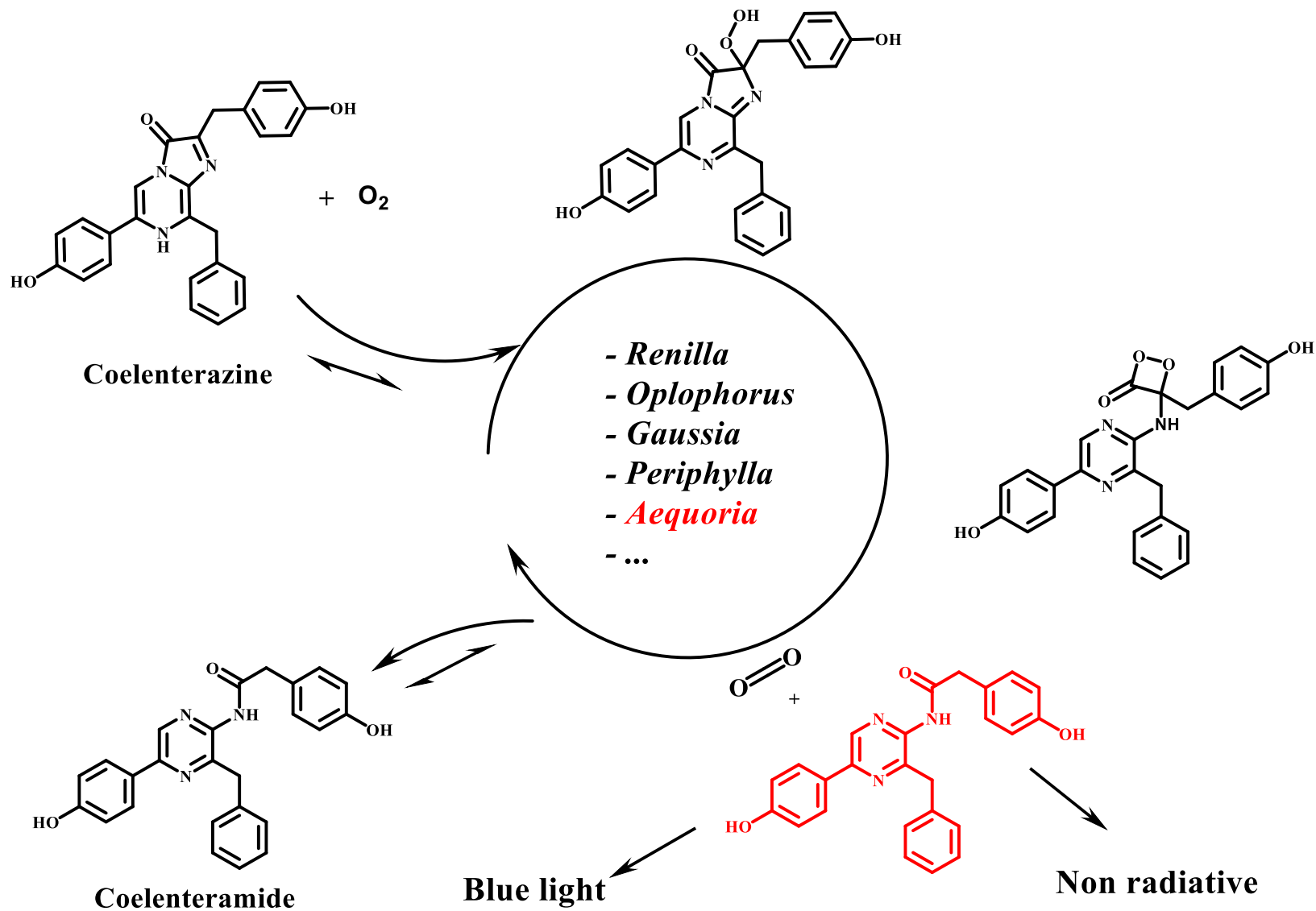


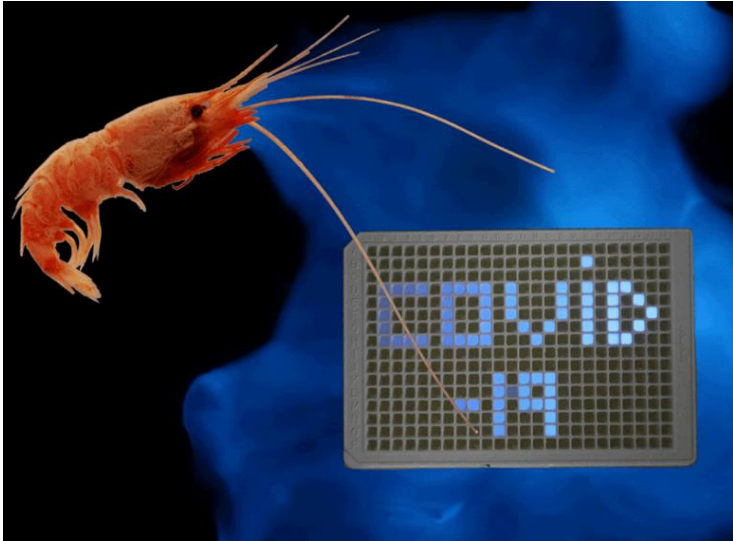
Analogues of a luciferin of marine origin, few chemistry contributions



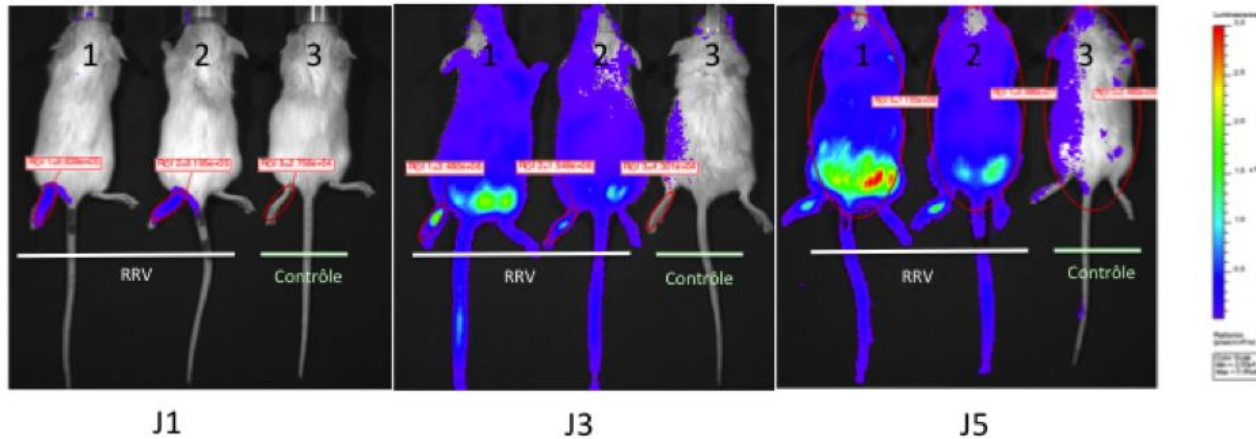
Many luciferases/photoproteins, one luciferin (a tribute to Prof O. Shimomura)



