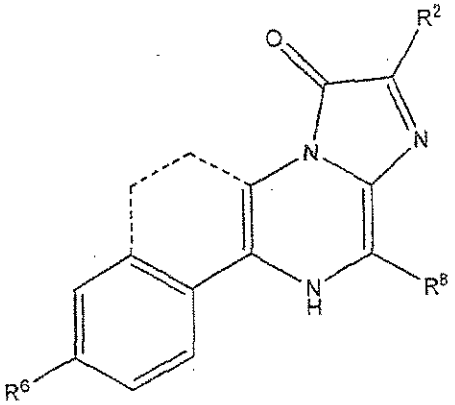
formation of inclusion bodies (Inouye and Sasaki, *Protein Expression and Purification*, **56**:261-268 (2007)). The formation of inclusion bodies is likely due to the instability of the protein.

[0005] The substrate specificity of *Oplophorus* luciferase is unexpectedly broad (Inouye and Shimomura. *BBRC*, **223**:349 (1997)). For instance, bisdeoxycoelenterazine (i.e., coelenterazine-hh), an analog of coelenterazine, is an excellent substrate for *Oplophorus* luciferase comparable to coelenterazine (Nakamura *et al.*, *Tetrahedron Lett.*, **38**:6405 (1997)). Moreover, *Oplophorus* luciferase is a secreted enzyme, like the luciferase of the marine ostracod *Cypridina* (*Vargula*) *hilgendorfii* (Johnson and Shimomura, *Meth. Enzyme*, **57**:331 (1978)), which also uses an imidazopyrazinone-type luciferin to emit light.

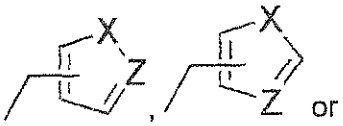
SUMMARY

In one aspect, there is provided a compound of formula (Ia):



(Ia)

wherein R^2 is selected from the group consisting of

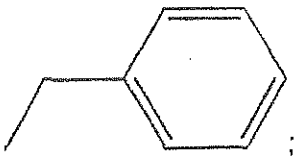


or

C_{2-5} straight chain alkyl;

R^6 is selected from the group consisting of -H, -OH, $-NH_2$, -OC(O)R or $-OCH_2OC(O)R$;

R^8 is



;

X is –S-, –O- or $–NR^{22}$-;

Z is –CH- or –N-;

each R^{11} is independently –C(O)R" or $-CH_2OC(O)R"$;

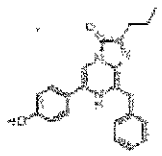
R^{22} is H, CH_3 or CH_2CH_3;

each R is independently C_{1-7} straight-chain alkyl or C_{1-7} branched alkyl;

R" is C_{1-7} straight-chain alkyl or C_{1-7} branched alkyl;

the dashed bonds indicate the presence of an optional ring, which may be saturated or unsaturated.

In another aspect, there is provided a compound selected from



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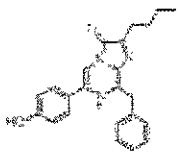

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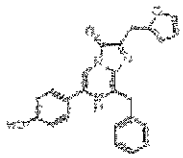

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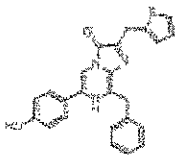

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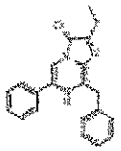

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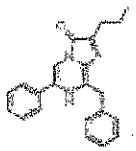

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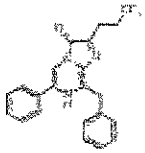

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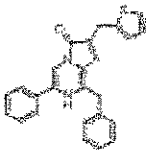

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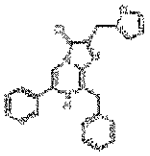

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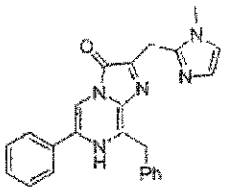

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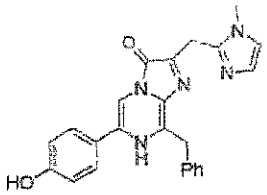

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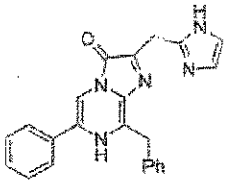
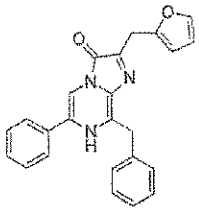
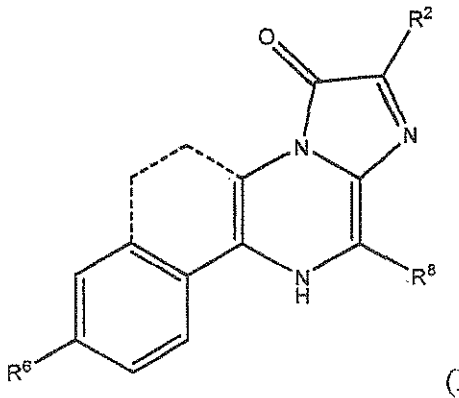


4541

In another aspect, there is provided a compound of formula

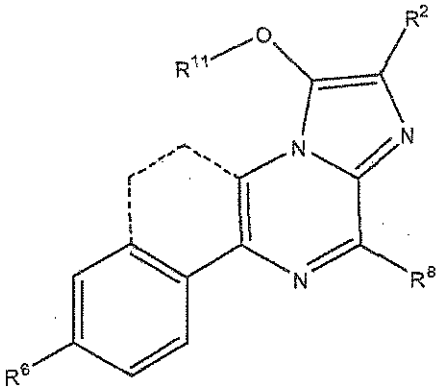


[0006] In an aspect, the disclosure relates to a compound of formula (Ia) or (Ib):



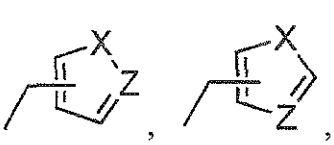
(Ia)

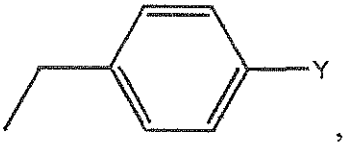
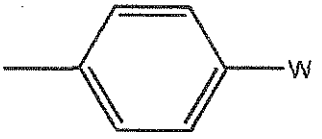
or



(Ib)

wherein R^2 is selected from the group consisting of

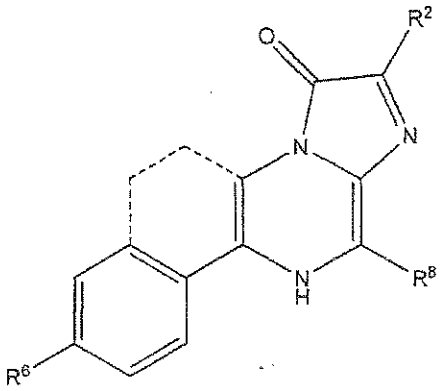


or C_{2-5} straight chain alkyl;

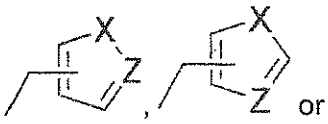
CLAIMS

1. A compound of formula (Ia) ~~or (Ib)~~:



(Ia)

wherein R^2 is selected from the group consisting of



or

C_{2-5} straight chain alkyl;

R^6 is selected from the group consisting of -H, -OH, $-NH_2$, -OC(O)R or $-OCH_2OC(O)R$;

R^8 is