCV replication. The methods comprise contacting cells infected with HCV virus with a compound or salt of the present invention, thereby inhibiting the replication of HCV virus in the cells.

In addition, the present invention features methods of using the compounds or salts of the present invention, or compositions comprising the same, to treat HCV infection. The methods comprise administering a compound or salt of the present invention, or a pharmaceutical composition comprising the same, to a patient in need thereof, thereby reducing the blood or tissue level of HCV virus in the patient.

The present invention also features use of the compounds or salts of the present invention for the manufacture of medicaments for the treatment of HCV infection.

Furthermore, the present invention features processes of making the compounds or salts of the invention.

Other features, objects, and advantages of the present invention are apparent in the detailed description that follows. It should be understood, however, that the detailed description, while indicating preferred embodiments of the invention, are given by way of illustration only, not limitation. Various changes and modifications within the scope of the invention will become apparent to those skilled in the art from the detailed description.

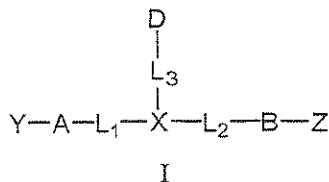
## **DETAILED DESCRIPTION**

Tellinghuisen *et al.*, NATURE 435:374-379 (2005), describes a crystal structure of the NS5A protein in which two NS5A monomers are packed as a dimer via contacts near the N-terminal ends of the molecules. WO2006093867 postulates the use of the crystal structure of the NS5A protein in conjunction of computer modeling to design or select NS5A inhibitors.

To improve interactions with the NS5A protein, many NS5A inhibitors have been designed to have dimeric or dimer-like structures. For instance, WO2006133326 (BMS) describes compounds

What is claimed is:

1. A compounds having Formula I, or a pharmaceutically acceptable salt thereof,



wherein:

X is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and is optionally substituted with one or more R<sub>A</sub> or R<sub>F</sub>;

L<sub>1</sub> and L<sub>2</sub> are each independently selected from bond; or C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene, each of which is independently optionally substituted at each occurrence with one or more R<sub>L</sub>;

L<sub>3</sub> is bond or -L<sub>S</sub>-K-L<sub>S</sub>'-, wherein K is selected from bond, -O-, -S-, -N(R<sub>B</sub>)-, -C(O)-, -S(O)<sub>2</sub>-, -S(O)-, -OS(O)-, -OS(O)<sub>2</sub>-, -S(O)<sub>2</sub>O-, -S(O)O-, -C(O)O-, -OC(O)-, -OC(O)O-, -C(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)O-, -OC(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)S(O)-, -N(R<sub>B</sub>)S(O)<sub>2</sub>-, -S(O)N(R<sub>B</sub>)-, -S(O)<sub>2</sub>N(R<sub>B</sub>)-, -C(O)N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)N(R<sub>B</sub>')-, -N(R<sub>B</sub>)SO<sub>2</sub>N(R<sub>B</sub>')-, or -N(R<sub>B</sub>)S(O)N(R<sub>B</sub>')-;

A and B are each independently C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and are each independently optionally substituted with one or more R<sub>A</sub>;

D is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and is optionally substituted with one or more R<sub>A</sub>; or D is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle which is substituted with J and optionally substituted with one or more R<sub>A</sub>, where J is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle and is optionally substituted with one or more R<sub>A</sub>, or J is -SF<sub>5</sub>; or D is hydrogen or R<sub>A</sub>;

Y is selected from -T'-C(R<sub>1</sub>R<sub>2</sub>)N(R<sub>5</sub>)-T-R<sub>D</sub>, -T'-C(R<sub>3</sub>R<sub>4</sub>)C(R<sub>6</sub>R<sub>7</sub>)-T-R<sub>D</sub>, -L<sub>K</sub>-T-R<sub>D</sub>, or -L<sub>K</sub>-E;

R<sub>1</sub> and R<sub>2</sub> are each independently R<sub>C</sub>, and R<sub>5</sub> is R<sub>B</sub>; or R<sub>1</sub> is R<sub>C</sub>, and R<sub>2</sub> and R<sub>5</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub>, and R<sub>7</sub> are each independently R<sub>C</sub>; or R<sub>3</sub> and R<sub>6</sub> are each independently R<sub>C</sub>, and R<sub>4</sub> and R<sub>7</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered carbocycle or heterocycle which is optionally substituted with one or more R<sub>A</sub>;

Z is selected from -T'-C(R<sub>8</sub>R<sub>9</sub>)N(R<sub>12</sub>)-T-R<sub>D</sub>, -T'-C(R<sub>10</sub>R<sub>11</sub>)C(R<sub>13</sub>R<sub>14</sub>)-T-R<sub>D</sub>, -L<sub>K</sub>-T-R<sub>D</sub>, or -L<sub>K</sub>-E;

R<sub>8</sub> and R<sub>9</sub> are each independently R<sub>C</sub>, and R<sub>12</sub> is R<sub>B</sub>; or R<sub>8</sub> is R<sub>C</sub>, and R<sub>9</sub> and R<sub>12</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

R<sub>10</sub>, R<sub>11</sub>, R<sub>13</sub>, and R<sub>14</sub> are each independently R<sub>C</sub>; or R<sub>10</sub> and R<sub>13</sub> are each independently R<sub>C</sub>, and R<sub>11</sub> and R<sub>14</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered carbocycle or heterocycle which is optionally substituted with one or more R<sub>A</sub>;

T and T' are each independently selected at each occurrence from bond, -L<sub>S</sub>-, -L<sub>S</sub>-M-L<sub>S</sub>'-, or -L<sub>S</sub>-M-L<sub>S</sub>'-M'-L<sub>S</sub>'-, wherein M and M' are each independently selected at each occurrence from bond, -O-, -S-, -N(R<sub>B</sub>)-, -C(O)-, -S(O)<sub>2</sub>-, -S(O)-, -OS(O)-, -OS(O)<sub>2</sub>-, -S(O)<sub>2</sub>O-, -S(O)O-, -C(O)O-, -OC(O)-, -OC(O)O-, -C(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)O-, -OC(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)S(O)-, -N(R<sub>B</sub>)S(O)<sub>2</sub>-, -S(O)N(R<sub>B</sub>)-, -S(O)<sub>2</sub>N(R<sub>B</sub>)-, -C(O)N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)N(R<sub>B</sub>')-, -N(R<sub>B</sub>)SO<sub>2</sub>N(R<sub>B</sub>')-, -N(R<sub>B</sub>)S(O)N(R<sub>B</sub>')-, C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and wherein said C<sub>3</sub>-C<sub>12</sub>carbocycle and 3- to 12-membered heterocycle are each independently optionally substituted at each occurrence with one or more R<sub>A</sub>;

