

**Claim No:  
HP-2018-000038**

**IN THE HIGH COURT OF JUSTICE  
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES  
INTELLECTUAL PROPERTY LIST (ChD)  
PATENTS COURT**

**B E T W E E N:**

**(1) GLAXOSMITHKLINE UK LIMITED  
(2) GLAXOSMITHKLINE INTELLECTUAL PROPERTY (NO.2) LIMITED**

Claimants in HP-2018-000038

**– and –**

**FIBROGEN, INC.**

Defendant in HP-2018-000038

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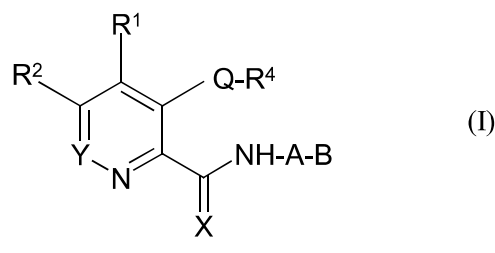
**STATEMENT OF GROUNDS**

**ANNEX A**

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## Unconditional amendments to EP (UK) 2 322 153:

1. A compound that inhibits hypoxia inducible factor (HIF) prolylhydroxylase activity for use in treating ~~or preventing~~ iron deficiency associated with anemia in a subject, wherein the compound is a structural mimetic of 2-oxoglutarate.
2. The compound according to claim 1, wherein the compound is of Formula (I):



wherein

A is 1,2-arylidene, 1,3-arylidene, 1,4-arylidene; or (C<sub>1</sub>-C<sub>4</sub>)-alkylene, optionally substituted by one or two halogen, cyano, nitro, trifluoromethyl, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>6</sub>)-hydroxyalkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy, -O-[CH<sub>2</sub>]<sub>x</sub>-C<sub>f</sub>H<sub>(2f+1-g)</sub>Hal<sub>g</sub>, (C<sub>1</sub>-C<sub>6</sub>)-fluoroalkoxy, (C<sub>1</sub>-C<sub>8</sub>)-fluoroalkenyloxy, (C<sub>1</sub>-C<sub>8</sub>)-fluoroalkynyloxy, -OCF<sub>2</sub>Cl, -O-CF<sub>2</sub>-CHFCl; (C<sub>1</sub>-C<sub>6</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfonyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylcarbonyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, carbamoyl, N-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbamoyl, N,N-di-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbamoyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylcarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, phenyl, benzyl, phenoxy, benzyloxy, anilino, N-methylanilino, phenylmercapto, phenylsulfonyl, phenylsulfinyl, sulfamoyl, N-(C<sub>1</sub>-C<sub>4</sub>)-alkylsulfamoyl, N,N-di-(C<sub>1</sub>-C<sub>4</sub>)-alkylsulfamoyl; or by a substituted (C<sub>6</sub>-C<sub>12</sub>)-aryloxy, (C<sub>7</sub>-C<sub>11</sub>)-aralkyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>11</sub>)-aralkyl radical, which carries in the aryl moiety one to five identical or different substituents selected from halogen, cyano, nitro, trifluoromethyl, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy, -O-[CH<sub>2</sub>]<sub>x</sub>-C<sub>f</sub>H<sub>(2f+1-g)</sub>Hal<sub>g</sub>, -OCF<sub>2</sub>Cl, -O-CF<sub>2</sub>-CHFCl, (C<sub>1</sub>-C<sub>6</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfonyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylcarbonyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, carbamoyl, N-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbamoyl, N,N-di-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbamoyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylcarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, sulfamoyl, N-(C<sub>1</sub>-C<sub>4</sub>)-alkylsulfamoyl, N,N-di-(C<sub>1</sub>-

C<sub>4</sub>)-alkylsulfamoyl; or wherein A is -CR<sup>5</sup>R<sup>6</sup> and R<sup>5</sup> and R<sup>6</sup> are each independently selected from hydrogen, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>7</sub>)-cycloalkyl, aryl, or a substituent of the α-carbon atom of an α-amino acid, wherein the amino acid is a natural L-amino acid or its D-isomer.

