



Improved Promoter Reporter Technology For Understanding Gene Regulation

GeneCopoeia, Inc.

Presenter:

Ed Davis, Ph.D.
Senior Application Scientist
GeneCopoeia, Inc.

September 10, 2014

Goals of this presentation

- Overview of promoter reporter technology
- GeneCopoeia's vast collection of reporter clones with high-performance reporter technology



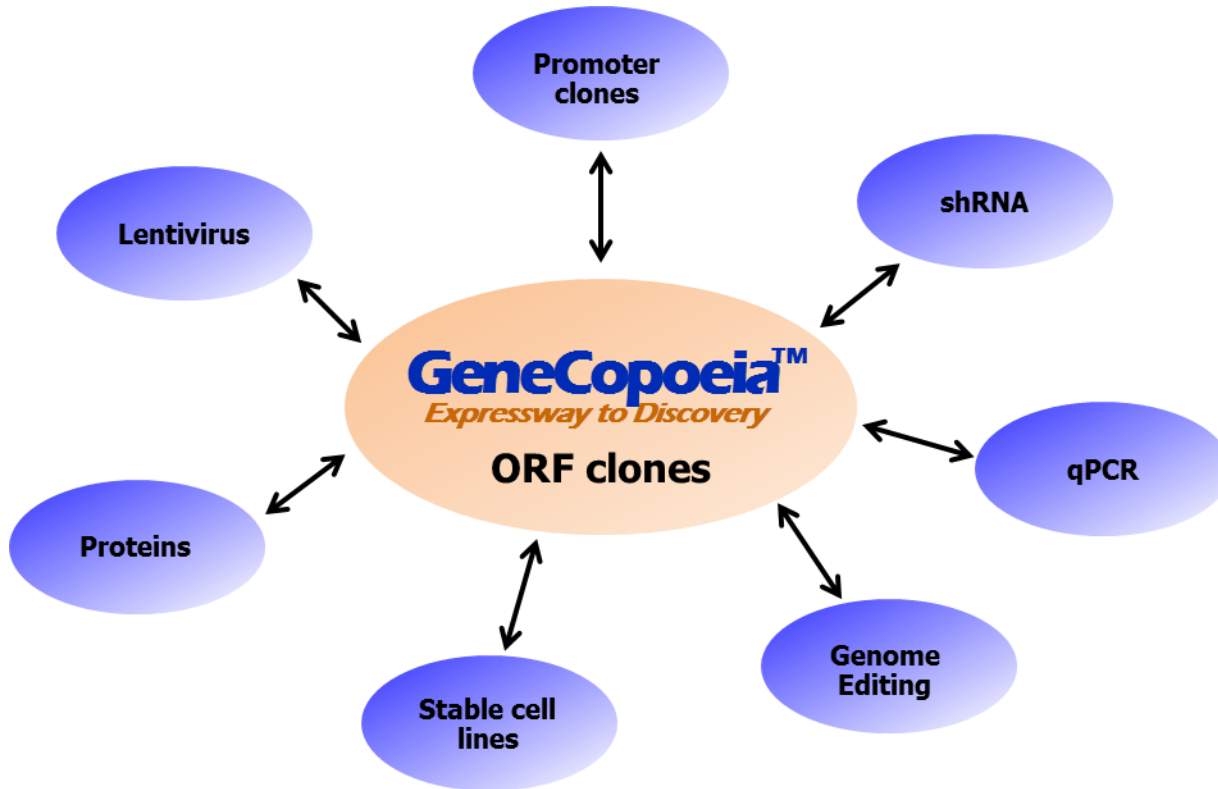
Quick survey

Why are you attending this webinar?