L<sub>K</sub> is independently selected at each occurrence from bond, -L<sub>S</sub>-N(R<sub>B</sub>)C(O)-L<sub>S</sub>'- or -L<sub>S</sub>-C(O)N(R<sub>B</sub>)-L<sub>S</sub>'-, or C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene, each of which is independently optionally substituted at each occurrence with one or more R<sub>A</sub>; or C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more R<sub>A</sub>;

E is independently selected at each occurrence from C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and is independently optionally substituted at each occurrence with one or more R<sub>A</sub>;

R<sub>D</sub> is each independently selected at each occurrence from hydrogen or R<sub>A</sub>;

R<sub>A</sub> is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxo, cyano, or -L<sub>S</sub>-R<sub>B</sub>, wherein two adjacent R<sub>A</sub>, taken together with the atoms to which they are attached and any atoms between the atoms to which they are attached, can optionally form carbocycle or heterocycle;

R<sub>B</sub> and R<sub>B</sub>' are each independently selected at each occurrence from hydrogen; or C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in R<sub>B</sub> or R<sub>B</sub>' is independently optionally substituted at each occurrence with one or more substituents selected from

halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl or C<sub>2</sub>-C<sub>6</sub>haloalkynyl;

R<sub>C</sub> is independently selected at each occurrence from hydrogen, halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano; or C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in R<sub>C</sub> is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl or C<sub>2</sub>-C<sub>6</sub>haloalkynyl;

R<sub>E</sub> is independently selected at each occurrence from -O-R<sub>S</sub>, -S-R<sub>S</sub>, -C(O)R<sub>S</sub>, -OC(O)R<sub>S</sub>, -C(O)OR<sub>S</sub>, -N(R<sub>S</sub>R<sub>S</sub>'), -S(O)R<sub>S</sub>, -SO<sub>2</sub>R<sub>S</sub>, -C(O)N(R<sub>S</sub>R<sub>S</sub>'), -N(R<sub>S</sub>)C(O)R<sub>S</sub>', -N(R<sub>S</sub>)C(O)N(R<sub>S</sub>'R<sub>S</sub>''), -N(R<sub>S</sub>)SO<sub>2</sub>R<sub>S</sub>', -SO<sub>2</sub>N(R<sub>S</sub>R<sub>S</sub>'), -N(R<sub>S</sub>)SO<sub>2</sub>N(R<sub>S</sub>'R<sub>S</sub>''), -N(R<sub>S</sub>)S(O)N(R<sub>S</sub>'R<sub>S</sub>''), -OS(O)-R<sub>S</sub>, -OS(O)<sub>2</sub>-R<sub>S</sub>, -S(O)<sub>2</sub>OR<sub>S</sub>, -S(O)OR<sub>S</sub>, -OC(O)OR<sub>S</sub>, -N(R<sub>S</sub>)C(O)OR<sub>S</sub>', -OC(O)N(R<sub>S</sub>R<sub>S</sub>'), -N(R<sub>S</sub>)S(O)-R<sub>S</sub>', -S(O)N(R<sub>S</sub>R<sub>S</sub>'), -P(O)(OR<sub>S</sub>)<sub>2</sub>, or -C(O)N(R<sub>S</sub>)C(O)-R<sub>S</sub>'; or C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano; or C<sub>3</sub>-C<sub>6</sub>carbocycle or 3- to 6-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkynyl, C(O)OR<sub>S</sub>, or -N(R<sub>S</sub>R<sub>S</sub>');

R<sub>F</sub> is independently selected at each occurrence from C<sub>1</sub>-C<sub>10</sub>alkyl, C<sub>2</sub>-C<sub>10</sub>alkenyl or C<sub>2</sub>-C<sub>10</sub>alkynyl, each of which contains 0, 1, 2, 3, 4 or 5 heteroatoms selected from O, S or N and is optionally substituted with one or more R<sub>L</sub>; or -(R<sub>X</sub>-R<sub>Y</sub>)<sub>Q</sub>-(R<sub>X</sub>-R<sub>Y</sub>'), wherein Q is 0, 1, 2, 3 or 4, and each R<sub>X</sub> is independently O, S or N(R<sub>B</sub>), wherein each R<sub>Y</sub> is independently C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene each of which is independently optionally substituted with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano, and wherein each R<sub>Y</sub>' is independently C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-

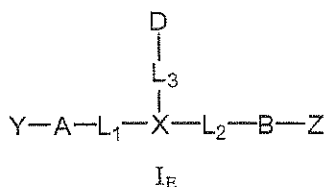
C<sub>6</sub>alkynyl each of which is independently optionally substituted with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl or cyano;

R<sub>L</sub> is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxo, cyano, -O-R<sub>S</sub>, -S-R<sub>S</sub>, -C(O)R<sub>S</sub>, -OC(O)R<sub>S</sub>, -C(O)OR<sub>S</sub>, -N(R<sub>S</sub>R<sub>S</sub>'), -S(O)R<sub>S</sub>, -SO<sub>2</sub>R<sub>S</sub>, -C(O)N(R<sub>S</sub>R<sub>S</sub>') or -N(R<sub>S</sub>)C(O)R<sub>S</sub>'; or C<sub>3</sub>-C<sub>6</sub>carbocycle or 3- to 6-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl or C<sub>2</sub>-C<sub>6</sub>haloalkynyl; wherein two adjacent R<sub>L</sub>, taken together with the atoms to which they are attached and any atoms between the atoms to which they are attached, can optionally form carbocycle or heterocycle;

L<sub>S</sub>, L<sub>S</sub>' and L<sub>S</sub>'' are each independently selected at each occurrence from bond; or C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene, each of which is independently optionally substituted at each occurrence with one or more R<sub>L</sub>; and

R<sub>S</sub>, R<sub>S</sub>' and R<sub>S</sub>'' are each independently selected at each occurrence from hydrogen; C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano, -O-C<sub>1</sub>-C<sub>6</sub>alkyl, -O-C<sub>1</sub>-C<sub>6</sub>alkylene-O-C<sub>1</sub>-C<sub>6</sub>alkyl, or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in R<sub>S</sub>, R<sub>S</sub>' or R<sub>S</sub>'' is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl or C<sub>2</sub>-C<sub>6</sub>haloalkynyl.