B is -CO<sub>2</sub>H, -NH<sub>2</sub>, -NHSO<sub>2</sub>CF<sub>3</sub>, tetrazolyl, imidazolyl, 3-hydroxyisoxazolyl, -CONHCOR<sup>'''</sup>, -CONHSOR<sup>'''</sup>, CONHSO<sub>2</sub>R<sup>'''</sup>, where R<sup>'''</sup> is aryl, heteroaryl, (C<sub>3</sub>-C<sub>7</sub>)-cycloalkyl, or (C<sub>1</sub>-C<sub>4</sub>)-alkyl, optionally monosubstituted by (C<sub>6</sub>-C<sub>12</sub>)-aryl, heteroaryl, OH, SH, (C<sub>1</sub>-C<sub>4</sub>)-alkyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, (C<sub>1</sub>-C<sub>4</sub>)-thioalkyl, (C<sub>1</sub>-C<sub>4</sub>)-sulfinyl, (C<sub>1</sub>-C<sub>4</sub>)-sulfonyl, CF<sub>3</sub>, Cl, Br, F, I, NO<sub>2</sub>, -COOH, (C<sub>2</sub>-C<sub>5</sub>)-alkoxycarbonyl, NH<sub>2</sub>, mono-(C<sub>1</sub>-C<sub>4</sub>-alkyl)-amino, di-(C<sub>1</sub>-C<sub>4</sub>-alkyl)-amino, or (C<sub>1</sub>-C<sub>4</sub>)-perfluoroalkyl; or wherein B is a CO<sub>2</sub>-G carboxyl radical, where G is a radical of an alcohol G-OH in which G is selected from (C<sub>1</sub>-C<sub>20</sub>)-alkyl radical, (C<sub>3</sub>-C<sub>8</sub>) cycloalkyl radical, (C<sub>2</sub>-C<sub>20</sub>)-alkenyl radical, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkenyl radical, retinyl radical, (C<sub>2</sub>-C<sub>20</sub>)-alkynyl radical, (C<sub>4</sub>-C<sub>20</sub>)-alkenylnyl radical, where the alkenyl, cycloalkenyl, alkynyl, and alkenylnyl radicals contain one or more multiple bonds; (C<sub>6</sub>-C<sub>16</sub>)-carbocyclic aryl radical, (C<sub>7</sub>-C<sub>16</sub>)-carbocyclic aralkyl radical, heteroaryl radical, or heteroaralkyl radical, wherein a heteroaryl radical or heteroaryl moiety of a heteroaralkyl radical contains 5 or 6 ring atoms; and wherein radicals defined for G are substituted by one or more hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, (C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>5</sub>-C<sub>8</sub>)-cycloalkenyl, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>16</sub>)-aralkyl, (C<sub>2</sub>-C<sub>12</sub>)-alkenyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy, (C<sub>1</sub>-C<sub>8</sub>)-hydroxyalkyl, -O-[CH<sub>2</sub>]<sub>x</sub>-C<sub>f</sub>H<sub>(2f+1-q)</sub>-F<sub>q</sub>, -OCF<sub>2</sub>Cl, -OCF<sub>2</sub>-CHFCl, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyl, cinnamoyl, (C<sub>2</sub>-C<sub>12</sub>)-alkenylcarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynylcarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxycarbonyl, acyloxy, (C<sub>1</sub>-C<sub>12</sub>)-

alkoxycarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-  
aryloxy-carbonyloxy, (C<sub>7</sub>-C<sub>16</sub>) aralkyloxy-carbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy-carbonyloxy,  
(C<sub>2</sub>-C<sub>12</sub>)-alkenyloxy-carbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxy-carbonyloxy, carbamoyl, N-(C<sub>1</sub>-  
C<sub>12</sub>)-alkylcarbamoyl, N.N-di(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-carbamoyl,  
N-(C<sub>6</sub>-C<sub>16</sub>)-arylcarbamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>16</sub>)-  
arylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-  
C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>7</sub>-C<sub>16</sub>)-  
aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-  
alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>16</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-  
(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, carbamoyloxy, N-(C<sub>1</sub>-  
C<sub>12</sub>)-alkylcarbamoyloxy, N.N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N-(C<sub>3</sub>-C<sub>8</sub>)-  
cycloalkylcarbamoyloxy, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyloxy, N-(C<sub>7</sub>-C<sub>16</sub>)-  
aralkylcarbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyloxy, N(C<sub>1</sub>-C<sub>10</sub>)-alkyl-  
N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>6</sub>-C<sub>12</sub>)-  
aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-  
carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-  
(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-  
((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, amino, (C<sub>1</sub>-C<sub>12</sub>)-alkylamino, di-(C<sub>1</sub>-  
C<sub>12</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino, (C<sub>2</sub>-C<sub>12</sub>)-alkenylamino, (C<sub>2</sub>-C<sub>12</sub>)-  
alkynylamino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylamino, N-(C-C<sub>11</sub>)-aralkylamino, N-alkyl-aralkylamino, N-  
alkyl-arylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-amino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-  
C<sub>12</sub>)-alkylcarbonylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonylamino, (C<sub>6</sub>-C<sub>12</sub>)  
arylcarbonylamino, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-  
alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl-  
N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>7</sub>-C<sub>11</sub>)-aralkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-  
alkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-  
C<sub>12</sub>)-arylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl,  
amino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N.N-di-(C<sub>1</sub>-C<sub>10</sub>)-

alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)cycloalkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfonyl, (C<sub>6</sub>-C<sub>16</sub>)-arylmercapto, (C<sub>6</sub>-C<sub>16</sub>)-arylsulfinyl, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylmercapto, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfinyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonyl, sulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylsulfamoyl, N,N-di(C<sub>1</sub>-C<sub>10</sub>)-alkylsulfamoyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylsulfamoyl, N-(C<sub>6</sub>-C<sub>12</sub>)-alkylsulfamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylsulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfamoyl, (C<sub>1</sub>-C<sub>10</sub>)-alkylsulfonamido, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-(C<sub>1</sub>-C<sub>10</sub>)-alkylsulfonamido, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonamido, or N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-(C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonamido; wherein radicals which are aryl or contain an aryl moiety, may be substituted on the aryl by one to five identical or different hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, (C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>16</sub>)-aralkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy, (C<sub>1</sub>-C<sub>8</sub>)-hydroxyalkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-carbonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyloxy, cinnamoyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenylcarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkynylcarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxycarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxycarbonyloxy, carbamoyl, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N,N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-

(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, carbamoyloxy, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N.N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyloxy, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyloxy, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyloxy, N(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, amino, (C<sub>1</sub>-C<sub>12</sub>)-alkylamino, di-(C<sub>1</sub>-C<sub>12</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkenylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkynylamino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylamino, N-(C<sub>7</sub>-C<sub>11</sub>)-aralkylamino, N-alkylaralkylamino, N-alkyl-arylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxyamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonylamino, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonylamino, (C<sub>7</sub>-C<sub>16</sub>)-alkylcarbonylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>7</sub>-C<sub>11</sub>)-aralkylcarbonyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, amino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N.N-di-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylmercapto, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfinyl, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylmercapto, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfinyl, or (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonyl;

X is O or S;

Q is O, S, NR', or a bond;

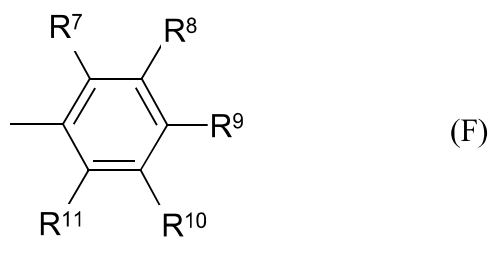
where, if Q is a bond, R<sup>4</sup> is halogen, nitrile, or trifluoromethyl;

or where, if Q is O, S, or NR', R<sup>4</sup> is hydrogen, (C<sub>1</sub>-C<sub>10</sub>)-alkyl radical, (C<sub>2</sub>-C<sub>10</sub>)-alkenyl radical, (C<sub>2</sub>-C<sub>10</sub>)-alkynyl radical, wherein alkenyl or alkynyl radical contains one or two C-C multiple bonds; unsubstituted fluoroalkyl radical of the formula -[CH<sub>2</sub>]<sub>x</sub>-C<sub>f</sub>H<sub>(2f+1-g)</sub>-F<sub>g</sub>, (C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl radical, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy-(C<sub>1</sub>-C<sub>4</sub>)-alkyl radical, aryl radical, heteroaryl radical, (C<sub>7</sub>-C<sub>11</sub>)-aralkyl radical, or a radical of the formula Z



where

E is a heteroaryl radical, a (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl radical, or a phenyl radical of the formula F