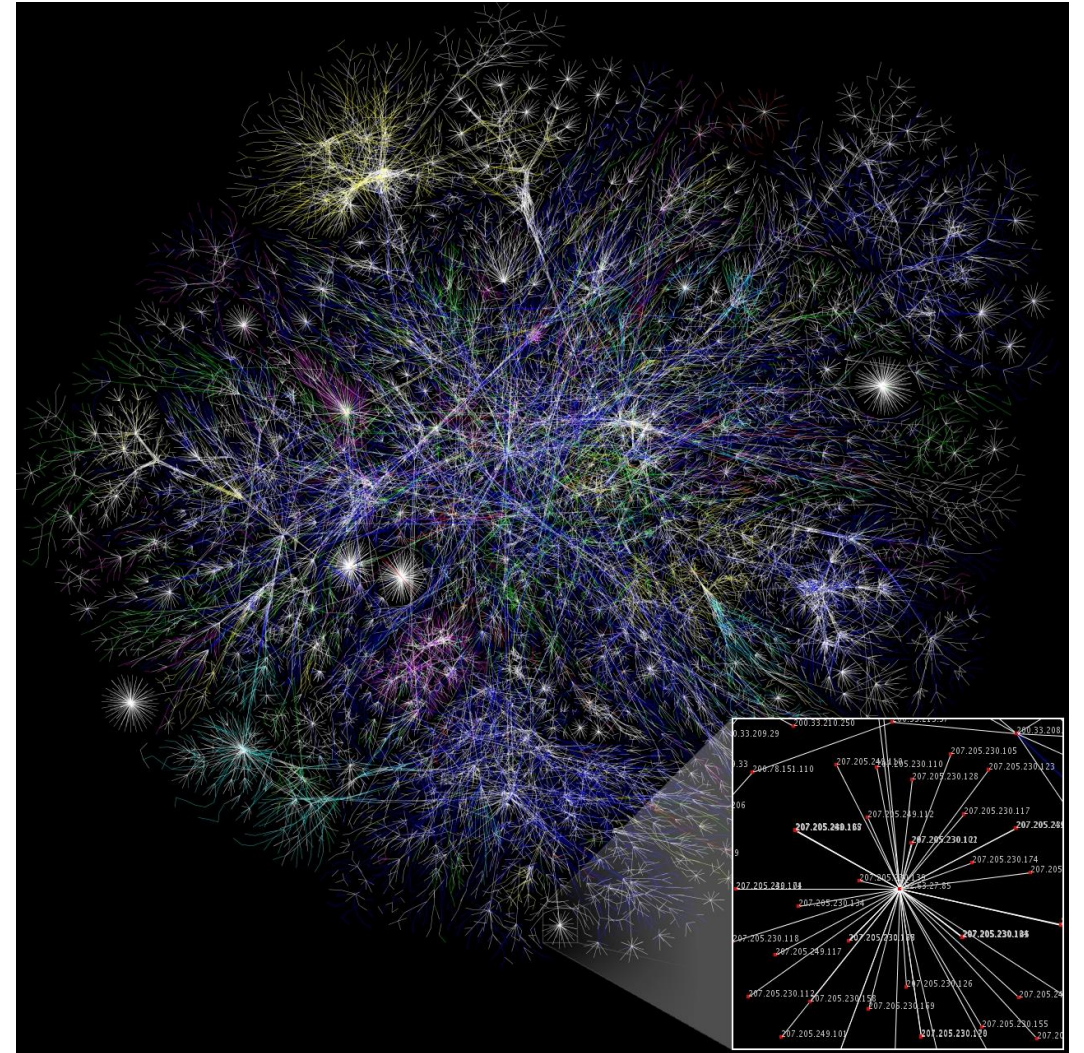
Very useful and improved reporting systems from the abyss



1-100 mg (LULISA: S. Goyard, T. Rose)



10-100 mg (Ross river virus: V. Choumet)

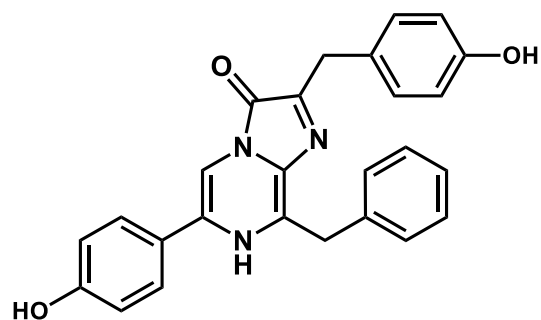


>1000 mg (Interactomic: Y. Jacob)

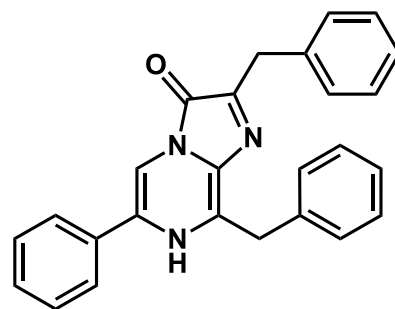
Our starting point: price and stability

Luciferin		Price (Prolume, 04.12.14)
Coelenterazine	10 mg	295 \$
CTZ-h	10 mg	295 \$
h-CTZ-h	10 mg	475 \$
eCTZ	10 mg	475 \$
CTZ-f	10 mg	475 \$
eCTZ-f	10 mg	475 \$
vCTZ	10 mg	895 \$

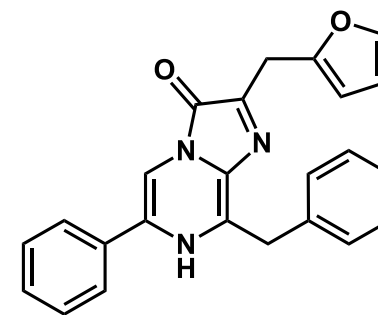
Luciferin		Price (Prolume, 04.12.14)
MeO-eCTZ	10 mg	895 \$
MeO-CTZ-OMe	10 mg	895 \$
MeO-eCTZ-f	10 mg	895 \$
MeO-CTZ-i	10 mg	895 \$
MeO-vCTZ-OMe	10 mg	895 \$
Varguline	10 mg	1200 \$
Furimazine (Promega)	For 1-2000 assays ≈ 1 mg	647 € (Promega)



