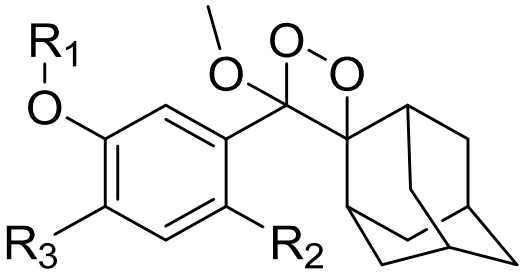
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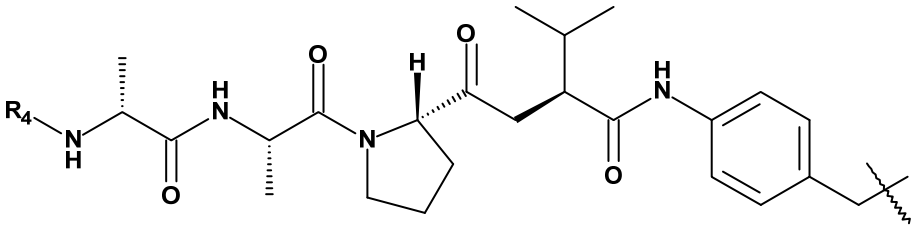
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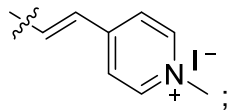
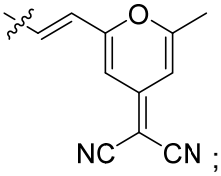
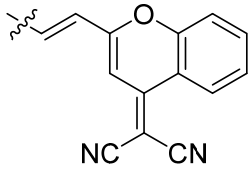
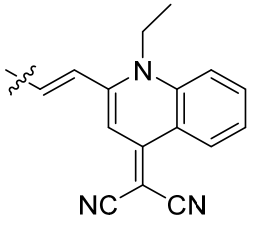
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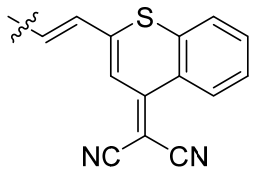
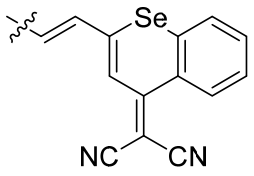
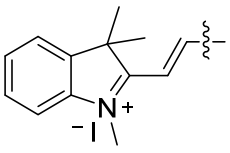
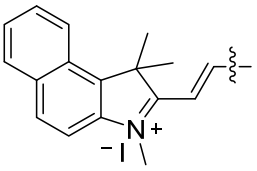
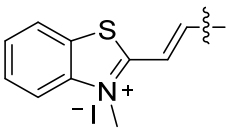
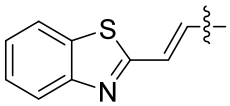
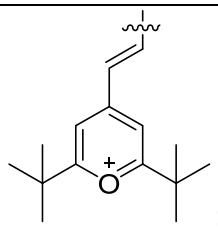
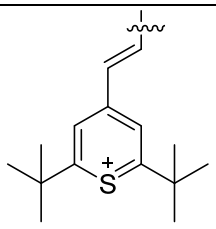
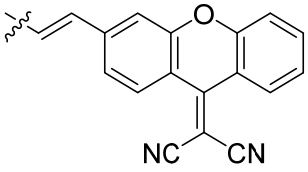
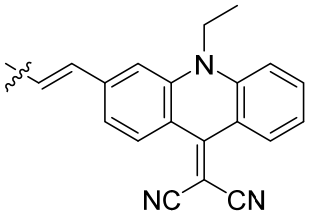
R^1 represents $CF_3S(O)_2$ or

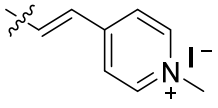


, where the wiggly line represents the point of attachment to the rest of the molecule;