v is 0-6,

w is 0 or 1,

t is 0-3, and

R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, and R<sup>11</sup> are identical or different and are hydrogen, halogen, cyano, nitro, trifluoromethyl, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy, -O-[CH<sub>2</sub>]<sub>x</sub>-C<sub>f</sub>H<sub>(2f+1-g)</sub>-F<sub>g</sub>, -OCF<sub>2</sub>-Cl, -O-CF<sub>2</sub>-CHFCl, (C<sub>1</sub>-C<sub>6</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>6</sub>)-hydroxyalkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylsulfonyl, (C<sub>1</sub>-C<sub>6</sub>)-alkylcarbonyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxycarbonyl, carbamoyl, N-(C<sub>1</sub>-C<sub>8</sub>)-alkylcarbamoyl, N,N-di-(C<sub>1</sub>-C<sub>8</sub>)-alkylcarbamoyl, or (C<sub>7</sub>-C<sub>11</sub>)-aralkylcarbamoyl, optionally substituted by fluorine, chlorine, bromine, trifluoromethyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbamoyl, (C<sub>1</sub>-C<sub>6</sub>)-

alkylcarbonyloxy, phenyl, benzyl, phenoxy, benzyloxy, NR<sup>Y</sup>R<sup>Z</sup> wherein R<sup>Y</sup> and R<sup>Z</sup> are independently selected from hydrogen, (C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>10</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>12</sub>)-alkenyl, (C<sub>3</sub>-C<sub>12</sub>)-alkynyl, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>11</sub>)-aralkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>7</sub>-C<sub>12</sub>)-aralkoxy, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyl; or further wherein R<sup>Y</sup> and R<sup>Z</sup> together are -[CH<sub>2</sub>]<sub>h</sub>, in which a CH<sub>2</sub> group can be replaced by O, S, N-(C<sub>1</sub>-C<sub>4</sub>)-alkylcarbonylimino, or N-(C<sub>1</sub>-C<sub>4</sub>)-alkoxycarbonylimino; phenylmercapto, phenylsulfonyl, phenylsulfinyl, sulfamoyl, N-(C<sub>1</sub>-C<sub>8</sub>)-alkylsulfamoyl, or N, N-di-(C<sub>1</sub>-C<sub>8</sub>)-alkylsulfamoyl; or alternatively R<sup>7</sup> and R<sup>8</sup>, R<sup>8</sup> and R<sup>9</sup>, R<sup>9</sup> and R<sup>10</sup>, or R<sup>10</sup> and R<sup>11</sup>, together are a chain selected from -[CH<sub>2</sub>]<sub>n</sub>- or -CH=CH-CH=CH-, where a CH<sub>2</sub> group of the chain is optionally replaced by O, S, SO, SO<sub>2</sub>, or NR<sup>Y</sup>; and n is 3, 4, or 5; and if E is a heteroaryl radical, said radical can carry 1-3 substituents selected from those defined for R<sup>7</sup>-R<sup>11</sup>, or if E is a cycloalkyl radical, the radical can carry one substituent selected from those defined for R<sup>7</sup>-R<sup>11</sup>;

or where, if Q is NR', R<sup>4</sup> is alternatively R'', where R' and R'' are identical or different and are hydrogen, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>11</sub>)-aralkyl, (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>10</sub>)-alkylcarbonyl, optionally substituted (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyl, or optionally substituted (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl; or R' and R'' together are -[CH<sub>2</sub>]<sub>h</sub>, in which a CH<sub>2</sub> group can be replaced by O, S, N-acylimino, or N-(C<sub>1</sub>-C<sub>10</sub>)-alkoxycarbonylimino, and h is 3 to 7.

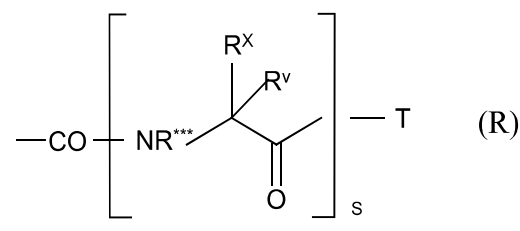
Y is N or CR<sup>3</sup>;