Coelenterazine

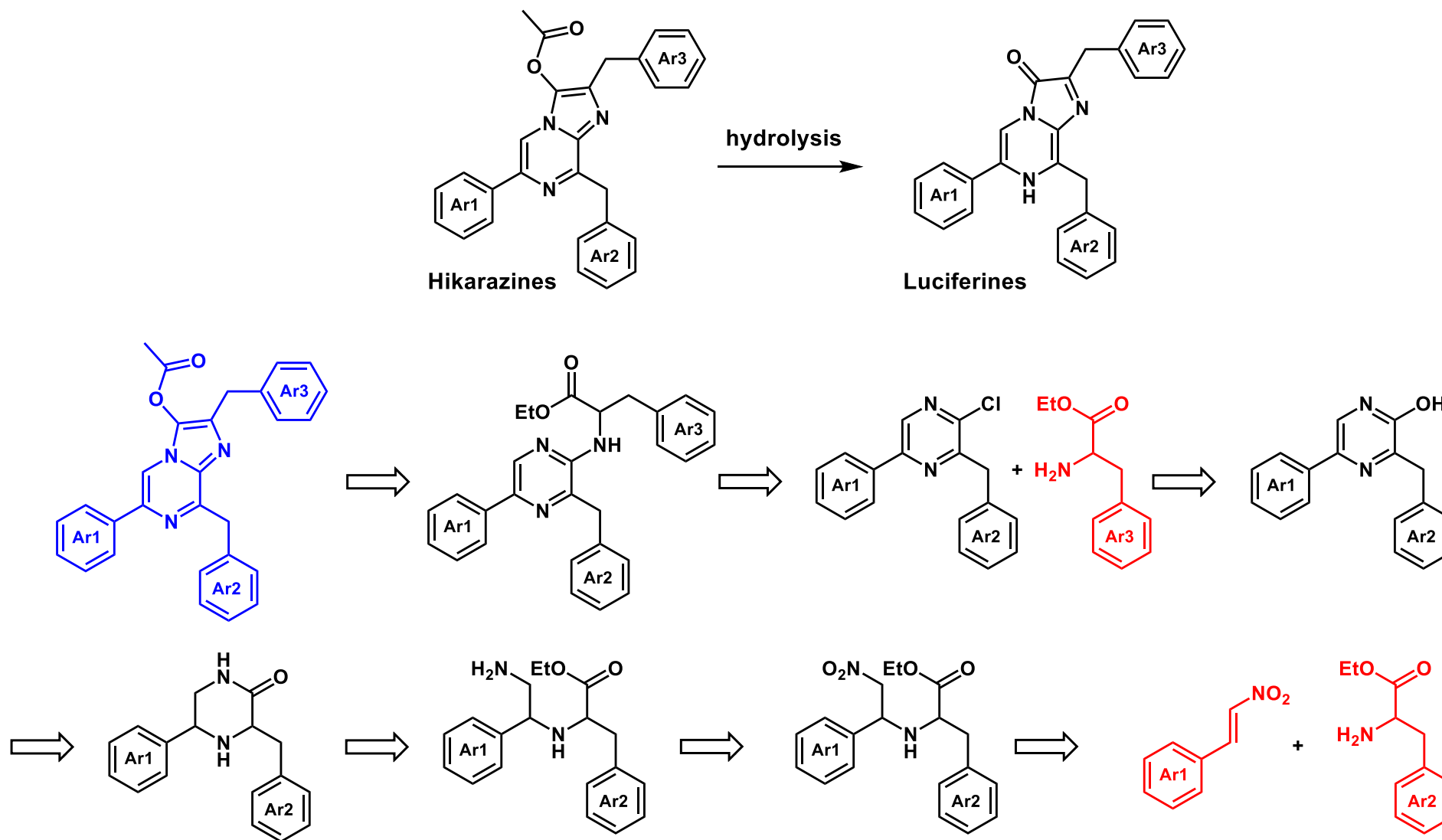


h-CTZ-h

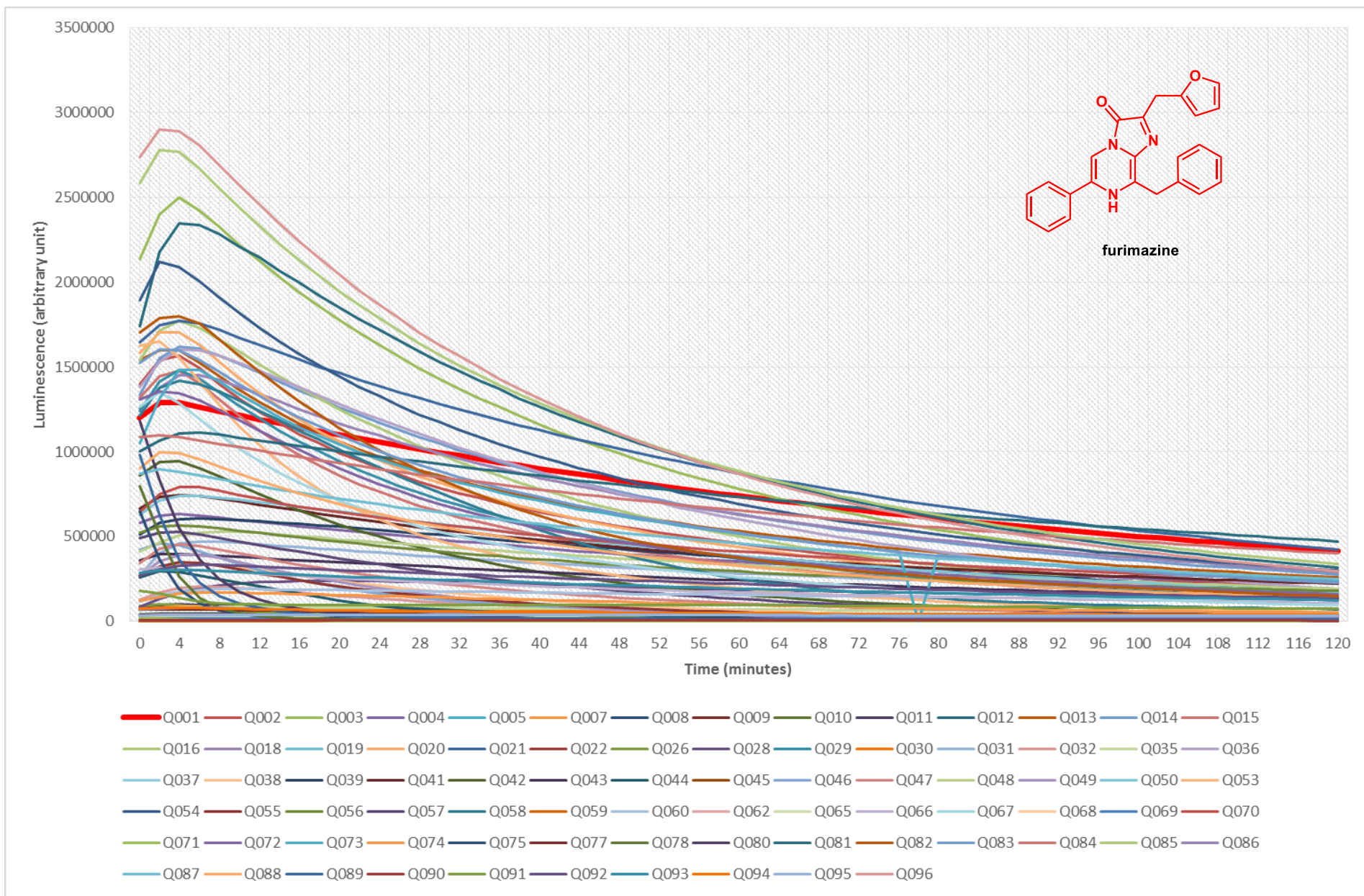


Furimazine

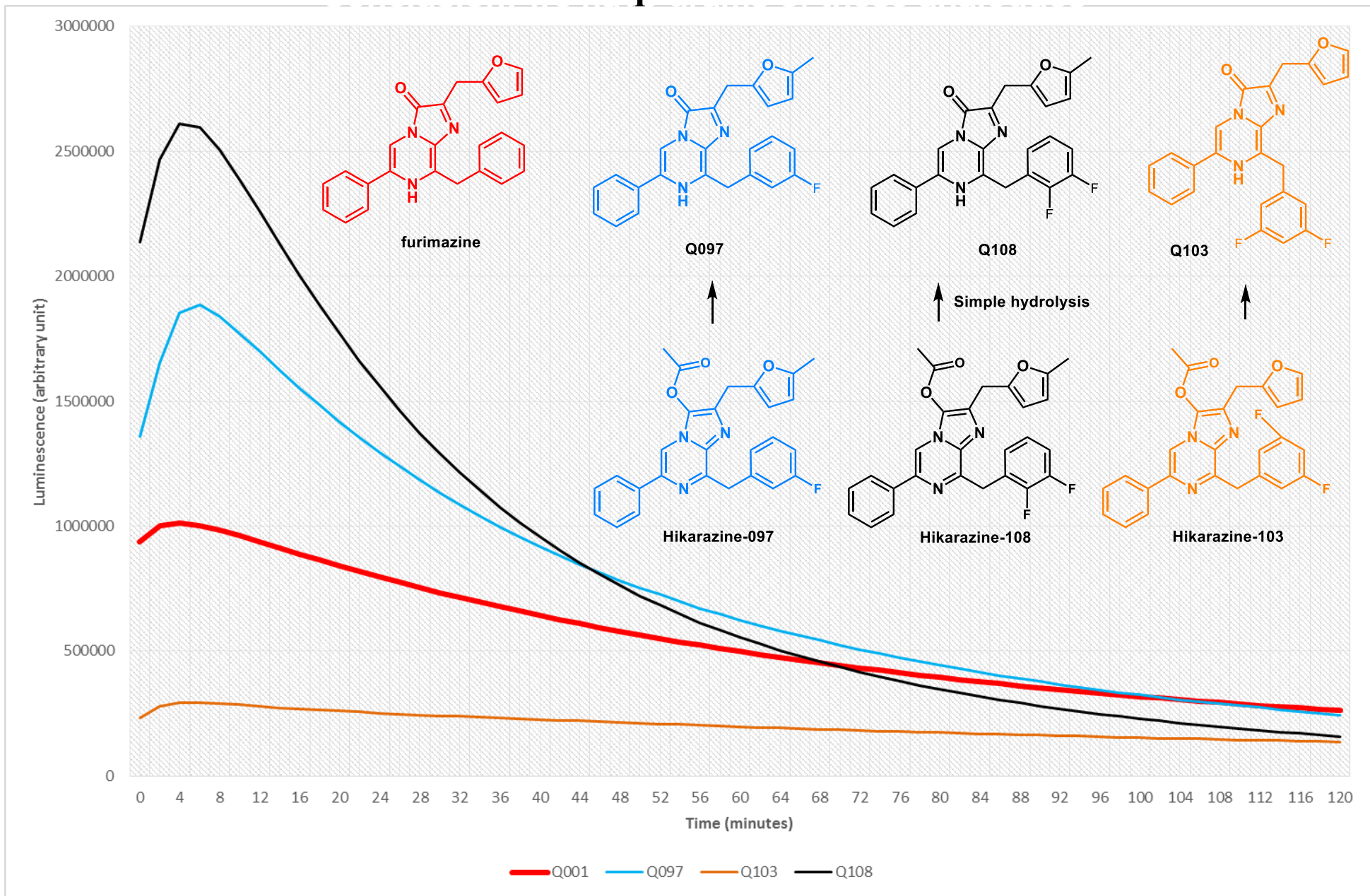
An original synthetic approach to hikarazines (*O*-acetylated luciferines)