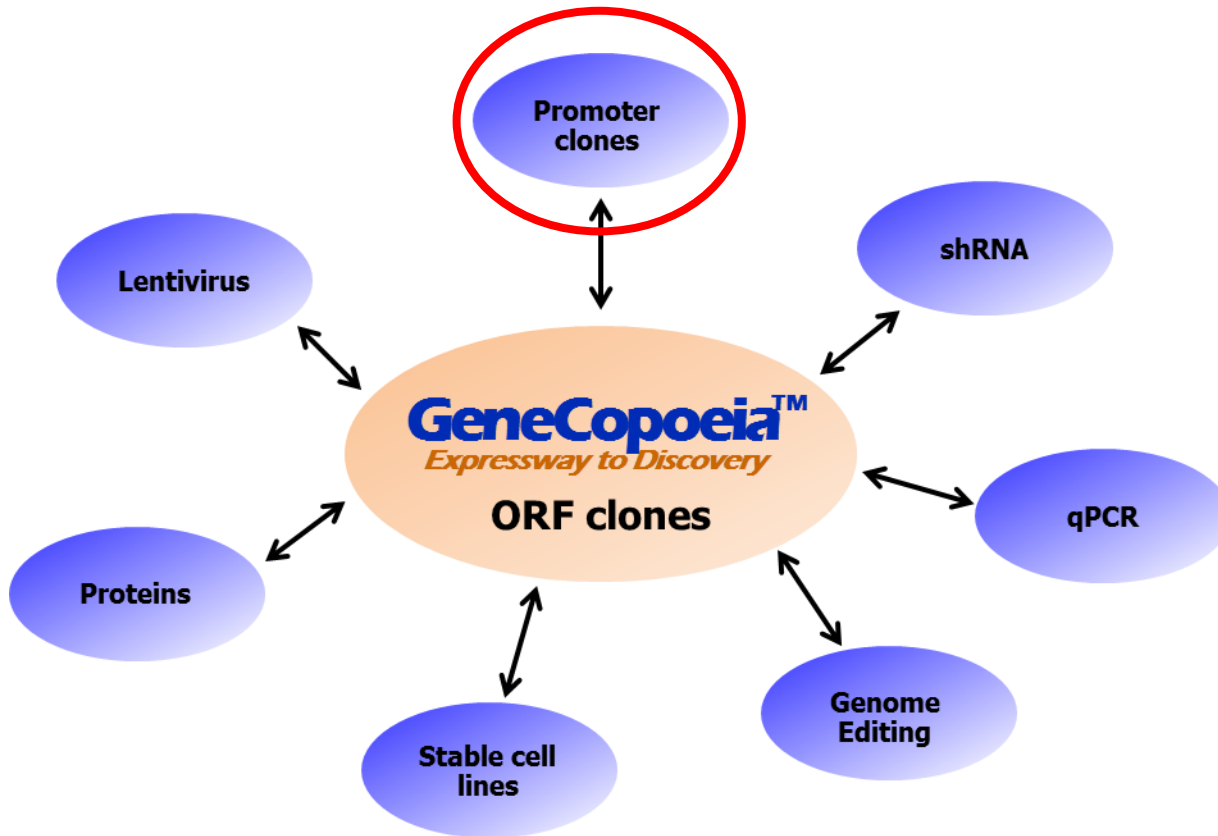
Please type your answers (A, B, C, or D) in the question box

- A. I want to use promoter clones & want to learn more.
- B. I heard about this technology & I'm just curious.
- C. I plan to use reporter clones & want to see what your company has to offer.
- D. Other (please explain).

GeneCopoeia Products & Services



GeneCopoeia Products & Services



Outline

- Promoter reporter clones: Technologies
 - Standard reporters
 - Dual reporters
- Applications for promoter reporters
- How GeneCopoeia can provide you the promoter reporter clone you need