R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are identical or different and are hydrogen, hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, (C<sub>1</sub>-C<sub>20</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyloxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyloxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>8</sub>)-alkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-



cycloalkyloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>16</sub>)-aralkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkenyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkynyl, (C<sub>2</sub>-C<sub>20</sub>)-alkenyl, (C<sub>2</sub>-C<sub>20</sub>)-alkynyl, (C<sub>1</sub>-C<sub>20</sub>)-alkoxy, (C<sub>2</sub>-C<sub>20</sub>)-alkenyloxy, (C<sub>2</sub>-C<sub>20</sub>)-alkynyloxy, retinyloxy, (C<sub>1</sub>-C<sub>20</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>1</sub>-C<sub>16</sub>)-hydroxyalkyl, (C<sub>6</sub>-C<sub>16</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>2</sub>-C<sub>20</sub>)-alkenyloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>2</sub>-C<sub>20</sub>)-alkynyloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, retinyloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, -O-[CH<sub>2</sub>]<sub>x</sub>C<sub>f</sub>H<sub>(2f+1-g)</sub>F<sub>g</sub>, -OCF<sub>2</sub>Cl, -OCF<sub>2</sub>-CHFCl, (C<sub>1</sub>-C<sub>20</sub>)-alkylcarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyl, cinnamoyl, (C<sub>2</sub>-C<sub>20</sub>)-alkenylcarbonyl, (C<sub>2</sub>-C<sub>20</sub>)-alkynylcarbonyl, (C<sub>1</sub>-C<sub>20</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyl, (C<sub>2</sub>-C<sub>20</sub>)-alkenyloxycarbonyl, retinyloxycarbonyl, (C<sub>2</sub>-C<sub>20</sub>)-alkynyloxycarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-arylcarbonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbonyloxy, cinnamoyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenylcarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkynylcarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxycarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxycarbonyloxy, carbamoyl, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N,N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N,N-dicyclo-(C<sub>3</sub>-C<sub>8</sub>)-alkylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N-((C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>6</sub>)-alkyl-N-((C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl)-carbamoyl, N-(+)-dehydroabietylcarbamoyl, N-(C<sub>1</sub>-C<sub>6</sub>)-alkyl-N-(+)-dehydroabietylcarbamoyl, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>16</sub>)-arylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl,

N-((C<sub>1</sub>-C<sub>18</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>6</sub>-C<sub>16</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl; CON(CH<sub>2</sub>)<sub>h</sub>, in which a CH<sub>2</sub> group can be replaced by O, S, N-(C<sub>1</sub>-C<sub>8</sub>)-alkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)-alkylimino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylimino, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylimino, N-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkylimino, and h is from 3 to 7; a carbamoyl radical of the formula R



in which

R<sup>x</sup> and R<sup>y</sup> are each independently selected from hydrogen, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>7</sub>)-cycloalkyl, aryl, or the substituent of an α-carbon of an α-amino acid, to which the L- and D-amino acids belong.

s is 1-5,

T is OH, or NR<sup>\*</sup>R<sup>\*\*</sup>, and R<sup>\*</sup>, R<sup>\*\*</sup> and R<sup>\*\*\*</sup> are identical or different and are selected from hydrogen, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>11</sub>)-aralkyl, (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (+)-dehydroabietyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>10</sub>)-alkanoyl, optionally substituted (C<sub>7</sub>-C<sub>16</sub>)-aralkanoyl, optionally substituted (C<sub>6</sub>-C<sub>12</sub>)-aroyl; or R<sup>\*</sup> and R<sup>\*\*</sup> together are -[CH<sub>2</sub>]<sub>h</sub>, in which a CH<sub>2</sub> group can be replaced by O, S, SO, SO<sub>2</sub>, N-acylamino, N-(C<sub>1</sub>-C<sub>10</sub>)-alkoxycarbonylimino, N-(C<sub>1</sub>-C<sub>8</sub>)-alkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)-alkylimino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylimino, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylimino, N-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkylimino, and h is from 3 to 7;