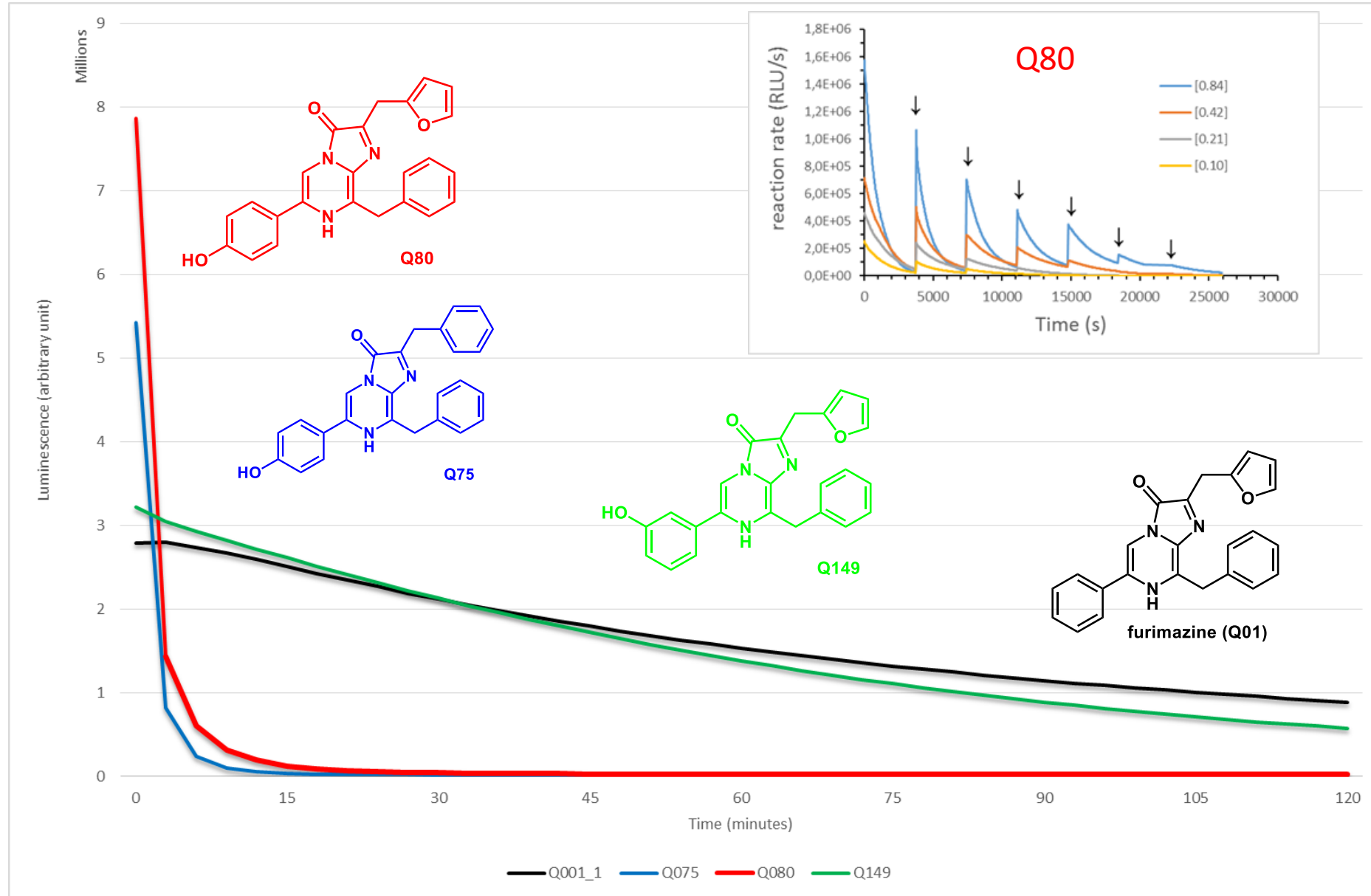
> 160 luciferin analogues made, many being substrates of NanoLuc/NanoKAZ