Post-genomics era functional studies

Human Genome Project

DNA



Post-Human Genome Project:
ORFs and Expression Regulation

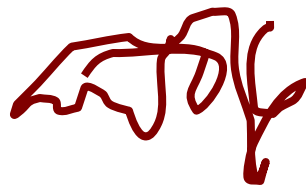
mRNA



Reverse Transcription



Protein



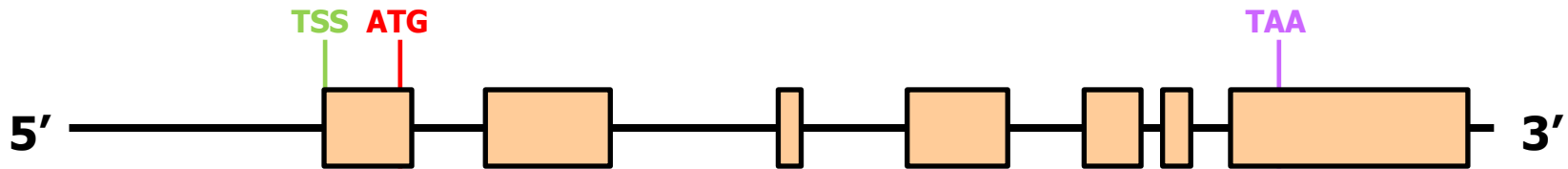


Promoter Clone Collections

- Human promoters
 - 20,000+ promoters

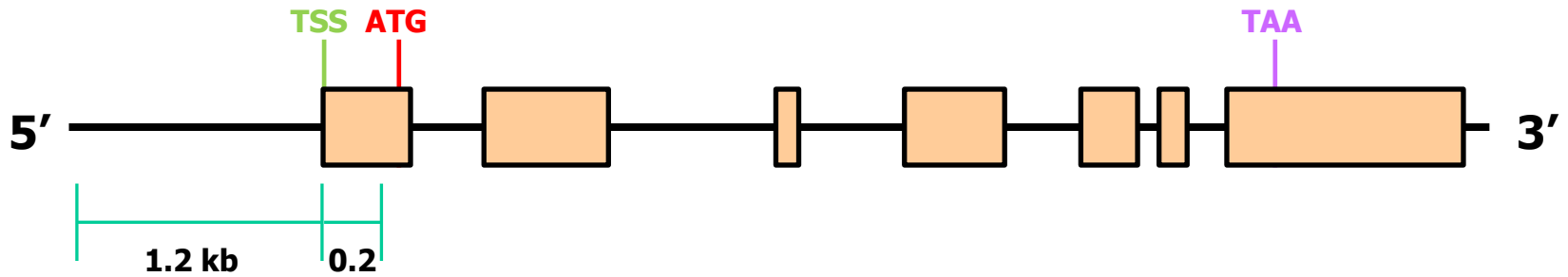
- Mouse promoters
 - 18,000+ promoters

How do we define a promoter?



- Functional: TSS-proximal DNA sequence elements required for native gene expression
- Excludes distal enhancers
- Most mammalian promoters have not been functionally defined

How do we define a promoter?



Why use promoter clones?