2. A compounds having Formula I<sub>E</sub>, or a pharmaceutically acceptable salt thereof,



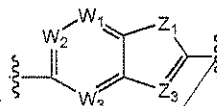
wherein:

X is 4- to 8-membered heterocycle, and is optionally substituted with one or more R<sub>A</sub>;

L<sub>1</sub> and L<sub>2</sub> are each independently selected from bond or C<sub>1</sub>-C<sub>6</sub>alkylene which is independently optionally substituted at each occurrence with one or more halo, hydroxy, -O-C<sub>1</sub>-C<sub>6</sub>alkyl, or -O-C<sub>1</sub>-C<sub>6</sub>haloalkyl;

L<sub>3</sub> is bond or C<sub>1</sub>-C<sub>6</sub>alkylene;

A and B are each independently phenyl, pyridinyl, thiazolyl, or



where Z<sub>1</sub>

is independently selected at each occurrence from O, S, NH or CH<sub>2</sub>, Z<sub>3</sub> is independently selected at each occurrence from N or CH, and W<sub>1</sub>, W<sub>2</sub>, and W<sub>3</sub> are each independently selected at each occurrence from CH or N; A and B are each independently optionally substituted with one or more R<sub>A</sub>.

D is C<sub>6</sub>-C<sub>10</sub>carbocycle or 5- to 12-membered heterocycle, each of which is optionally substituted with one or more R<sub>M</sub>;

Y is -T'-C(R<sub>1</sub>R<sub>2</sub>)N(R<sub>5</sub>)-T-R<sub>D</sub>;

Z is -T'-C(R<sub>8</sub>R<sub>9</sub>)N(R<sub>12</sub>)-T-R<sub>D</sub>;

R<sub>1</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, or 3- to 6-membered carbocycle or heterocycle, wherein each said 3- to 6-membered carbocycle or heterocycle is independently optionally substituted at each occurrence with one or more substituents selected from halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, -O-C<sub>1</sub>-C<sub>6</sub>alkyl or -O-C<sub>1</sub>-C<sub>6</sub>haloalkyl;

R<sub>2</sub> and R<sub>5</sub> are each independently hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, or 3- to 6-membered carbocycle or heterocycle, wherein each said 3- to 6-membered carbocycle or heterocycle is independently optionally substituted at each occurrence with one or more substituents selected from halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, -O-C<sub>1</sub>-C<sub>6</sub>alkyl or -O-C<sub>1</sub>-C<sub>6</sub>haloalkyl; or R<sub>2</sub> and R<sub>5</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

R<sub>8</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, or 3- to 6-membered carbocycle or heterocycle, wherein each said 3- to 6-membered carbocycle or heterocycle is independently optionally substituted at each occurrence with one or more substituents selected from halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, -O-C<sub>1</sub>-C<sub>6</sub>alkyl or -O-C<sub>1</sub>-C<sub>6</sub>haloalkyl;

R<sub>9</sub> and R<sub>12</sub> are each independently hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, or 3- to 6-membered carbocycle or heterocycle, wherein each said 3- to 6-membered carbocycle or heterocycle is independently optionally substituted at each occurrence with one or more substituents selected from halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, -O-C<sub>1</sub>-C<sub>6</sub>alkyl or -O-C<sub>1</sub>-C<sub>6</sub>haloalkyl; or R<sub>9</sub> and R<sub>12</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

T is independently selected at each occurrence from bond or -C(O)-L<sub>S</sub>'-;

