

# Product Data Sheet

## Avitag™ biotinylated *Gaussia* luciferase

Catalog Number: 0308

### Product Description

*Gaussia* luciferase is a luminescent protein with quantum yields higher than the luciferases from *Renilla sp.* and firefly. The enzyme catalyzes the oxidation decarboxylation of coelenterazine to give light ( $\lambda_{\text{max}} = 485\text{nm}$ ) and coelenteramide. ATP is not needed for activity. *Gaussia* luciferase is salt tolerant and retains its activity in the presence of non-ionic detergents, cholate, and deoxycholate. In addition, the enzyme is thermal tolerant and can retain activity at temperatures up to 60°C. The protein is also resistant to irreversible denaturation. Enzymatic activity can be recovered after treatment with 7M guanidine HCl or 8M urea in the presence of detergent.

Biotinylated *Gaussia* luciferase has a single biotin molecule covalently attached, yielding a protein with a biotinylation peptide sequence tag. By spacing the biotinylation site away from the protein's active site, via the peptide sequence modification, inactivation by direct biotinylation is prevented. The biotinylated luciferase, when complexed with avidin or streptavidin, can be used for the detection of low levels of an analyte. Detection of pmole quantities of an analyte have been reported.<sup>1</sup>

### Instructions for Use

1. The amount of luciferase used for a given assay should be empirically determined by titrating the enzyme. The amount of luciferase that gives the highest signal: noise ratio should be selected.
2. Prepare a coelenterazine stock by dissolving the powder in 1mL of acidified methanol (50 $\mu$ L concentrated HCl to 10mL of anhydrous methanol) to give a 200 $\mu$ M solution. Aliquot and store at -80°C for up to 4 weeks. A working solution of coelenterazine is prepared by diluting the stock solution to 10 $\mu$ M in 18Mohm water.  
**Important Notice:** Coelenterazine is unstable in aqueous solutions. It is recommended that working solutions are prepared daily. Activity results will vary depending on concentration of Coelenterazine used.
3. For performing luciferase assays, dilute the enzyme in 50mM Tris-Cl, 0.5M NaCl, pH 7.8 to the desired RFU per assay. Add coelenterazine to 2.5 $\mu$ M and immediately measure the light production at 485nm with a 5-10 second integration.

### Material Safety Data

FOR RESEARCH USE ONLY. NOT INTENDED OR APPROVED FOR HUMAN, DIAGNOSTICS OR VETERINARY USE. Do not ingest, swallow or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. For complete safety information see full Material Safety Data Sheet.

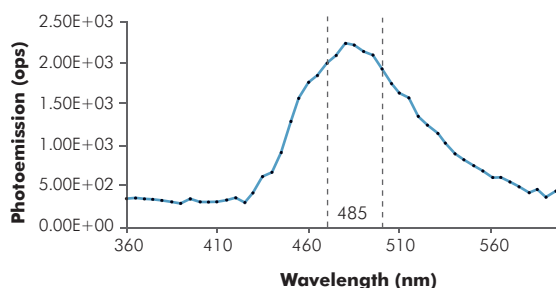


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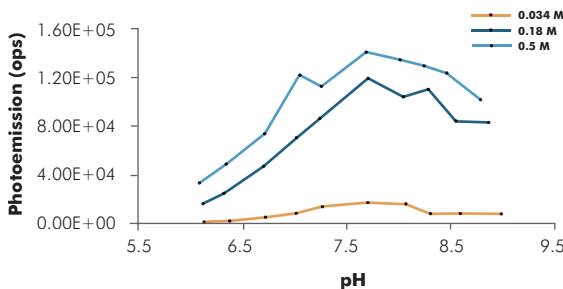
### Product Specifications

Protein	1mg (0308-1), 250 $\mu$ g (0308-2)
Long-term Storage	2 years at -80°C Aliquot to avoid repeated freezing and thawing
Short-term Storage	1 month at 4°C
Formulation	In: 10 mM Na <sub>2</sub> HPO <sub>4</sub> , 140 mM NaCl, 2 mM KH <sub>2</sub> PO <sub>4</sub> , 3 mM KCl, 10% glycerol, pH 7.6
Molecular Weight	25kDa by SDS-PAGE 22kDa

### Gaussia Luciferase Emission



### Gaussia Luciferase pH/NaCl



**Figure 1.** The graph on the top shows the emission spectrum for *Gaussia* luciferase ( $\lambda_{\text{max}}^e = 485\text{nm}$ ). The lower graph shows the effects of salt concentration and pH on light emission of *Gaussia* luciferase.

### References

1. Verhaegen, M. and Christopoulos, T. K. 2002. Recombinant *Gaussia* Luciferase. Overexpression, Purification, and Analytical Application of a Bioluminescent Reporter for DNA Hybridization. Anal. Chem. 74: 4378-4385.
2. Avitag™ is a trademark of Avidity, LLC.