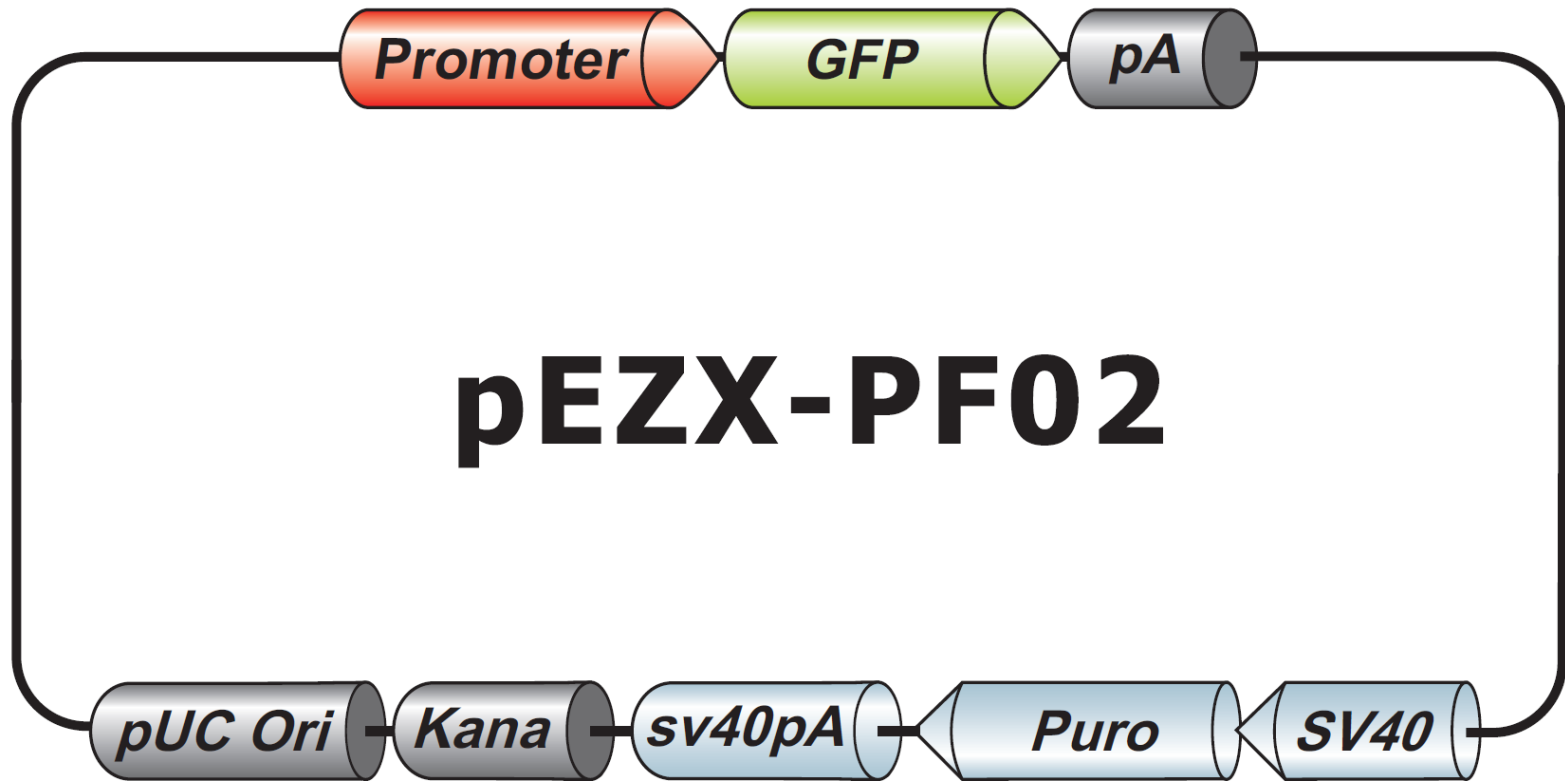
- Study regulatory patterns of gene expression in different tissues
- Determine regulatory proteins that bind promoter sequence
- Determine binding elements for activator and repressor molecules
- Use as biosensors for physiological or environmental stimuli

What is a promoter clone?

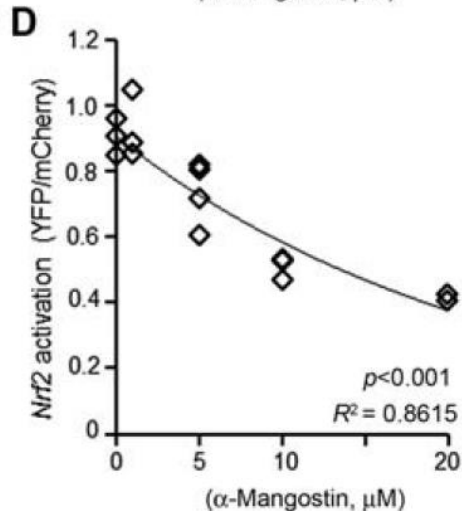
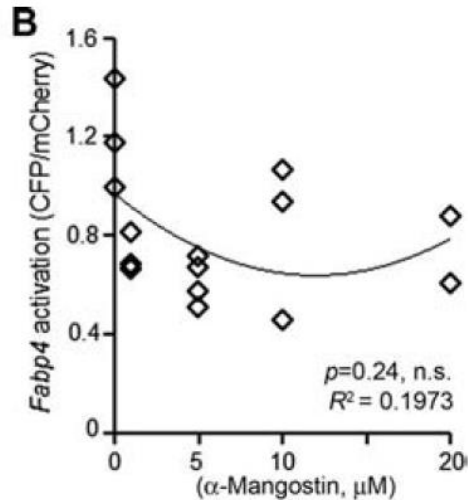