carbamoyloxy, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N,N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyloxy, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarmamoyloxy, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarmamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyloxyamino, (C<sub>1</sub>-C<sub>12</sub>)-alkylamino, di-(C<sub>1</sub>-C<sub>12</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkenylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkynylamino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylamino, N-(C<sub>7</sub>-C<sub>11</sub>)-aralkylamino, N-alkyl-aralkylamino, N-alkyl-arylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxyamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoylamino, (C<sub>6</sub>-C<sub>12</sub>)-aroylamino, (C<sub>7</sub>-C<sub>16</sub>)-aralkanoylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>6</sub>-C<sub>12</sub>)-aroyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>7</sub>-C<sub>11</sub>)-aralkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aroylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, amino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N,N-di(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>1</sub>-C<sub>20</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>20</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>20</sub>)-alkylsulfonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylmercapto, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfinyl, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylmercapto, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfinyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylmercapto-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfinyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfonyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-arylmercapto-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfinyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-arylsulfonyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylmercapto-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfinyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, sulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylsulfamoyl, N,N-di-(C<sub>1</sub>-C<sub>10</sub>)-alkylsulfamoyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylsulfamoyl, N-(C<sub>6</sub>-C<sub>12</sub>)-arylsulfamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylsulfamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfamoyl, (C<sub>1</sub>-C<sub>10</sub>)-alkylsulfonamido, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)-(C<sub>1</sub>-C<sub>10</sub>)-

alkylsulfonamido, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonamido, and N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl-(C<sub>7</sub>-C<sub>16</sub>)-  
aralkylsulfonamido; where an aryl radical may be substituted by 1 to 5 substituents  
selected from hydroxyl, halogen, cyano, trifluoromethyl, nitro, carboxyl, (C<sub>2</sub>-C<sub>16</sub>)-alkyl,  
(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy, (C<sub>3</sub>-C<sub>8</sub>)-  
cycloalkyl-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyloxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyloxy-  
(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>8</sub>)-alkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl(C<sub>1</sub>-  
C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-  
cycloalkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>7</sub>-C<sub>16</sub>)-aralkyl, (C<sub>2</sub>-C<sub>16</sub>)-  
alkenyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynyl, (C<sub>1</sub>-C<sub>16</sub>)-alkoxy, (C<sub>1</sub>-C<sub>16</sub>)-alkenyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-  
C<sub>12</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-  
alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>7</sub>-C<sub>16</sub>)-  
aralkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy, (C<sub>1</sub>-C<sub>8</sub>)-hydroxyalkyl, (C<sub>6</sub>-C<sub>16</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-  
aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-  
aralkyloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl, -O-[CH<sub>2</sub>]<sub>x</sub>C<sub>f</sub>H<sub>(2f+1-g)</sub>F<sub>g</sub>, -OCF<sub>2</sub>Cl, -OCF<sub>2</sub>-CHFCl,  
(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-arylcabonyl, (C<sub>7</sub>-C<sub>16</sub>)-  
aralkylcarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyl,  
(C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxycarbonyl,  
(C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyl, (C<sub>2</sub>-C<sub>12</sub>)-alkynyloxycarbonyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>6</sub>)-  
alkoxycarbonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-  
alkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkoxycarbonyl, (C<sub>1</sub>-C<sub>12</sub>)-  
alkylcarbonyloxy, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-arylcabonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-  
aralkylcarbonyloxy, cinnamoyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenylcarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-  
alkynylcarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxycarbonyloxy, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-(C<sub>1</sub>-C<sub>12</sub>)-  
alkoxycarbonyloxy, (C<sub>6</sub>-C<sub>12</sub>)-aryloxycarbonyloxy, (C<sub>7</sub>-C<sub>16</sub>)-aralkyloxycarbonyloxy, (C<sub>3</sub>-  
C<sub>8</sub>)-cycloalkoxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-alkenyloxycarbonyloxy, (C<sub>2</sub>-C<sub>12</sub>)-  
alkynyloxycarbonyloxy, carbamoyl, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyl, N,N-di(C<sub>1</sub>-C<sub>12</sub>)-  
alkylcarbamoyl, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N,N-dicyclo-(C<sub>3</sub>-C<sub>8</sub>)-alkylcarbamoyl,  
N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyl, N-((C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-