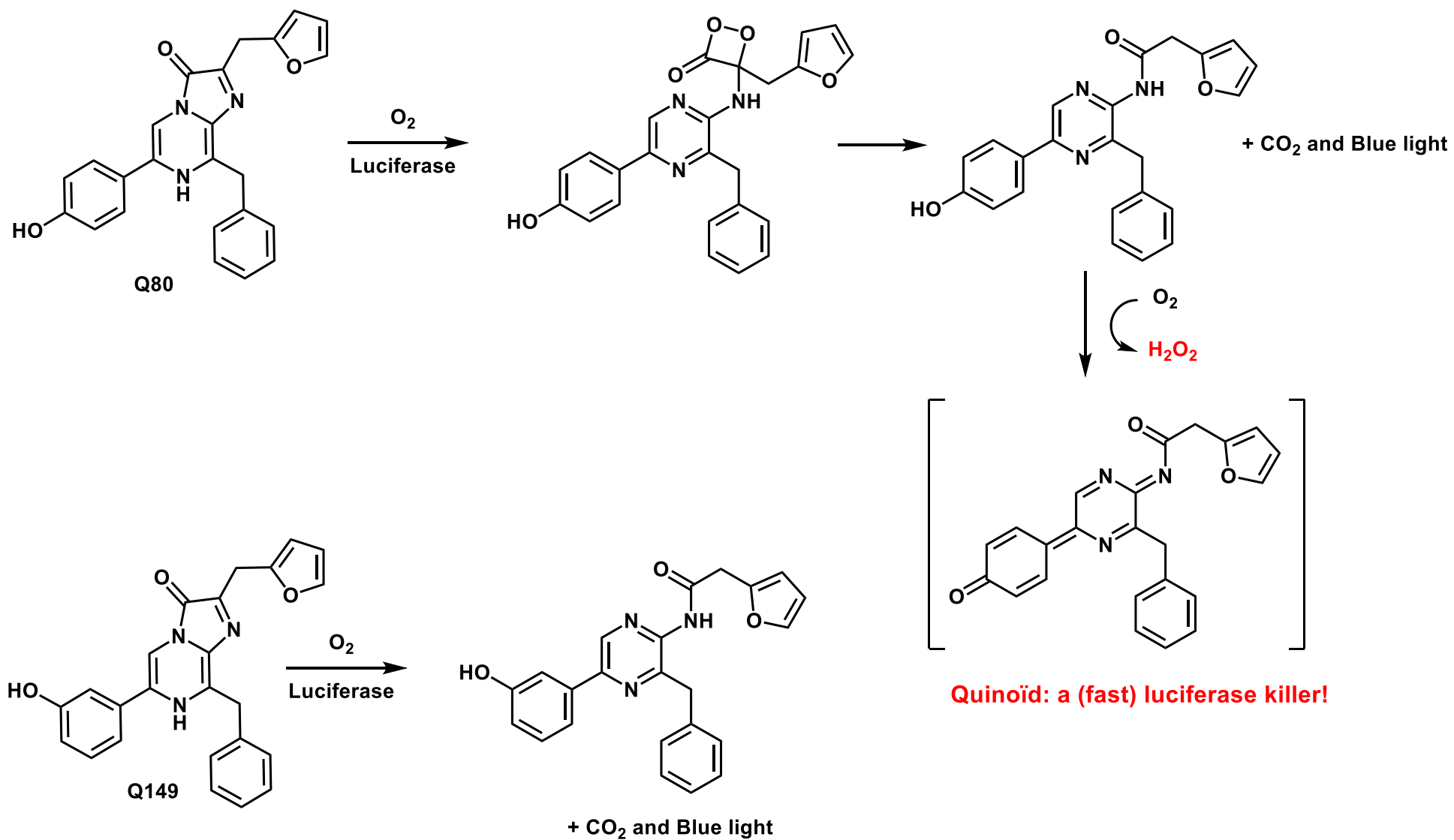
Few improved luciferins



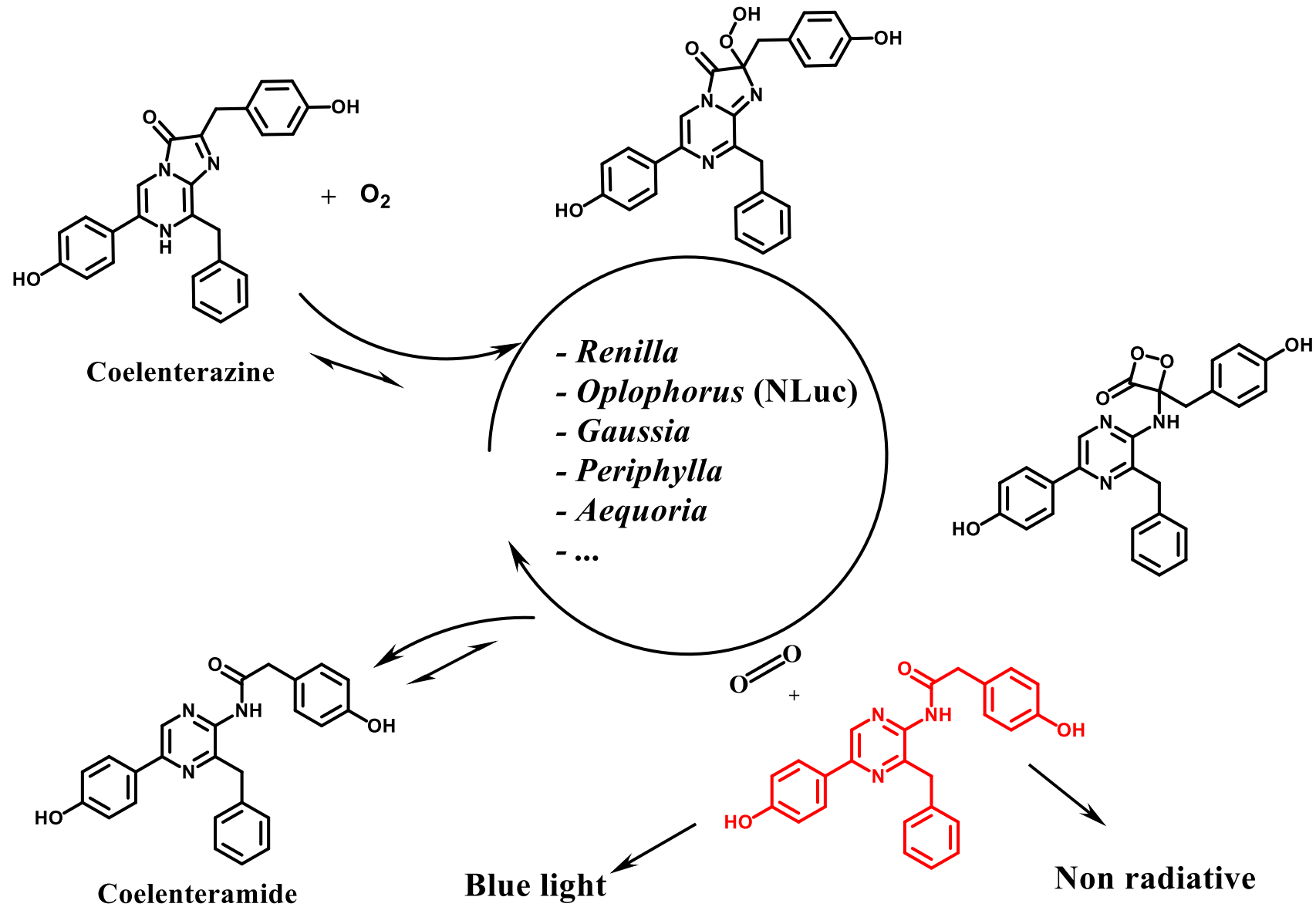
Some Nuc killers



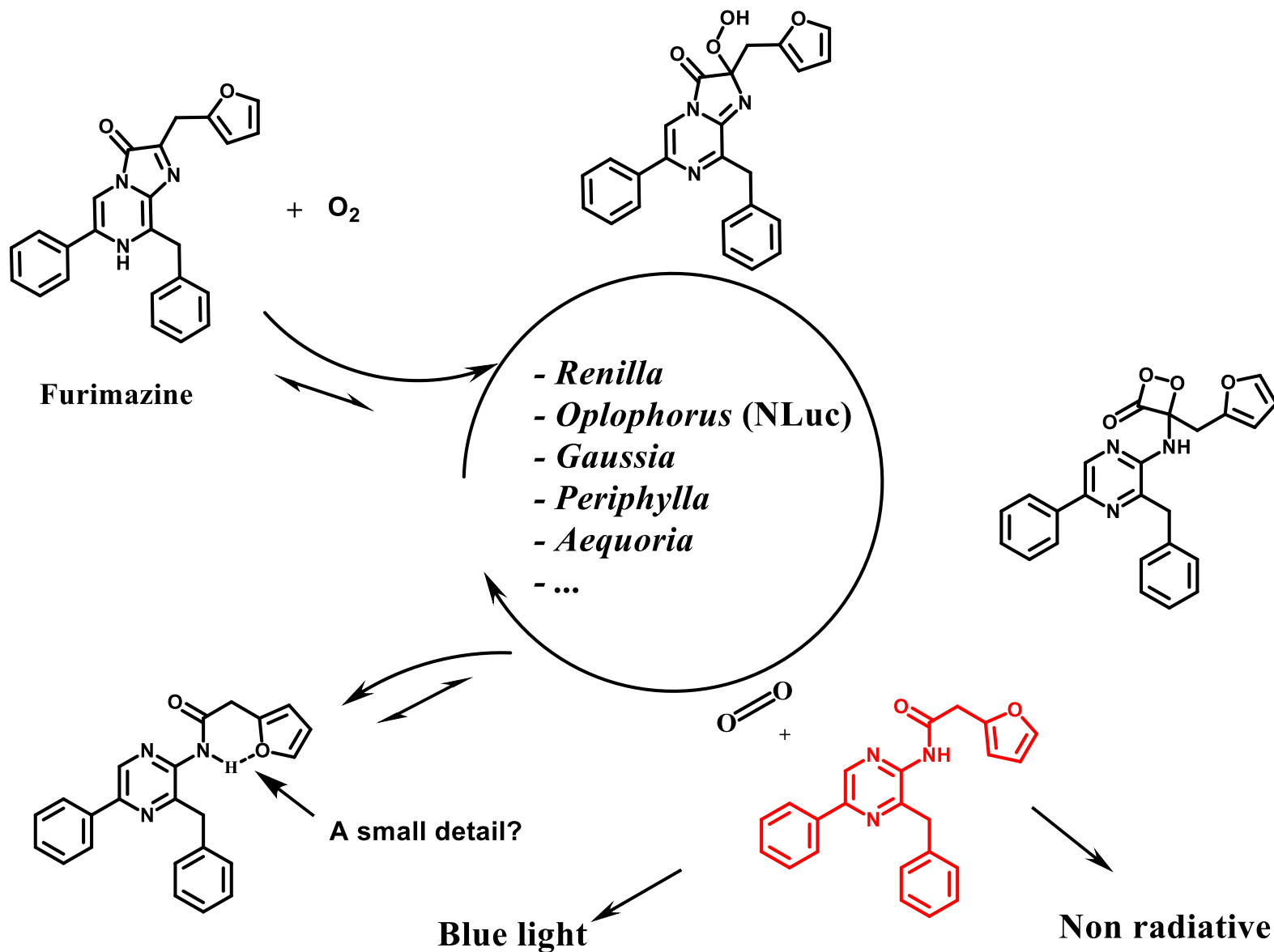
The fast luciferase killers, a chemist explanation