- T' is independently selected at each occurrence from bond,  $-\text{C}(\text{O})\text{N}(\text{R}_\text{B})-$ ,  $-\text{N}(\text{R}_\text{B})\text{C}(\text{O})-$ , or 3- to 12-membered heterocycle, wherein said 3- to 12-membered heterocycle is independently optionally substituted at each occurrence with one or more  $\text{R}_\text{A}$ ;
- $\text{R}_\text{D}$  is each independently selected at each occurrence from hydrogen or  $\text{R}_\text{A}$ ;
- $\text{R}_\text{A}$  is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxy, cyano, or  $-\text{L}_\text{S}-\text{R}_\text{E}$ ;
- $\text{R}_\text{B}$  and  $\text{R}_\text{B}'$  are each independently selected at each occurrence from hydrogen; or  $\text{C}_1$ - $\text{C}_6$ alkyl which is independently optionally substituted at each occurrence with one or more substituents selected from halogen or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in  $\text{R}_\text{B}$  or  $\text{R}_\text{B}'$  is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy,  $\text{C}_1$ - $\text{C}_6$ alkyl,  $\text{C}_1$ - $\text{C}_6$ haloalkyl,  $-\text{O}-\text{C}_1$ - $\text{C}_6$ alkyl, or  $-\text{O}-\text{C}_1$ - $\text{C}_6$ haloalkyl;
- $\text{R}_\text{E}$  is independently selected at each occurrence from  $-\text{O}-\text{R}_\text{S}$ ,  $-\text{S}-\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{R}_\text{S}$ ,  $-\text{OC}(\text{O})\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{OR}_\text{S}$ ,  $-\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{S}(\text{O})\text{R}_\text{S}$ ,  $-\text{SO}_2\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{N}(\text{R}_\text{S})\text{C}(\text{O})\text{R}_\text{S}'$ ,  $-\text{N}(\text{R}_\text{S})\text{C}(\text{O})\text{N}(\text{R}_\text{S}'\text{R}_\text{S}'')$ ,  $-\text{N}(\text{R}_\text{S})\text{SO}_2\text{R}_\text{S}'$ ,  $-\text{SO}_2\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{N}(\text{R}_\text{S})\text{SO}_2\text{N}(\text{R}_\text{S}'\text{R}_\text{S}'')$ ,  $-\text{N}(\text{R}_\text{S})\text{S}(\text{O})\text{N}(\text{R}_\text{S}'\text{R}_\text{S}'')$ ,  $-\text{OS}(\text{O})-\text{R}_\text{S}$ ,  $-\text{OS}(\text{O})_2-\text{R}_\text{S}$ ,  $-\text{S}(\text{O})_2\text{OR}_\text{S}$ ,  $-\text{S}(\text{O})\text{OR}_\text{S}$ ,  $-\text{OC}(\text{O})\text{OR}_\text{S}$ ,  $-\text{N}(\text{R}_\text{S})\text{C}(\text{O})\text{OR}_\text{S}'$ ,  $-\text{OC}(\text{O})\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{N}(\text{R}_\text{S})\text{S}(\text{O})-\text{R}_\text{S}'$ ,  $-\text{S}(\text{O})\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{C}(\text{O})\text{N}(\text{R}_\text{S})\text{C}(\text{O})-\text{R}_\text{S}'$ , or  $=\text{C}(\text{R}_\text{S}\text{R}_\text{S}')$ ; or  $\text{C}_1$ - $\text{C}_6$ alkyl,  $\text{C}_2$ - $\text{C}_6$ alkenyl or  $\text{C}_2$ - $\text{C}_6$ alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano; or  $\text{C}_3$ - $\text{C}_{12}$ carbocycle or 3- to 12-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $\text{C}_1$ - $\text{C}_6$ alkyl,  $\text{C}_2$ - $\text{C}_6$ alkenyl,  $\text{C}_2$ - $\text{C}_6$ alkynyl,  $\text{C}_1$ - $\text{C}_6$ haloalkyl,  $\text{C}_2$ - $\text{C}_6$ haloalkenyl or  $\text{C}_2$ - $\text{C}_6$ haloalkynyl;
- $\text{R}_\text{L}$  is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxy, cyano,  $-\text{O}-\text{R}_\text{S}$ ,  $-\text{S}-\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{R}_\text{S}$ ,  $-\text{OC}(\text{O})\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{OR}_\text{S}$ ,  $-\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ ,  $-\text{S}(\text{O})\text{R}_\text{S}$ ,  $-\text{SO}_2\text{R}_\text{S}$ ,  $-\text{C}(\text{O})\text{N}(\text{R}_\text{S}\text{R}_\text{S}')$ , or  $-\text{N}(\text{R}_\text{S})\text{C}(\text{O})\text{R}_\text{S}'$ ; or  $\text{C}_3$ - $\text{C}_{12}$ carbocycle or 3- to 12-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $\text{C}_1$ - $\text{C}_6$ alkyl,  $\text{C}_2$ - $\text{C}_6$ alkenyl,  $\text{C}_2$ - $\text{C}_6$ alkynyl,  $\text{C}_1$ - $\text{C}_6$ haloalkyl,  $\text{C}_2$ - $\text{C}_6$ haloalkenyl or  $\text{C}_2$ - $\text{C}_6$ haloalkynyl;
- $\text{L}_\text{S}$  is independently selected at each occurrence from bond; or  $\text{C}_1$ - $\text{C}_6$ alkylene,  $\text{C}_2$ - $\text{C}_6$ alkenylene or  $\text{C}_2$ - $\text{C}_6$ alkynylene, each independently optionally substituted with halogen;

$L_S'$  is independently selected at each occurrence from bond; or  $C_1$ - $C_6$ alkylene,  $C_2$ - $C_6$ alkenylene or  $C_2$ - $C_6$ alkynylene, each of which is independently optionally substituted at each occurrence with one or more  $R_L$ ;

$R_S$ ,  $R_S'$  and  $R_S''$  are each independently selected at each occurrence from hydrogen;  $C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl or  $C_2$ - $C_6$ alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $-O$ - $C_1$ - $C_6$ alkyl,  $-O$ - $C_1$ - $C_6$ haloalkyl, or 3- to 12-membered carbocycle or heterocycle; or 3- to 12-membered carbocycle or heterocycle; wherein each 3- to 12-membered carbocycle or heterocycle in  $R_S$ ,  $R_S'$  or  $R_S''$  is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl,  $C_2$ - $C_6$ alkynyl,  $C_1$ - $C_6$ haloalkyl,  $C_2$ - $C_6$ haloalkenyl or  $C_2$ - $C_6$ haloalkynyl;

$R_M$  is independently selected at each occurrence from:

halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, cyano,  $SF_5$ ,  $-N(R_S R_S')$ ,  $-O-R_S$ ,  $-OC(O)R_S$ ,  $-OC(O)OR_S$ ,  $-OC(O)N(R_S R_S')$ ,  $-C(O)R_S$ ,  $-C(O)OR_S$ ,  $-C(O)N(R_S R_S')$ ,  $-N(R_S)C(O)R_S'$ ,  $-N(R_S)C(O)OR_S'$ ,  $-N(R_S)SO_2R_S'$ ,  $-S(O)R_S$ ,  $-SO_2R_S$ ,  $-S(O)N(R_S R_S')$ ,  $-SR_S$ ,  $-Si(R_S)_3$ , or  $-P(O)(OR_S)_2$ ;

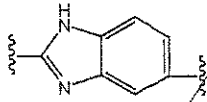
$C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl or  $C_2$ - $C_6$ alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $-N(R_S R_S')$ ,  $-O-R_S$ ,  $-OC(O)R_S$ ,  $-OC(O)OR_S$ ,  $-OC(O)N(R_S R_S')$ ,  $-C(O)R_S$ ,  $-C(O)OR_S$ ,  $-C(O)N(R_S R_S')$ ,  $-N(R_S)C(O)R_S'$ ,  $-N(R_S)C(O)OR_S'$ ,  $-N(R_S)SO_2R_S'$ ,  $-S(O)R_S$ ,  $-SO_2R_S$ ,  $-S(O)N(R_S R_S')$ ,  $-SR_S$ , or  $-P(O)(OR_S)_2$ ;