- Putative promoter region of interest cloned upstream of reporter ORF in expression vector
- Expression followed either qualitatively (visually) or quantitatively

GLuc-ON™ Promoter reporter clones



Case study: GLuc-ON™ clones



- Used GLuc-ON™ clones *Fabp4* promoter-CFP and *Nrf2* promoter-YFP to assay responsiveness to α -Mangostin in adipocytes
- Normalization control: GeneCopoeia mCherry clone



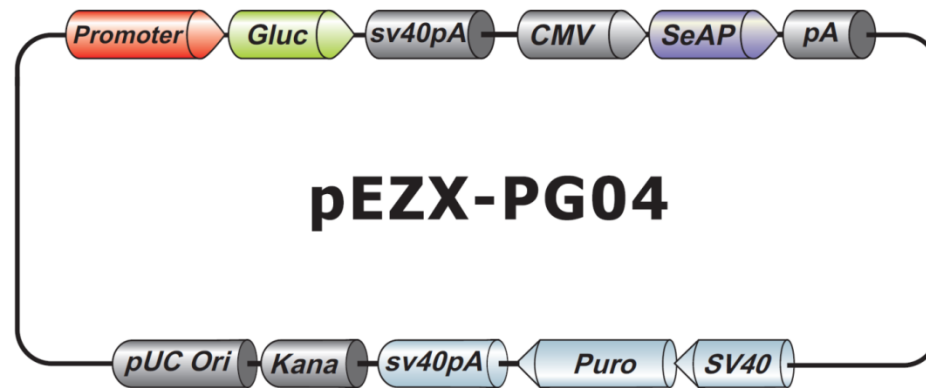
GLuc-ON™ Promoter reporter clones

Limitation of traditional reporters

- Quantitative measurement difficult. Must lyse cells. Cannot measure in real time.