alkyl)carbamoyl, N-(C<sub>1</sub>-C<sub>6</sub>)-alkyl-N-((C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)-alkyl)carbamoyl, N-(+)-dehydroabietylcarbamoyl, N-(C<sub>1</sub>-C<sub>6</sub>)-alkyl-N-(+)-dehydroabietylcarbamoyl, N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyl, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>16</sub>)-arylcarbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyl, N-((C<sub>1</sub>-C<sub>16</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyl, N-((C<sub>6</sub>-C<sub>16</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyl, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)-carbamoyl, CON(CH<sub>2</sub>)<sub>h</sub>, in which a CH<sub>2</sub> group can be replaced by, O, S, N-(C<sub>1</sub>-C<sub>8</sub>)-alkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylimino, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)-alkylimino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylimino, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylimino, N-(C<sub>1</sub>-C<sub>4</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkylimino, and h is from 3 to 7; carbamoyloxy, N-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N,N-di-(C<sub>1</sub>-C<sub>12</sub>)-alkylcarbamoyloxy, N-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkylcarbamoyloxy, N-(C<sub>6</sub>-C<sub>16</sub>)-arylcarbamoyloxy, N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>6</sub>-C<sub>12</sub>)-arylcarbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-(C<sub>7</sub>-C<sub>16</sub>)-aralkylcarbamoyloxy, N-((C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>1</sub>-C<sub>10</sub>)-alkoxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, N-(C<sub>1</sub>-C<sub>10</sub>)-alkyl-N-((C<sub>7</sub>-C<sub>16</sub>)-aralkyloxy-(C<sub>1</sub>-C<sub>10</sub>)-alkyl)carbamoyloxy, amino, (C<sub>1</sub>-C<sub>12</sub>)-alkylamino, di-(C<sub>1</sub>-C<sub>12</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkenylamino, (C<sub>3</sub>-C<sub>12</sub>)-alkynylamino, N-(C<sub>6</sub>-C<sub>12</sub>)-arylamino, N-(C<sub>7</sub>-C<sub>11</sub>)-aralkylamino, N-alkyl-aralkylamino, N-alkyl-arylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxyamino, (C<sub>1</sub>-C<sub>12</sub>)-alkoxy-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoylamino, (C<sub>6</sub>-C<sub>12</sub>)-aroylamino, (C<sub>7</sub>-C<sub>16</sub>)-aralkanoylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>6</sub>-C<sub>12</sub>)-aroyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>7</sub>-C<sub>11</sub>)-aralkanoyl-N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino, (C<sub>1</sub>-C<sub>12</sub>)-alkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aroylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkanoylamino-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, amino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N-(C<sub>1</sub>-C<sub>10</sub>)-alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, N,N-di-(C<sub>1</sub>-C<sub>10</sub>)-

alkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkylamino-(C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylmercapto, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfinyl, (C<sub>1</sub>-C<sub>12</sub>)-alkylsulfonyl, (C<sub>6</sub>-C<sub>16</sub>)-arylmercapto, (C<sub>6</sub>-C<sub>16</sub>)-arylsulfinyl, (C<sub>6</sub>-C<sub>16</sub>)-arylsulfonyl, (C<sub>7</sub>-C<sub>16</sub>)-aralkylmercapto, (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfinyl, or (C<sub>7</sub>-C<sub>16</sub>)-aralkylsulfonyl;

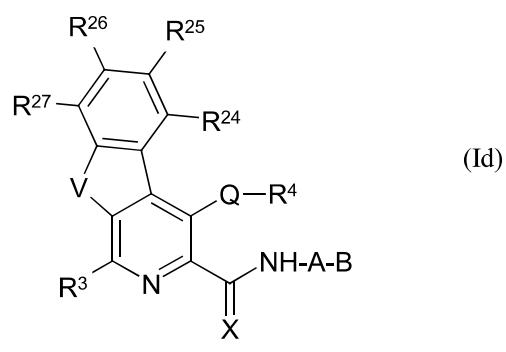
or wherein R<sup>1</sup> and R<sup>2</sup>, or R<sup>2</sup> and R<sup>3</sup> form a chain [CH<sub>2</sub>]<sub>o</sub>, which is saturated or unsaturated by a C=C double bond, in which 1 or 2 CH<sub>2</sub> groups are optionally replaced by O, S, SO, SO<sub>2</sub>, or NR', and R' is hydrogen, (C<sub>6</sub>-C<sub>12</sub>)-aryl, (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>7</sub>-C<sub>12</sub>)-aralkoxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>6</sub>-C<sub>12</sub>)-aryloxy-(C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>10</sub>)-alkanoyl, optionally substituted (C<sub>7</sub>-C<sub>16</sub>)-aralkanoyl, or optionally substituted (C<sub>6</sub>-C<sub>12</sub>)-aroyl; and o is 3, 4 or 5;