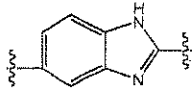
$G_2$ , wherein  $G_2$  is a  $C_3$ - $C_{12}$ carbocycle or 3- to 12-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more  $R_{G2}$ , and each  $R_{G2}$  is independently selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl,  $C_2$ - $C_6$ alkynyl,  $C_1$ - $C_6$ haloalkyl,  $C_2$ - $C_6$ haloalkenyl,  $C_2$ - $C_6$ haloalkynyl,  $-O-R_S$ ,  $-C(O)OR_S$ ,  $-C(O)R_S$ ,  $-N(R_S R_S')$ , or  $-L_4-G_3$ ;

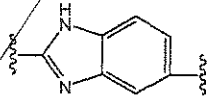
$L_4$  is a bond,  $C_1$ - $C_6$ alkylene,  $C_2$ - $C_6$ alkenylene,  $C_2$ - $C_6$ alkynylene,  $-O-$ ,  $-S-$ ,  $-N(R_B)-$ ,  $-C(O)-$ ,  $-S(O)_2-$ ,  $-S(O)-$ ,  $-C(O)O-$ ,  $-OC(O)-$ ,  $-OC(O)O-$ ,  $-C(O)N(R_B)-$ ,  $-N(R_B)C(O)-$ ,  $-N(R_B)C(O)O-$ ,  $-OC(O)N(R_B)-$ ,  $-N(R_B)S(O)-$ ,  $-N(R_B)S(O)_2-$ ,  $-S(O)N(R_B)-$ ,  $-S(O)_2N(R_B)-$ ,  $-N(R_B)C(O)N(R_B')-$ ,  $-N(R_B)SO_2N(R_B')-$ , or  $-N(R_B)S(O)N(R_B')-$ ;

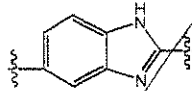
$G_3$  is a  $C_3$ - $C_{12}$ carbocycle or 3- to 12-membered heterocycle, and is optionally substituted with one or more  $R_{G3}$ ; and

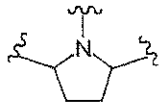
$R_{G3}$  is each independently, at each occurrence, halogen,  $-C_1$ - $C_6$ alkyl,  $-C(O)C_1$ - $C_6$ alkyl,  $-C_1$ - $C_6$ haloalkyl,  $-O-C_1$ - $C_6$ alkyl,  $-O-C_1$ - $C_6$ haloalkyl,  $C_3$ - $C_6$ carbocycle, or 3- to 6-membered heterocycle.

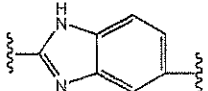
3. The compound or salt according to claim 2, wherein A is  and is optionally

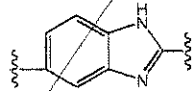
substituted with one or more  $R_A$ , and B is  and is optionally substituted with one or more  $R_A$ , and D is  $C_6$ - $C_{10}$ aryl or 5- to 10-membered heteroaryl and is substituted with one or more  $R_M$ .

4. The compound or salt according to claim 2, wherein A is  and is optionally

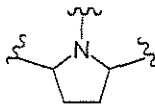
substituted with one or more  $R_A$ , and B is  and is optionally substituted with one or more  $R_A$ , and D is phenyl or pyridyl and is substituted by one or more  $R_M$ , wherein at least one  $R_M$  is  $G_2$  which is substituted with  $L_4$ - $G_3$  and optionally substituted with one or more  $R_{G2}$ .

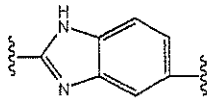
5. The compound or salt according to claim 2, wherein X is  and is optionally

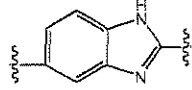
substituted with one or more  $R_A$ , A is  and is optionally substituted with one or

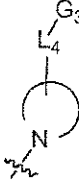
more  $R_A$ , and B is  and is optionally substituted with one or more  $R_A$ , and D is

phenyl or pyridyl and is substituted by one or more  $R_M$ , and wherein at least one  $R_M$  is  which is a monocyclic 4-8 membered nitrogen-containing heterocycle optionally substituted with one or more  $R_{G2}$ .

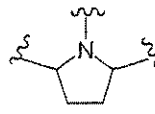
6. The compound or salt according to claim 2, wherein X is  and is optionally

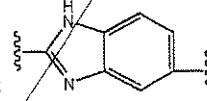
substituted with one or more  $R_A$ , A is  and is optionally substituted with one or

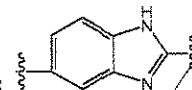
more  $R_A$ , and B is  and is optionally substituted with one or more  $R_A$ , and D is

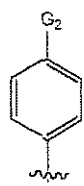
phenyl or pyridyl and is substituted by one or more  $R_M$ , and at least one  $R_M$  is , wherein

 is a monocyclic 4-8 membered nitrogen-containing heterocycle optionally substituted with one or more  $R_{G2}$ .

7. The compound or salt according to claim 2, wherein X is  and is optionally

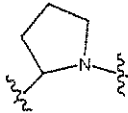
substituted with one or more  $R_A$ , A is  and is optionally substituted with one or

more  $R_A$ , and B is  and is optionally substituted with one or more  $R_A$ , and D is

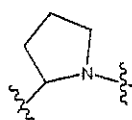


and is optionally substituted by one or more additional  $R_M$ .

8. The compound or salt according to claim 7, wherein  $R_1$  is hydrogen, and  $R_2$  and  $R_5$

taken together with the atoms to which they are attached form  which is substituted with 0, 1, 2, 3, or 4  $R_A$ , wherein  $R_8$  is hydrogen, and  $R_9$  and  $R_{12}$  taken together with the atoms to which

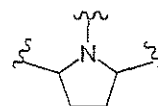
they are attached form



which is substituted with 0, 1, 2, 3, or 4  $R_A$ , and wherein each  $T'$

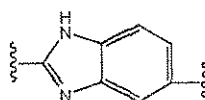
is bond.