GLuc-ON™ Promoter reporter clones

GeneCopoeia dual secreted reporter promoter clones

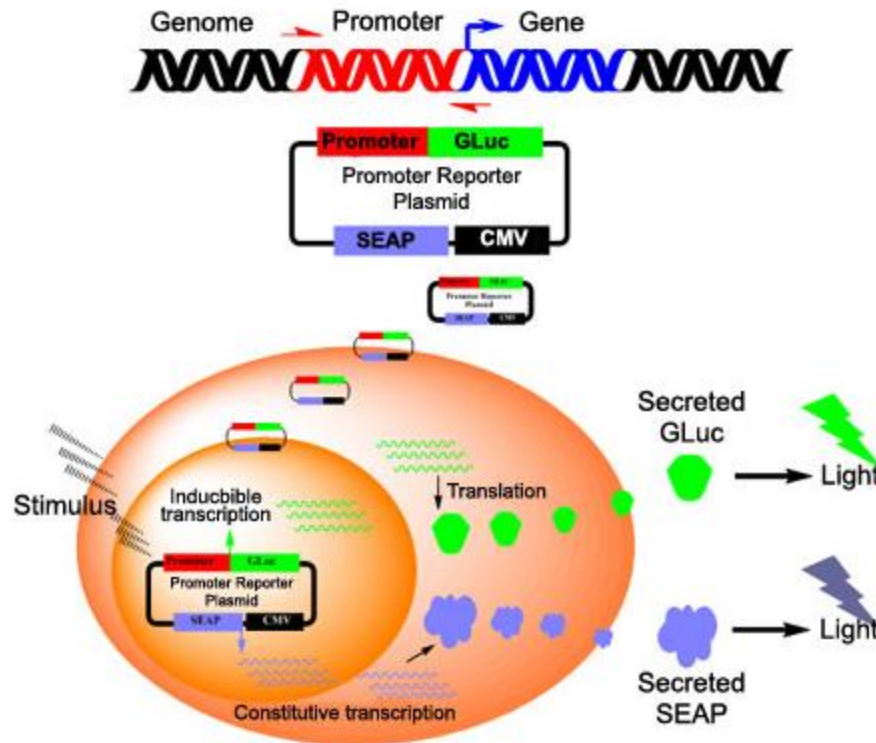


Advantages

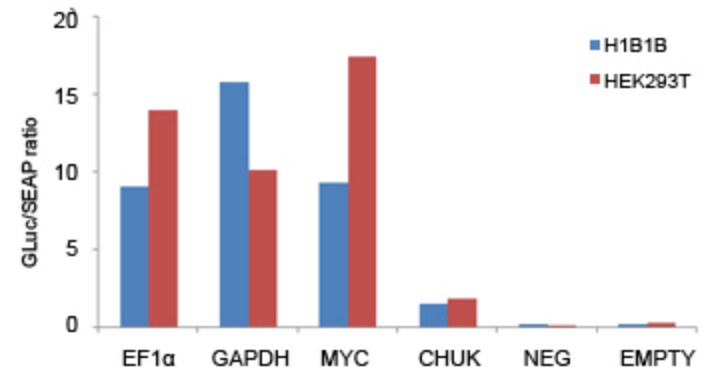
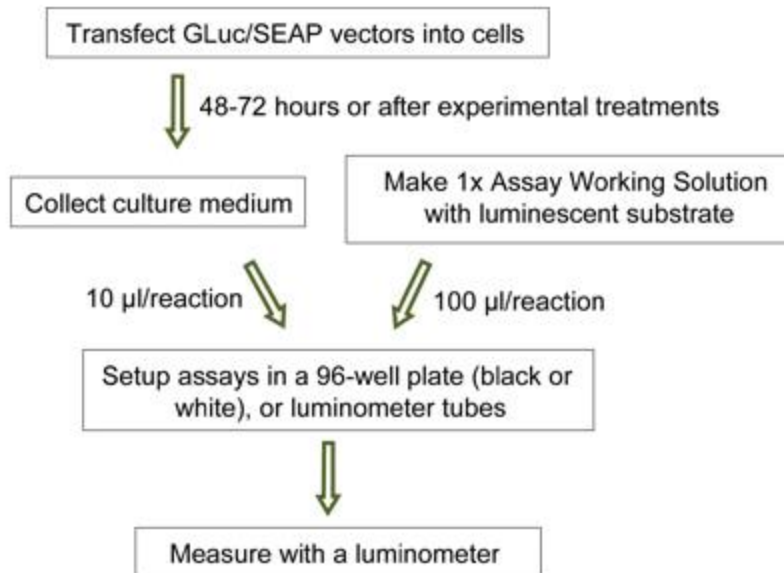
- Test and control reporters on same vector
- Both reporters secreted. No need to lyse cells
- Activity can be measured multiple times on the same sample
- Gluc is 1,000-fold more sensitive than Fluc or Rluc
- Compatible with Secrete-Pair™ Dual luminescence assay kit