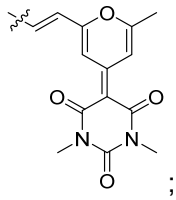
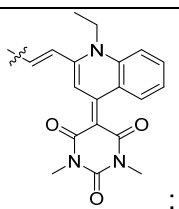
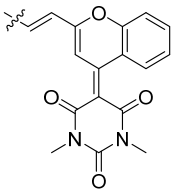
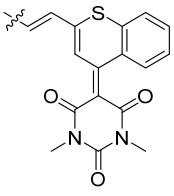
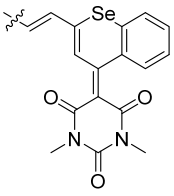
R_2 represents H, an acceptor group capable of red-shifting the chemiluminescence emission to the near-infrared region, a polyethylene glycol group, a halogen atom, an electron-withdrawing group or a π* acceptor group capable of accepting electrons,
wherein each acceptor group capable of red-shifting the chemiluminescence emission to the near-infrared region is independently selected from the list of:

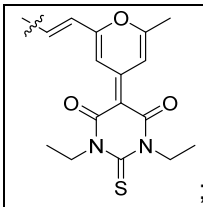
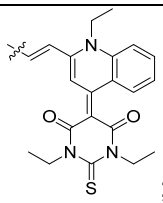
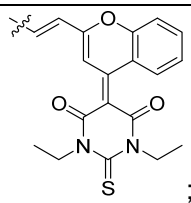
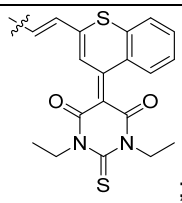
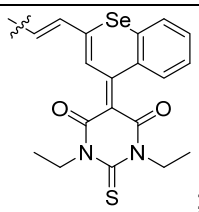
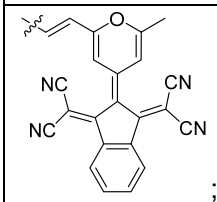
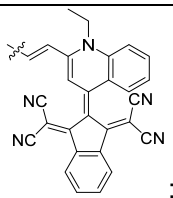
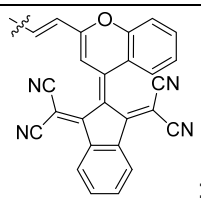
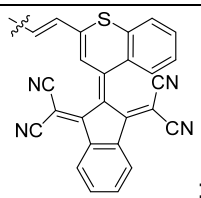
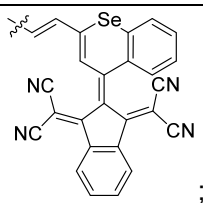
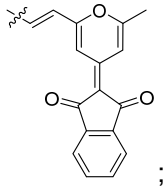
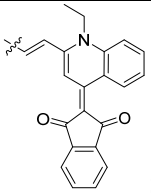
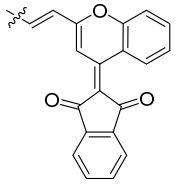
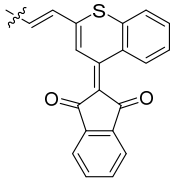
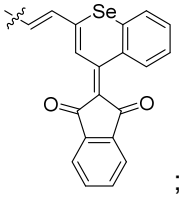
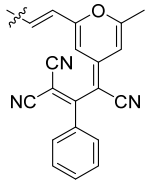
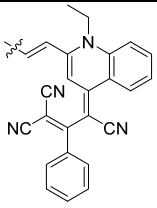
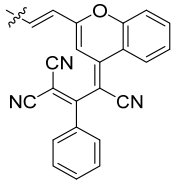
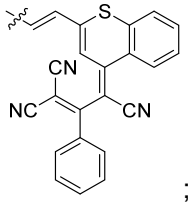
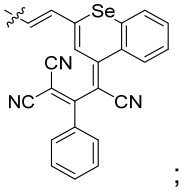
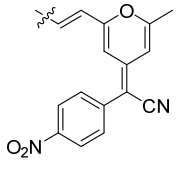
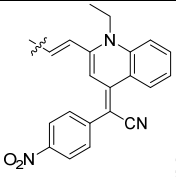
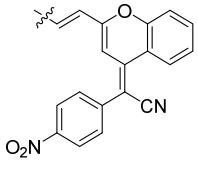
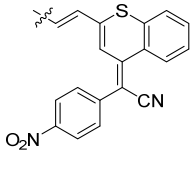
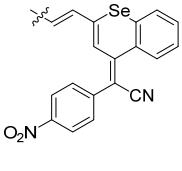
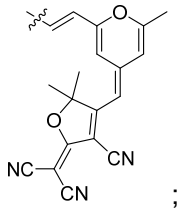
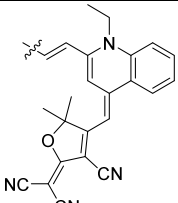
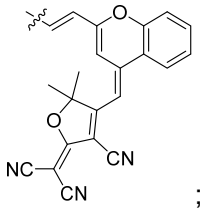
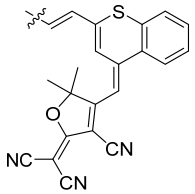
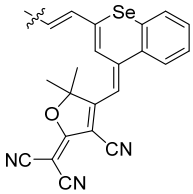
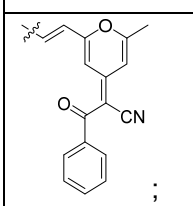
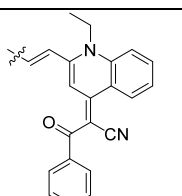
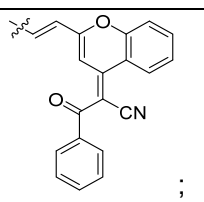
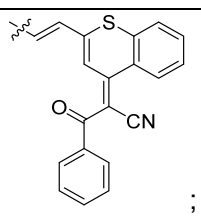
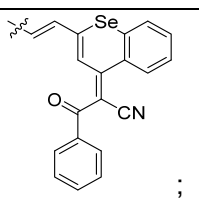
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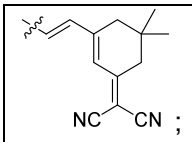
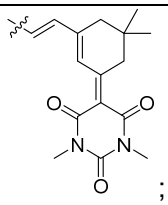
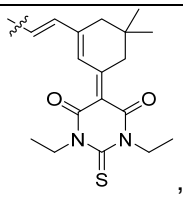
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where the wavy line represents the point of attachment to the rest of the molecule, optionally wherein each acceptor group capable of red-shifting the chemiluminescence emission to the near-infrared region is  ,