9. The compound or salt according to claim 2, wherein X is



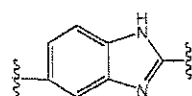
and is optionally

substituted with one or more  $R_A$ , A is

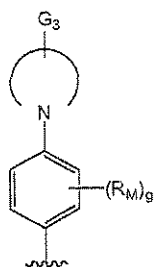


and is optionally substituted with one or

more  $R_A$ , and B is



and is optionally substituted with one or more  $R_A$ , and D is



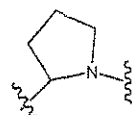
, wherein  $G_3$  is phenyl optionally substituted with one or two  $R_{G3}$ ;  $g$  is 0, 1, or 2;  $R_M$  is each independently fluoro, chloro, methyl, methoxy, trifluoromethyl, or trifluoromethoxy; and



is a monocyclic 4-8 membered nitrogen-containing heterocycle optionally substituted with one or more  $R_{G2}$ .

10. The compound or salt according to claim 9, wherein  $R_1$  is hydrogen, and  $R_2$  and  $R_5$  taken

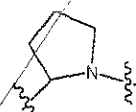
together with the atoms to which they are attached form



which is substituted with 0, 1, 2,

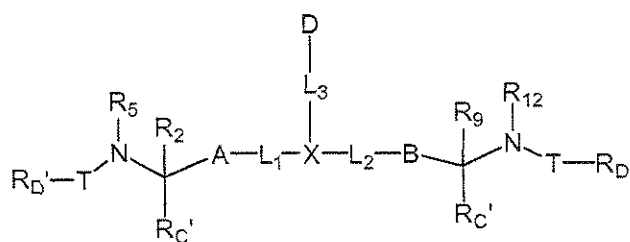
3, or 4  $R_A$ , wherein  $R_8$  is hydrogen, and  $R_9$  and  $R_{12}$  taken together with the atoms to which they are

attached form



which is substituted with 0, 1, 2, 3, or 4  $R_A$ , and wherein each  $T'$  is bond.

11. A compounds having Formula I<sub>B</sub>, or a pharmaceutically acceptable salt thereof,

I<sub>B</sub>

wherein:

R<sub>C</sub>' is each independently selected from R<sub>C</sub>;

R<sub>D</sub>' is each independently selected from R<sub>D</sub>;

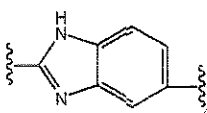
R<sub>2</sub> and R<sub>5</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

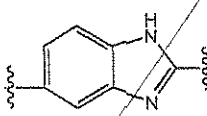
R<sub>9</sub> and R<sub>12</sub>, taken together with the atoms to which they are attached, form a 3- to 12-membered heterocycle which is optionally substituted with one or more R<sub>A</sub>;

X is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle, and is optionally substituted with one or more R<sub>A</sub> or R<sub>F</sub>;

L<sub>1</sub> and L<sub>2</sub> are each independently selected from bond; or C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene, each of which is independently optionally substituted at each occurrence with one or more R<sub>L</sub>;

L<sub>3</sub> is bond or -L<sub>S</sub>-K-L<sub>S</sub>'-, wherein K is selected from bond, -O-, -S-, -N(R<sub>B</sub>)-, -C(O)-, -S(O)<sub>2</sub>-, -S(O)-, -OS(O)-, -OS(O)<sub>2</sub>-, -S(O)<sub>2</sub>O-, -S(O)O-, -C(O)O-, -OC(O)-, -OC(O)O-, -C(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)O-, -OC(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)S(O)-, -N(R<sub>B</sub>)S(O)<sub>2</sub>-, -S(O)N(R<sub>B</sub>)-, -S(O)<sub>2</sub>N(R<sub>B</sub>)-, -C(O)N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)N(R<sub>B</sub>')-, -N(R<sub>B</sub>)SO<sub>2</sub>N(R<sub>B</sub>')-, or -N(R<sub>B</sub>)S(O)N(R<sub>B</sub>')-;

A is  and is optionally substituted with one or more R<sub>A</sub>;

B is  and is optionally substituted with one or more R<sub>A</sub>;

D is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle which is substituted with J and optionally substituted with one or more R<sub>A</sub>, where J is C<sub>3</sub>-C<sub>12</sub>carbocycle or 3- to 12-membered heterocycle and is optionally substituted with one or more R<sub>A</sub>;

T is each independently selected at each occurrence from bond, -L<sub>S</sub>-, -L<sub>S</sub>-M-L<sub>S</sub>'-, or -L<sub>S</sub>-M-L<sub>S</sub>'-M'-L<sub>S</sub>'-, wherein M and M' are each independently selected at each occurrence from bond, -O-, -S-, -N(R<sub>B</sub>)-, -C(O)-, -S(O)<sub>2</sub>-, -S(O)-, -OS(O)-, -OS(O)<sub>2</sub>-, -S(O)<sub>2</sub>O-, -S(O)O-, -C(O)O-, -OC(O)-, -OC(O)O-, -C(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)C(O)-, -N(R<sub>B</sub>)C(O)O-, -OC(O)N(R<sub>B</sub>)-, -N(R<sub>B</sub>)S(O)-, -N(R<sub>B</sub>)S(O)<sub>2</sub>-, -S(O)N(R<sub>B</sub>)-, -

$S(O)_2N(R_B)-$ ,  $-C(O)N(R_B)C(O)-$ ,  $-N(R_B)C(O)N(R_B')-$ ,  $-N(R_B)SO_2N(R_B')-$ ,  $-N(R_B)S(O)N(R_B')-$ ,  $C_3-C_{12}$ carbocycle or 3- to 12-membered heterocycle, and wherein said  $C_3-C_{12}$ carbocycle and 3- to 12-membered heterocycle are each independently optionally substituted at each occurrence with one or more  $R_A$ ;

$R_D$  is each independently selected at each occurrence from hydrogen or  $R_A$ ;