or wherein the radicals R<sup>1</sup> and R<sup>2</sup>, or R<sup>2</sup> and R<sup>3</sup>, together with the pyridine or pyridazine carrying them, form a 5,6,7,8-tetrahydroisoquinoline ring, a 5,6,7,8-tetrahydroquinoline ring, or a 5,6,7,8-tetrahydrocinnoline ring;

or wherein R<sup>1</sup> and R<sup>2</sup>, or R<sup>2</sup> and R<sup>3</sup> form a carbocyclic or heterocyclic 5- or 6-membered aromatic ring;

or where R<sup>1</sup> and R<sup>2</sup>, or R<sup>2</sup> and R<sup>3</sup>, together with the pyridine or pyridazine carrying them, form an optionally substituted heterocyclic ring system selected from thienopyridines, furanopyridines, pyridopyridines, pyrimidinopyridines, imidazopyridines, thiazolopyridines, oxazolopyridines, quinoline, isoquinoline, and cinnoline;

or wherein the radicals R<sup>1</sup> and R<sup>2</sup>, together with the pyridine carrying them, form a compound of Formula Id;



where V is S, O, or NR<sup>k</sup>, and R<sup>k</sup> is selected from hydrogen, (C<sub>1</sub>-C<sub>6</sub>)-alkyl, aryl, or benzyl; where an aryl radical may be optionally substituted by 1 to 5 substituents as defined above; and

R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, and R<sup>27</sup> in each case independently of each other have the meaning of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup>;

f is 1 to 8;

g is 0 or 1 to (2f+1);

x is 0 to 3; and

h is 3 to 7;

or a physiologically active salt derived therefrom.

~~2. A compound that inhibits hypoxia-inducible factor (HIF) hydroxylase activity for use in treating or preventing microcytosis associated with iron deficiency in a subject, wherein the compound is a structural mimetic of 2-oxoglutarate.~~

3. The compound of claim 2 for the use of that claim, wherein

A is C<sub>1</sub>-alkylene;

B is -CO<sub>2</sub>H;

Q is O;

R<sup>4</sup> is hydrogen;

X is O;

Y is CR<sup>3</sup>;

and R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are as defined above;

including physiologically active salts derived therefrom.

~~3-4.~~ The compound of claim 1 for the use of that claim, wherein the iron deficiency is functional iron deficiency.

~~4-5.~~ The compound of claim 1 for the use of that claim, wherein the iron deficiency is associated with a disorder selected from the group consisting of ~~anemia,~~ iron deficiency anemia, microcytic anemia, inflammation, infection, immunodeficiency disorder and neoplastic disorder.

~~5-6.~~ The compound of claim 1 for the use of that claim, wherein the compound is for use in increasing iron absorption.

~~6-7.~~ The compound of claim ~~5-6~~ for the use of that claim, wherein the iron absorption is in the intestine, is in duodenal enterocytes, or is absorption of dietary iron.

~~7-8.~~ The compound of claim 1 for the use of that claim, wherein the compound is for use in increasing iron availability for erythropoiesis or red blood cell production.

~~8-9.~~ The compound of claim 1 for the use of that claim, wherein the compound is for use in: ~~increasing reticulocytes; increasing hematocrit; increasing hemoglobin; increasing red blood cell count; increasing mean corpuscular hemoglobin; or~~ increasing mean corpuscular volume.

~~9-10.~~ The compound of claim 1 for the use of that claim, wherein the compound is for use in: increasing serum iron or; ~~increasing total iron binding capacity;~~ increasing



transferrin saturation; ~~increasing soluble transferrin receptor levels; or decreasing hepcidin expression.~~

11. The compound of claim 1 for the use of that claim, wherein the compound is for decreasing hepcidin expression.

~~10. The compound of any preceding claim for the use of that claim, wherein the compound inhibits HIF prolyl hydroxylase activity.~~

~~11. 12. The compound of any preceding claim for the use of that claim, wherein the compound is for oral administration.~~

**Conditional amendment to claim 1** (in addition to the unconditional amendments):

1. A compound that inhibits hypoxia inducible factor (HIF) prolyl hydroxylase activity for use in increasing serum iron in treating iron deficiency associated with anemia in a subject, wherein the compound is a structural mimetic of 2-oxoglutarate.

Claims 2-9, 11 and 12 are unchanged and Claim 10 is amended in the following manner:

10. The compound of claim 1 for the use of that claim, wherein the compound is for use in: ~~increasing serum iron or~~ increasing transferrin saturation.