GLuc-ON™ Promoter reporter clones

GeneCopoeia dual secreted reporter promoter clones

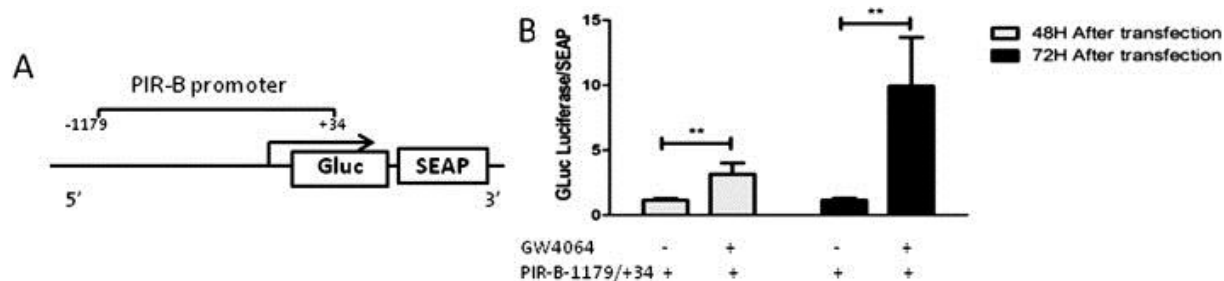


Secrete-Pair™ kit



Case study: GLuc-ON™ clones

- Used GLuc-ON™ Gluc-SEAP dual reporter clone to analyze stimulation of PIR-B expression by FXR (bile acid receptor) gene activation in a mouse monocyte/macrophage cell line
- Used molecule GW4064 to activate FXR
- Assayed Gluc and SEAP activity using the Secrete-Pair™ Dual luminance assay kit





GLuc-ON™ Promoter reporter clones

How do I order GLuc-ON™
promoter reporter clones from
GeneCopoeia?

GLuc-ON™ Promoter reporter clones

Publications using GLuc-ON™ promoter reporter clones

- Zhang, H. *et al.* (2014). The critical role of myeloid-derived suppressor cells and FXR activation in immune-mediated liver injury. *Journal of Autoimmunity*, *in press*.
- Rubie, C. *et al.* (2014). Chemokine receptor CCR6 expression is regulated by miR-518a-5p in colorectal cancer cells. *Journal of Translational Medicine* **12**, 1479
- Klimosch, SN. *et al.* (2013) Functional TLR5 genetic variants affect human colorectal cancer survival. *Cancer Research* **73**, 7232
- Shen, Q. *et al.* (2013). Adipocyte reporter assays: Application for identification of anti-inflammatory and antioxidant properties of mangosteen xanthenes. *Molecular Nutrition & Food Research* **58**, 239
- Celardo, I. *et al.* (2013). Caspase-1 is a novel target of p63 in tumor suppression. *Cell Death and Disease* **4**, e645
- Zheng, H. *et al.* (2013). Glycogen synthase kinase-3 beta regulates Snail and β -catenin expression during Fas-induced epithelial–mesenchymal transition in gastrointestinal cancer. *European Journal of Cancer* **49**, 2734
- Mills, L.D. *et al.* (2013). Loss of the Transcription Factor GLI1 Identifies a Signaling Network in the Tumor Microenvironment Mediating KRAS-Induced. *Journal of Biological Chemistry* **288**, 11786
- Schank, JR. *et al.* (2013) Tacr1 Gene Variation and Neurokinin 1 Receptor Expression Is Associated with Antagonist Efficacy in Genetically Selected Alcohol-Preferring Rats. *Biological Psychiatry Journal* **73**, 774
- Petrella, B. *et al.* (2012) Interleukin-1 beta and transforming growth factor-beta 3 cooperate to activate matrix metalloproteinase expression and invasiveness in A549 lung adenocarcinoma ... *Cancer Letters*, Volume **325**, 220

Summary

- Promoter reporter clones are useful for many applications in the analysis of gene expression
- Traditional promoter clones use fluorescent reporters or firefly/renilla luciferase, which require cell lysis for quantitative measurement
- GeneCopoeia GLuc-ON™ promoter reporter clones offer higher sensitivity and ease-of-use over traditional fluorescent and luminescent reporters
- Customers can easily purchase GeneCopoeia GLuc-ON™ promoter reporter clones by searching our database of nearly 40,000 human and mouse promoters