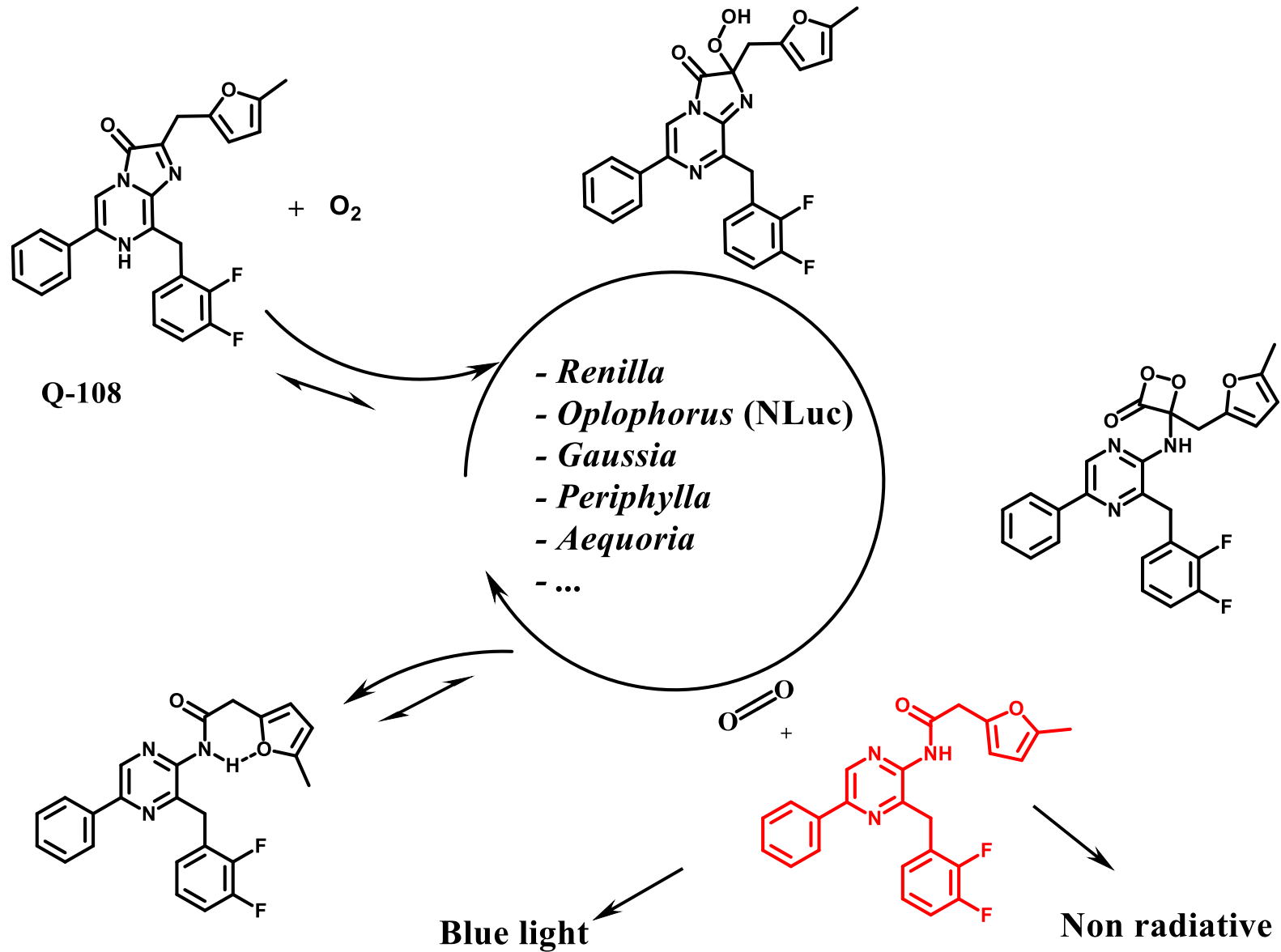
Many luciferases/photoproteins, one luciferin



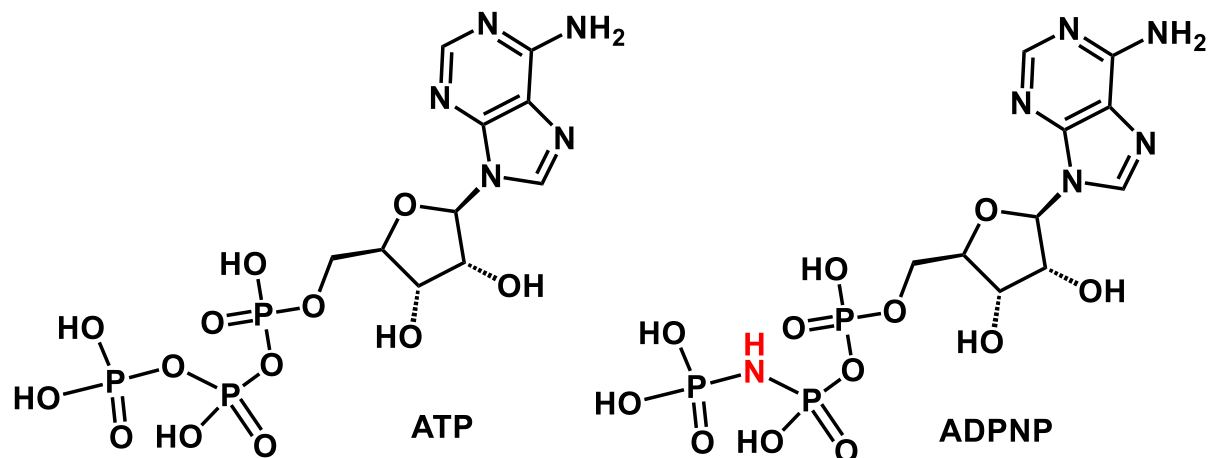
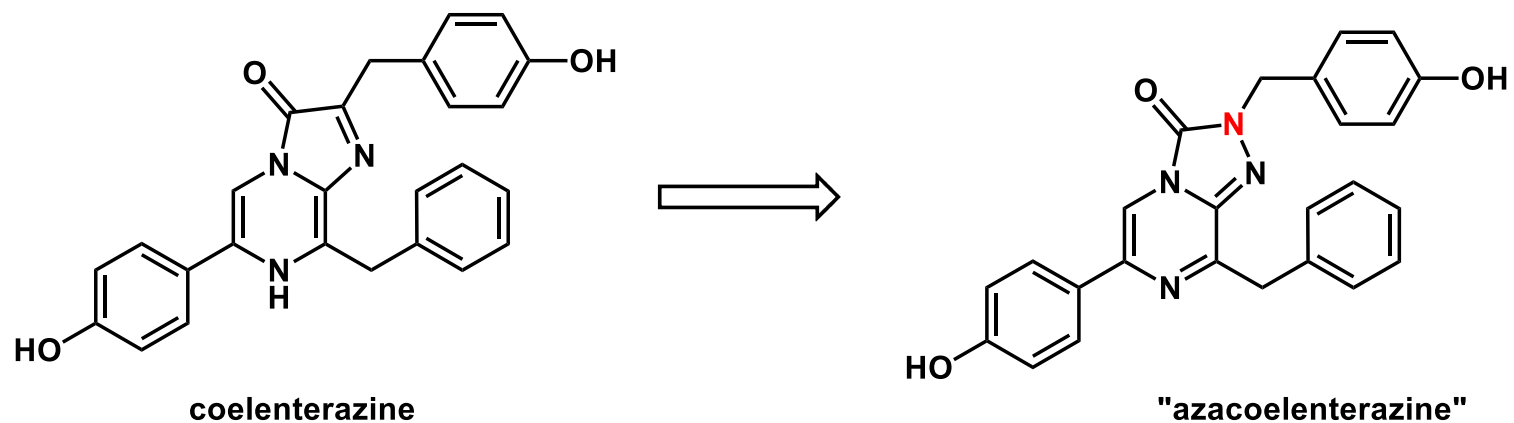
Why is furimazine better (with Nluc)?



Why is Q-108 even better (still with Nluc)?



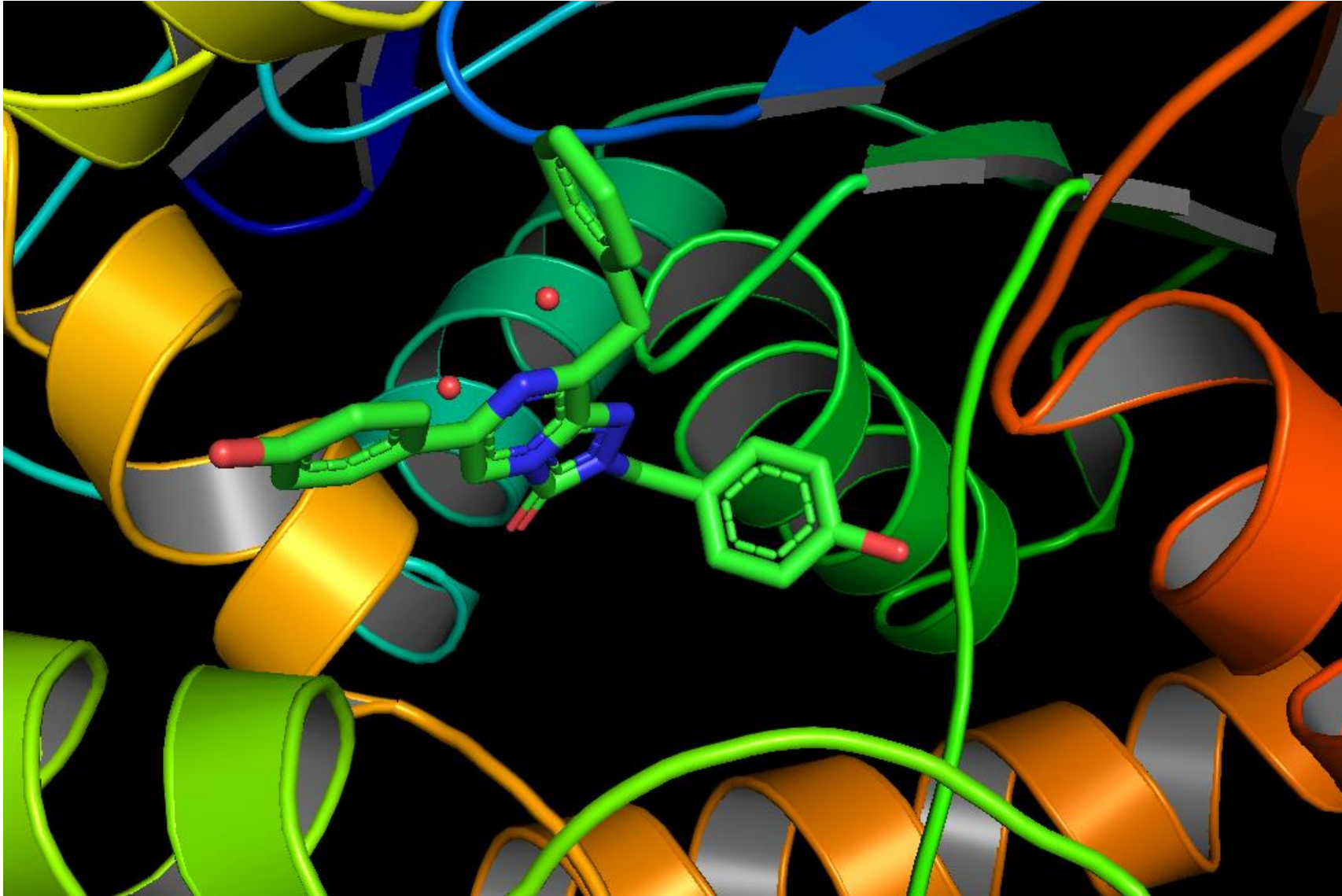
An un-oxidable coelenterazine as a structural tool ?