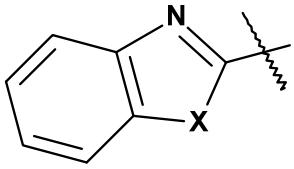
wherein each π* acceptor group capable of accepting electrons is selected from the list:

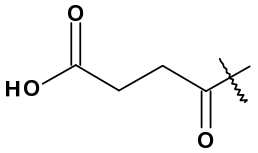
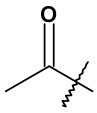
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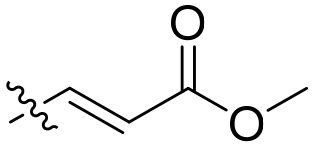
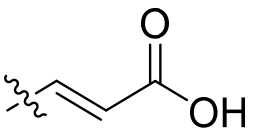
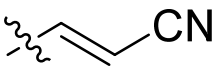
where the wavy line represents the point of attachment to the rest of the molecule;

R_3 represents  , where X represents Se, or more particularly S or O and the wiggly line represents the point of attachment to the rest of the molecule;

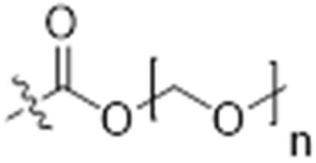
R_4 represents  , or  , where the wiggly lines represent the point of attachment to the rest of the molecule or

a pharmaceutically acceptable salt or solvate thereof.