$R_A$  is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxo, cyano, or  $-L_S-R_E$ , wherein two adjacent  $R_A$ , taken together with the atoms to which they are attached and any atoms between the atoms to which they are attached, can optionally form carbocycle or heterocycle;

$R_B$  and  $R_B'$  are each independently selected at each occurrence from hydrogen; or  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl or  $C_2-C_6$ alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in  $R_B$  or  $R_B'$  is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano,  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl,  $C_2-C_6$ alkynyl,  $C_1-C_6$ haloalkyl,  $C_2-C_6$ haloalkenyl or  $C_2-C_6$ haloalkynyl;

$R_C$  is independently selected at each occurrence from hydrogen, halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl or cyano; or  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl or  $C_2-C_6$ alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in  $R_C$  is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxo, formyl, cyano,  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl,  $C_2-C_6$ alkynyl,  $C_1-C_6$ haloalkyl,  $C_2-C_6$ haloalkenyl or  $C_2-C_6$ haloalkynyl;

$R_E$  is independently selected at each occurrence from  $-O-R_S$ ,  $-S-R_S$ ,  $-C(O)R_S$ ,  $-OC(O)R_S$ ,  $-C(O)OR_S$ ,  $-N(R_S R_S')$ ,  $-S(O)R_S$ ,  $-SO_2R_S$ ,  $-C(O)N(R_S R_S')$ ,  $-N(R_S)C(O)R_S'$ ,  $-N(R_S)C(O)N(R_S' R_S'')$ ,  $-N(R_S)SO_2R_S'$ ,  $-SO_2N(R_S R_S')$ ,  $-N(R_S)SO_2N(R_S' R_S'')$ ,  $-N(R_S)S(O)N(R_S' R_S'')$ ,  $-OS(O)-R_S$ ,  $-OS(O)_2-R_S$ ,  $-S(O)_2OR_S$ ,  $-S(O)OR_S$ ,  $-OC(O)OR_S$ ,  $-N(R_S)C(O)OR_S'$ ,  $-OC(O)N(R_S R_S')$ ,  $-N(R_S)S(O)-R_S'$ ,  $-S(O)N(R_S R_S')$ ,  $-P(O)(OR_S)_2$ , or  $-C(O)N(R_S)C(O)-R_S'$ ; or  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl or  $C_2-C_6$ alkynyl, each of which is

independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano; or C<sub>3</sub>-C<sub>6</sub>carbocycle or 3- to 6-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkynyl, C(O)OR<sub>S</sub>, or -N(R<sub>S</sub>R<sub>S</sub>');

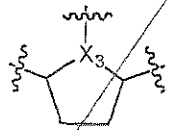
R<sub>F</sub> is independently selected at each occurrence from C<sub>1</sub>-C<sub>10</sub>alkyl, C<sub>2</sub>-C<sub>10</sub>alkenyl or C<sub>2</sub>-C<sub>10</sub>alkynyl, each of which contains 0, 1, 2, 3, 4 or 5 heteroatoms selected from O, S or N and is optionally substituted with one or more R<sub>L</sub>; or -(R<sub>X</sub>-R<sub>Y</sub>)<sub>Q</sub>-(R<sub>X</sub>-R<sub>Y</sub>'), wherein Q is 0, 1, 2, 3 or 4, and each R<sub>X</sub> is independently O, S or N(R<sub>B</sub>), wherein each R<sub>Y</sub> is independently C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene each of which is independently optionally substituted with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano, and wherein each R<sub>Y</sub>' is independently C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl each of which is independently optionally substituted with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl or cyano;

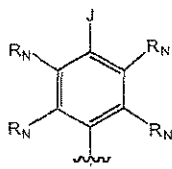
R<sub>L</sub> is independently selected at each occurrence from halogen, nitro, oxo, phosphonoxy, phosphono, thioxy, cyano, -O-R<sub>S</sub>, -S-R<sub>S</sub>, -C(O)R<sub>S</sub>, -OC(O)R<sub>S</sub>, -C(O)OR<sub>S</sub>, -N(R<sub>S</sub>R<sub>S</sub>'), -S(O)R<sub>S</sub>, -SO<sub>2</sub>R<sub>S</sub>, -C(O)N(R<sub>S</sub>R<sub>S</sub>') or -N(R<sub>S</sub>)C(O)R<sub>S</sub>'; or C<sub>3</sub>-C<sub>6</sub>carbocycle or 3- to 6-membered heterocycle, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl or C<sub>2</sub>-C<sub>6</sub>haloalkynyl; wherein two adjacent R<sub>L</sub>, taken together with the atoms to which they are attached and any atoms between the atoms to which they are attached, can optionally form carbocycle or heterocycle;

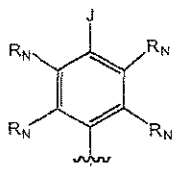
L<sub>S</sub>, L<sub>S</sub>' and L<sub>S</sub>'' are each independently selected at each occurrence from bond; or C<sub>1</sub>-C<sub>6</sub>alkylene, C<sub>2</sub>-C<sub>6</sub>alkenylene or C<sub>2</sub>-C<sub>6</sub>alkynylene, each of which is independently optionally substituted at each occurrence with one or more R<sub>L</sub>; and

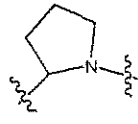
R<sub>S</sub>, R<sub>S</sub>' and R<sub>S</sub>'' are each independently selected at each occurrence from hydrogen; C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl or C<sub>2</sub>-C<sub>6</sub>alkynyl, each of which is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl,

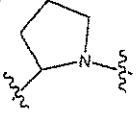
cyano,  $-O-C_1-C_6$ alkyl,  $-O-C_1-C_6$ alkylene- $O-C_1-C_6$ alkyl, or 3- to 6-membered carbocycle or heterocycle; or 3- to 6-membered carbocycle or heterocycle; wherein each 3- to 6-membered carbocycle or heterocycle in  $R_S$ ,  $R_{S'}$  or  $R_{S''}$  is independently optionally substituted at each occurrence with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl,  $C_2-C_6$ alkynyl,  $C_1-C_6$ haloalkyl,  $C_2-C_6$ haloalkenyl or  $C_2-C_6$ haloalkynyl.