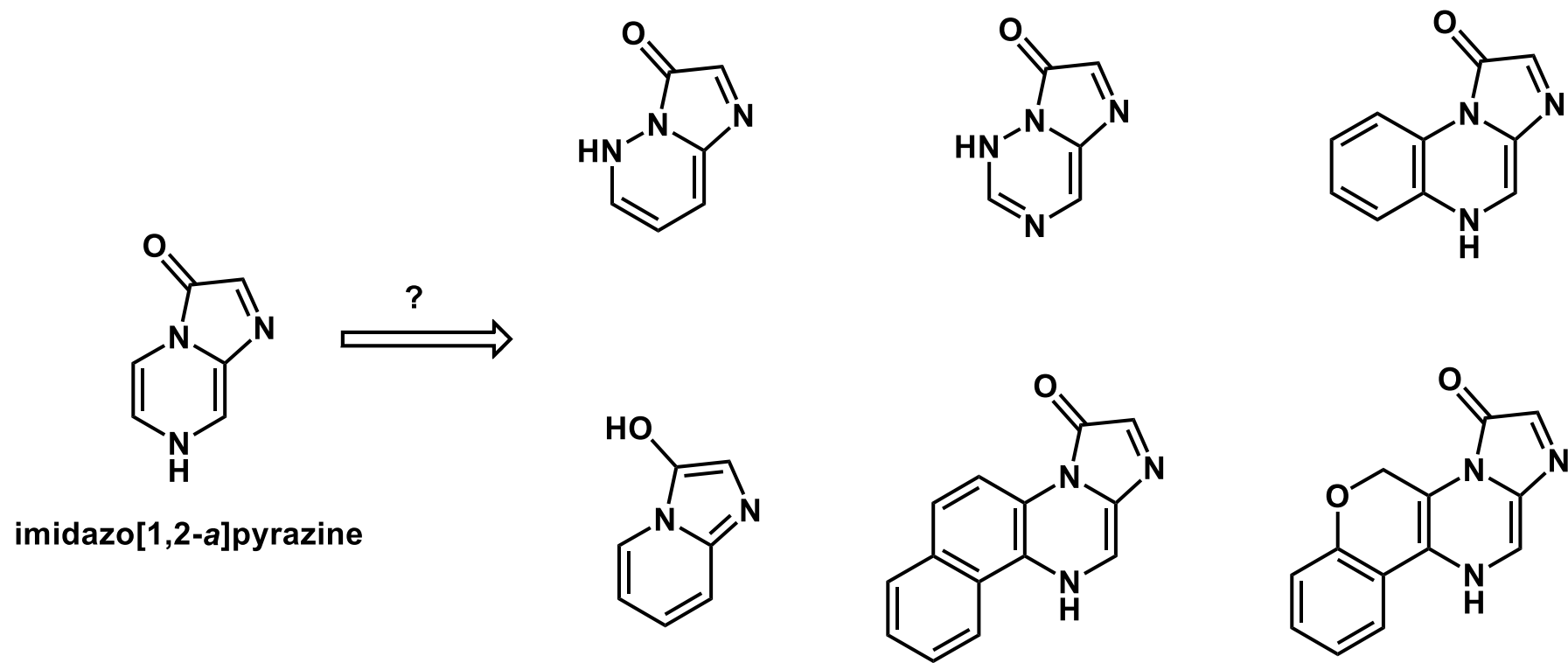
M. Marek (Masaryk University, Czech Republic).

Y. Kuroda (Tokyo University of Agriculture and Technology , Japan)

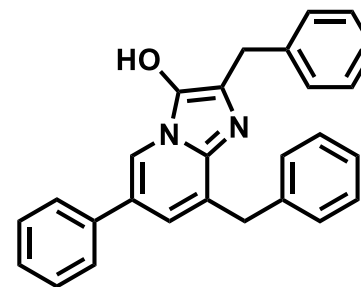
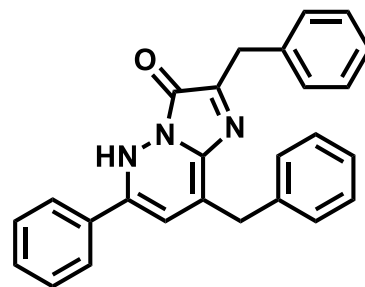
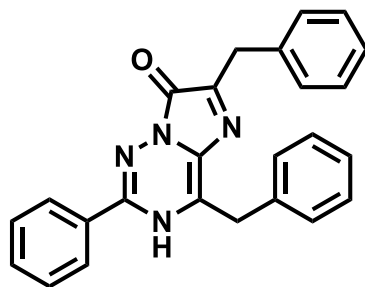
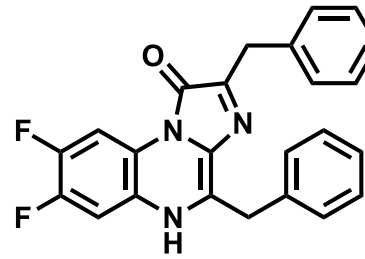
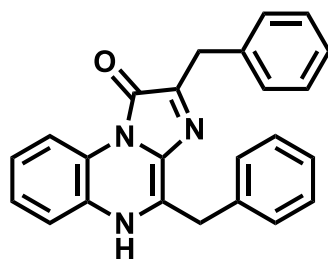
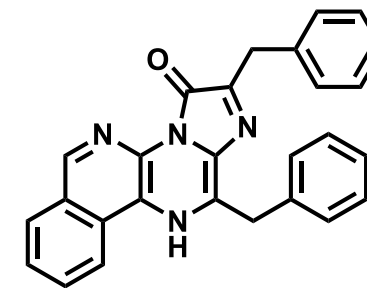
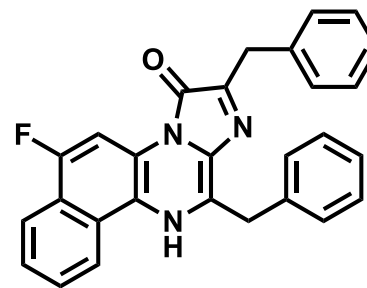
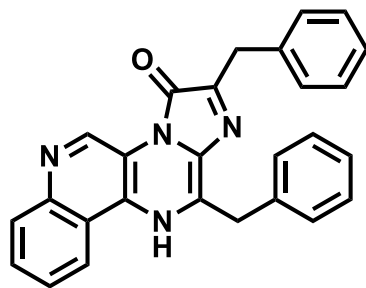
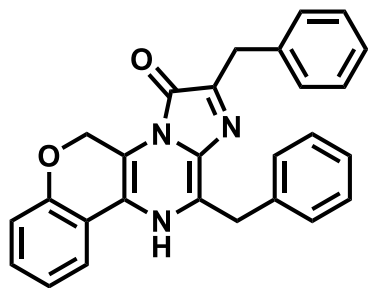
“Azacoelenterazine” and *Renilla* (PDB: 7QXR; hold for release)



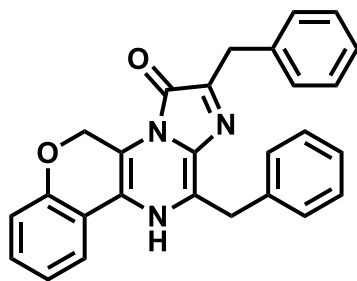
Beyond the imidazopyrazine ring system, how to redden marine luciferin/luciferase reporting system ?