GLuc-ON™ Promoter clone website

GeneCopoeia™
Expressway to Discovery

[My Account](#) [Shopping Cart](#)

Questions? Call us toll-free!
1-866-360-9531
Mon-Fri 9am-5pm EST

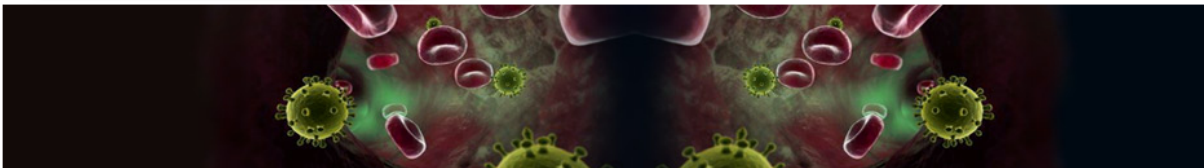
[About Us](#) | [Products](#) | [Services](#) | [Technical Resources](#) | [Order Support](#) | [Contact Us](#)

Please enter the keyword

All

Search

[ORF](#) | [miRNA](#) | [Promoter](#) | [shRNA](#) | [TALEN/CRISPR](#) | [Lentiviral Particle](#) | [Primer](#) | [Protein](#)



About Us

Products

▼ Clone Collections

- Clone sets
- ▶ ORF cDNA
- shRNA
- Promoter reporter
- miRNA 3' UTR target
- precursor miRNA
- miRNA inhibitor
- AAVS1 knock-in ORF
- Controls

▶ Genome Editing Tools

▶ Lentiviral System

▶ miRNA Solutions

▶ qPCR Products

Fluorescent Labeling and
Detection

You are here: [Home](#) > [Products](#) > [Clone collections](#) >

GLuc-ON™ Promoter Reporter Clones

[Register webinar to learn more](#)

[Introduction](#)

[Vectors and Controls](#)

[To Order](#)

[Related Products](#)

[Publications](#)

Using a secreted and robust Gaussia Luciferase (GLuc) as the reporter, GeneCopoeia GLuc-ON™ promoter clones are designed for promoter analysis by detecting the real-time activities of over 20,000 human and 18,000 mouse promoters using live cell assays.

Each transfection-ready promoter clone contains a 1.2-1.5 kb insert, corresponding to the 5'-flanking promoter sequence located approximately 1.5 kb upstream and up to 200 bp downstream of the transcription start site (TSS) of a specific human gene. This insert is placed upstream of the GLuc reporter gene. Since the putative cis-acting enhancer elements are expected to exist in the cloned promoter region, the promoter luciferase activity observed during the reporter assay closely resembles the actual promoter regulation of these genes within human cells.

GLuc-ON promoter clones can be ordered as [pre-designed](#) or [custom-built](#) in one of our robust vector systems. Currently we offer both single-reporter and dual-reporter vector systems. The single-reporter system uses GLuc, mCherry, or GFP as the promoter reporter. The dual-reporter system uses GLuc as the promoter reporter and SEAP (secreted Alkaline Phosphatase) as the internal control for signal normalization.

http://www.genecopoeia.com/product/promoter-reporter-clones/?category_name=product&PHPSESSID=sq5o5lla337nk1n3hnc8gmacf7

GeneCopoeia™
Expressway to Discovery



Upcoming webinar!

CRISPR & TALEN In Mammalian Cells: What Do I Do Next?

Wednesday, September 24, 2014 1:30 pm EDT

Register here:

[https://attendee.gotowebinar.com/register/3793592
553033800450](https://attendee.gotowebinar.com/register/3793592553033800450)



Thank you!

If you have any additional
questions, please call

1-866-360-9531 x227

Email: edavis@genecopoeia.com

Or visit us on the web:

www.genecopoeia.com

GeneCopoeia, Inc.

9260 Medical Center Drive Suite 101

Rockville, Maryland USA 20850

GeneCopoeia™
Expressway to Discovery