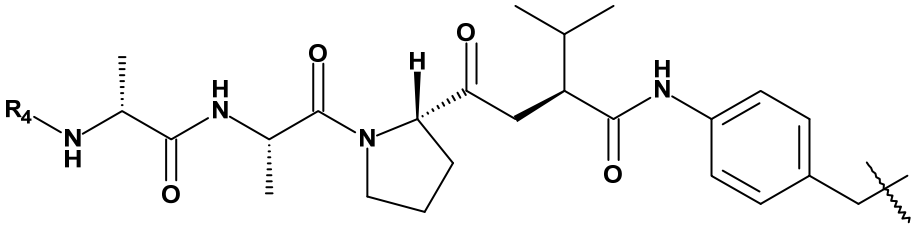
2. The compound, or pharmaceutically acceptable salt or solvate thereof, according to any one of the preceding claims, wherein each electron withdrawing group is selected from the list:

 ,  and  , where the wavy line represents the point of attachment to the rest of the molecule.

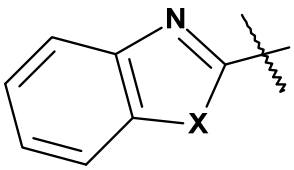
3. The compound, or pharmaceutically acceptable salt or solvate thereof, according to any one of the preceding claims, wherein each polyethylene glycol group has the formula:

 , where n is from 1 to 227 and the wiggly line represents the point of attachment to the rest of the molecule.

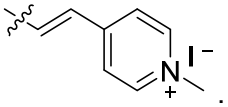
4. The compound, or pharmaceutically acceptable salt or solvate thereof, according to any one of the preceding claims, wherein:

R_1 is , where the wiggly line represents the point of attachment to the rest of the molecule;

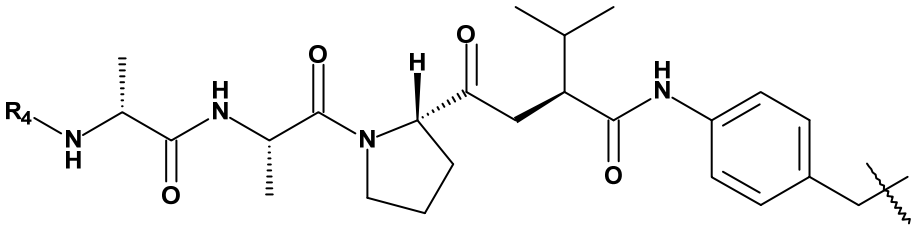
R_2 represents H, an acceptor group capable of red-shifting the chemiluminescence emission to the near-infrared region, or a polyethylene glycol group;

R_3 represents , where X represents S or O and the wiggly line represents the point of attachment to the rest of the molecule.

5. The compound according to Claim 4, wherein R_1 represents $CF_3S(O)_2$.

6. The compound according to Claim 4 or Claim 5, wherein R_2 represents H or .

7. The compound, or pharmaceutically acceptable salt or solvate thereof, according to any one of Claims 1 to 3, wherein:
R^1 represents



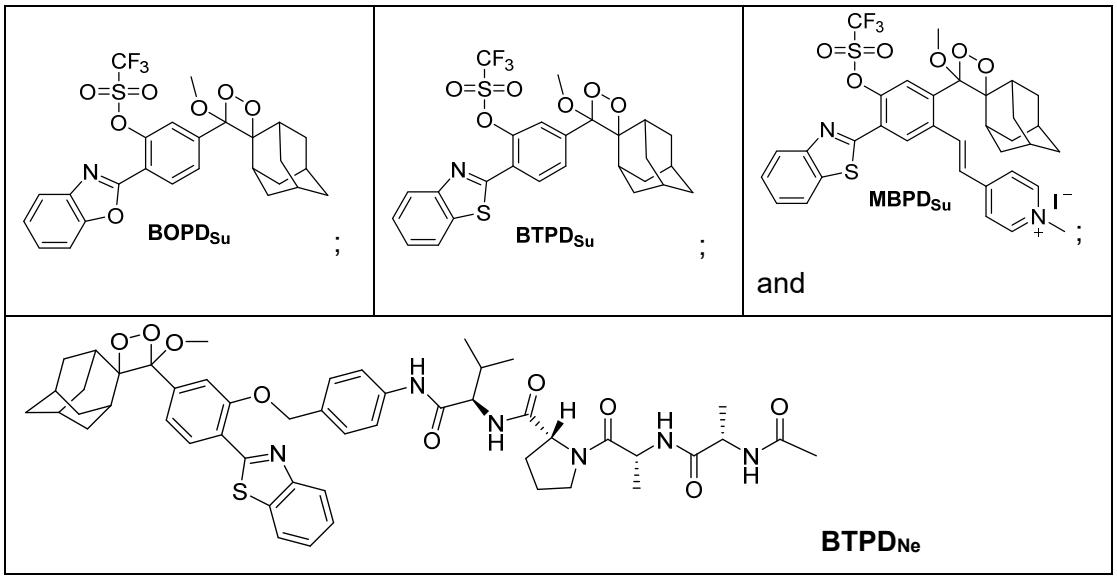
, where the wiggly line represents the point of attachment to the rest of the molecule;