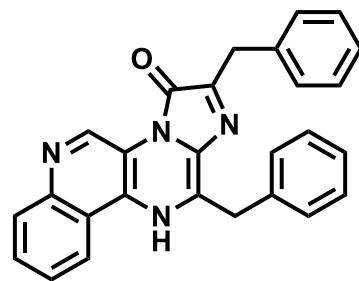
**None of these core-modified analogues are bioluminescents (with Nluc) but
all are (chemi)luminescents (with DMSO, and NaOH)**



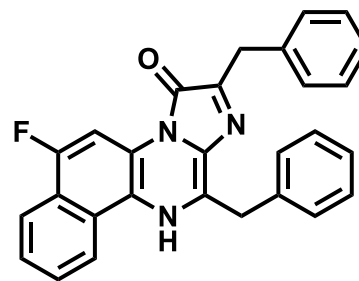
Beyond the imidazopyrazine ring system: λ_{\max} ?



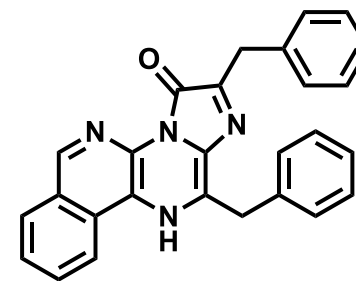
$\lambda_{\max} = 458 \text{ nm}$



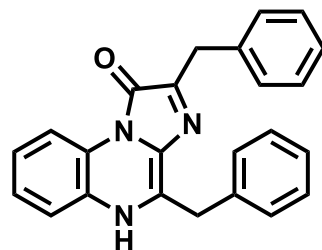
$\lambda_{\max} = 460 \text{ nm}$



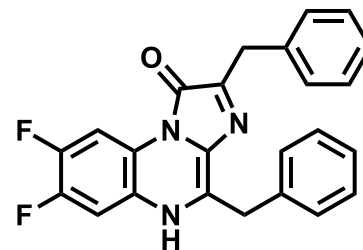
$\lambda_{\max} = 457 \text{ nm}$



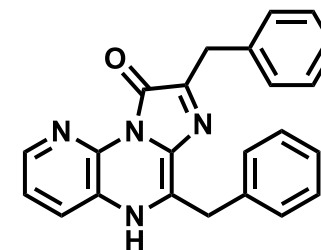
$\lambda_{\max} = 462 \text{ nm}$



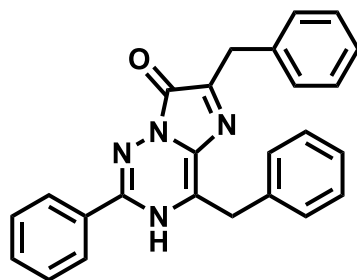
$\lambda_{\max} = \text{too weak}$



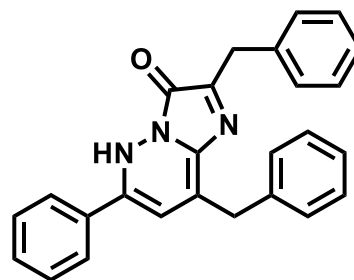
$\lambda_{\max} = 513 \text{ nm (weak)}$



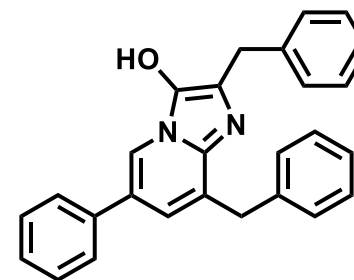
$\lambda_{\max} = 546 \text{ nm (weak)}$



$\lambda_{\max} = \text{too weak}$

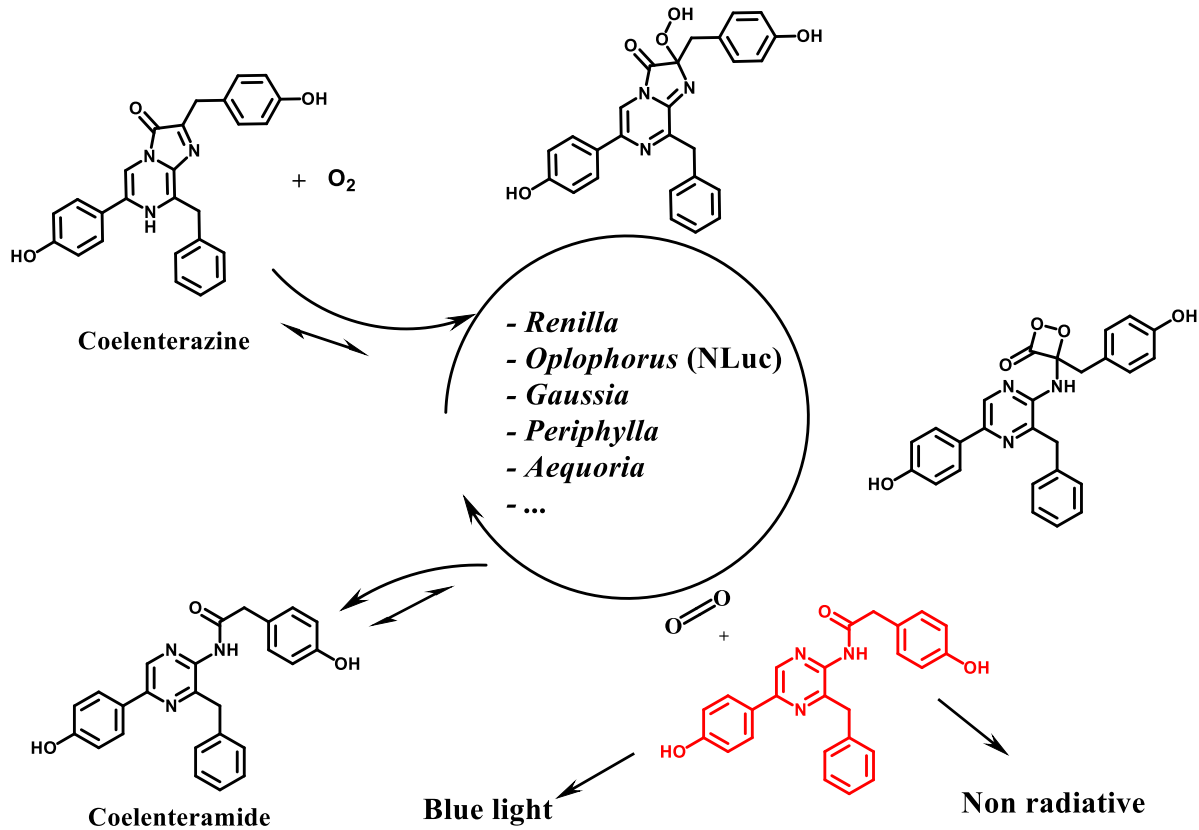


$\lambda_{\max} = \text{too weak}$



$\lambda_{\max} = \text{too weak}$

One luciferin and a lot more luciferases/photoproteins to discover!



Periphylla periphylla (S. Haddock, Monterey Bay Aquarium Research Institute)

To boldly glow where nobody has glown before...

- Eloi Coutant (PhD)
- Vincent Hervin (M2)
- Sarah Desmond (L2)
- Glwadys Gagnot (PhD)
- Mathilde Manuali (BTS)
- Candice Ford (L1)
- Victor Monnot (L3)
- Racha Baatallah (M2)

- Yves Jacob
- Sophie Goyard
- Thierry Rose
- Valérie Choumet
- Essia Belarbi
- Vincent Legros
- Stéphanie Petrella
- Claudine Mayer
- Ahmed Haouz
- Bruno Baron
- Martin Marek (CZ)
- Yutaka Kuroda (Jpn)

- Daniel Larzul
- Christian Bréchet



Thank you for your attention



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