12. The compound or salt according to claim 11, wherein X is  and is optionally substituted with one or more  $R_A$  or  $R_F$ , and  $X_3$  is N and is directly linked to  $-L_3-D$ , wherein  $L_1$ ,  $L_2$  and



$L_3$  are bond, wherein D is , and each  $R_N$  is independently  $R_D$ , wherein J is  $C_3-C_6$ carbocycle or 3- to 6-membered heterocycle and is substituted with a  $C_3-C_6$ carbocycle or 3- to 6-membered heterocycle which is independently optionally substituted with one or more substituents selected from halogen, hydroxy, mercapto, amino, carboxy, nitro, oxo, phosphonoxy, phosphono, thioxy, formyl, cyano,  $C_1-C_6$ alkyl,  $C_2-C_6$ alkenyl,  $C_2-C_6$ alkynyl,  $C_1-C_6$ haloalkyl,  $C_2-C_6$ haloalkenyl,  $C_2-C_6$ haloalkynyl,  $C(O)OR_S$  or  $-N(R_S R_{S'})$ , and J is optionally substituted with one or more  $R_A$ , wherein

$R_2$  and  $R_5$ , taken together with the atoms to which they are attached, form  which is optionally substituted with one or more  $R_A$ , wherein  $R_9$  and  $R_{12}$ , taken together with the atoms to

which they are attached, form  which is optionally substituted with one or more  $R_A$ , wherein  $-T-R_D'$  is  $-C(O)-L_Y'-R_D'$ ,  $-C(O)O-L_Y'-R_D'$ ,  $-C(O)-L_Y'-N(R_B)C(O)-L_{S''}-R_D'$ ,  $-C(O)-L_Y'-N(R_B)C(O)O-L_{S''}-R_D'$ ,  $-N(R_B)C(O)-L_Y'-N(R_B)C(O)-L_{S''}-R_D'$ ,  $-N(R_B)C(O)-L_Y'-N(R_B)C(O)O-L_{S''}-R_D'$ , or  $-N(R_B)C(O)-L_Y'-N(R_B)-L_{S''}-R_D'$ , and wherein  $L_Y'$  is each independently  $L_S'$ .

13. A process of making a compound of the invention, comprising a step described in one of the Schemes, General Procedures or Examples described herein.

14. An intermediate described in one of Schemes, General Procedures or Examples described herein.

15. methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-{3,5-difluoro-4-[4-(4-fluorophenyl)piperidin-1-yl]phenyl}-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl})-1*H*-benzimidazol-5-yl]pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl}carbamate, or a pharmaceutically acceptable salt thereof.

16. A pharmaceutical composition comprising the compound of claim 15 or said salt.

17. methyl {(2*S*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-{3,5-difluoro-4-(4-phenylpiperidin-1-yl)phenyl]-5-{2-[(2*S*)-1-{(2*S*)-2-[(methoxycarbonyl)amino]-3-methylbutanoyl}pyrrolidin-2-yl]-1*H*-benzimidazol-5-yl}pyrrolidin-2-yl]-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methyl-1-oxobutan-2-yl}carbamate, or a pharmaceutically acceptable salt thereof.

18. A pharmaceutical composition comprising the compound of claim 17 or said salt.

19. methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-{4-[4-(2,6-difluorophenyl)piperazin-1-yl]-3,5-difluorophenyl}-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl})-1*H*-benzimidazol-5-yl]pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl}carbamate, or a pharmaceutically acceptable salt thereof.

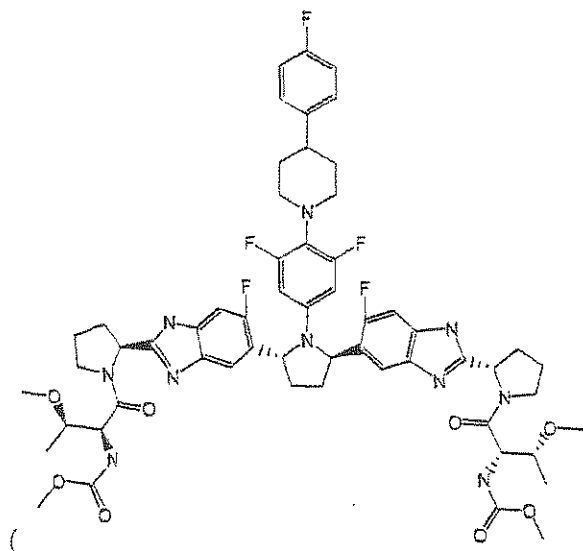
20. A pharmaceutical composition comprising the compound of claim 19 or said salt.

21. methyl {(2*S*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-(4-*tert*-butylphenyl)-5-{5-fluoro-2-[(2*S*)-1-{(2*S*)-2-[(methoxycarbonyl)amino]-3-methylbutanoyl}pyrrolidin-2-yl]-1*H*-benzimidazol-6-yl}pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methyl-1-oxobutan-2-yl}carbamate, or a pharmaceutically acceptable salt thereof.

22. A pharmaceutical composition comprising the compound of claim 21 or said salt.

# CLAIMS:

1. Methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-{3,5-difluoro-4-[4-(4-fluorophenyl)piperidin-1-yl]phenyl}-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl}-1*H*-benzimidazol-5-yl)pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl} carbamate



), or a pharmaceutically acceptable salt thereof.

2. A pharmaceutical composition comprising methyl {(2*S*,3*R*)-1-[(2*S*)-2-{5-[(2*R*,5*R*)-1-{3,5-difluoro-4-[4-(4-fluorophenyl)piperidin-1-yl]phenyl}-5-(6-fluoro-2-{(2*S*)-1-[*N*-(methoxycarbonyl)-*O*-methyl-L-threonyl]pyrrolidin-2-yl}-1*H*-benzimidazol-5-yl)pyrrolidin-2-yl]-6-fluoro-1*H*-benzimidazol-2-yl}pyrrolidin-1-yl]-3-methoxy-1-oxobutan-2-yl} carbamate.

3. Use of the compound of claim 1, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating a patient infected with HCV.