R_2 represents H, a halogen atom, an electron-withdrawing group or a π* acceptor group capable of accepting electrons;

R_3 represents H, a halogen atom, an electron-withdrawing group or a π* acceptor group capable of accepting electrons.

8. The compound according to Claim 7, wherein R_3 represents H, a halogen atom, or an electron-withdrawing group.

9. The compound, or pharmaceutically acceptable salt or solvate thereof, according to Claim 1 wherein the compound is selected from the list:



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10. A method for detection of neutrophil elastase in an analyte, the method comprising the following steps:

(a) providing an analyte and a fluid comprising a compound of formula I, or pharmaceutically acceptable salt or solvate thereof, according to any one of Claims 1 to 9;

(b) contacting the analyte with the fluid comprising a compound of formula I, or pharmaceutically acceptable salt or solvate thereof, for a period of time; and

(c) after the period of time detecting any chemiluminescence, wherein the presence of neutrophil elastase in the fluid comprising the analyte and the fluid comprising a compound of formula I, or pharmaceutically acceptable salt or solvate thereof, is indicated by chemiluminescence.

11. A method for detection of neutrophil elastase *in vivo*, the method comprising the following steps:

(ai) administering a compound of formula I, or pharmaceutically acceptable salt or solvate thereof, according to any one of Claims 1 to 9 to a subject; and

(aii) detecting any chemiluminescence, wherein the presence of neutrophil elastase *in vivo* is indicated by chemiluminescence.

12. A method for identifying a compound suitable for the treatment of psoriasis, the method comprising:

(bi) providing a mouse where the skin exhibits neutrophil infiltration (e.g. where the dorsal skin of the mouse has been treated by imiquimod);

(bii) contacting the skin with a test material for a first period of time;

(biii) after the first period of time, contacting the drug-treated skin with a compound of formula I, or a pharmaceutically acceptable salt or solvate thereof, as defined in any one of Claims 1 to 9 to be administered for a second period of time; and

(biv) after the second period of time any chemiluminescent signal skin is detected and compared to a blank control, where a reduced quantitative chemiluminescence readout in the presence of the test compound compared to the blank control is indicative of anti-psoriasis activity.

13. A method for identifying a compound suitable for the treatment of peritonitis, the method comprising:

(ci) providing a mouse suffering from peritonitis, where the peritonitis is associated with ascites, where the ascites exhibits neutrophil infiltration (e.g where the mouse's peritonitis was induced by intraperitoneal injection of lipopolysaccharides (LPS));

(cii) contacting an abdomen of the mouse with a test material for a first period of time;

(ciii) after the first period of time, contacting the LPS-treated abdomen with a compound of formula I, or a pharmaceutically acceptable salt or solvate thereof, as defined in any one of Claims 1 to 9 to be administered for a second period of time; and

(civ) after the second period of time any chemiluminescent signal abdomen is detected and compared to a blank control, where a reduced quantitative chemiluminescence readout in the presence of the test compound compared to the blank control is indicative of peritonitis activity,

where mice were treated with PBS only.