BIOSYNTH® Carbosynth

X-Shining™ Luciferase Product Range

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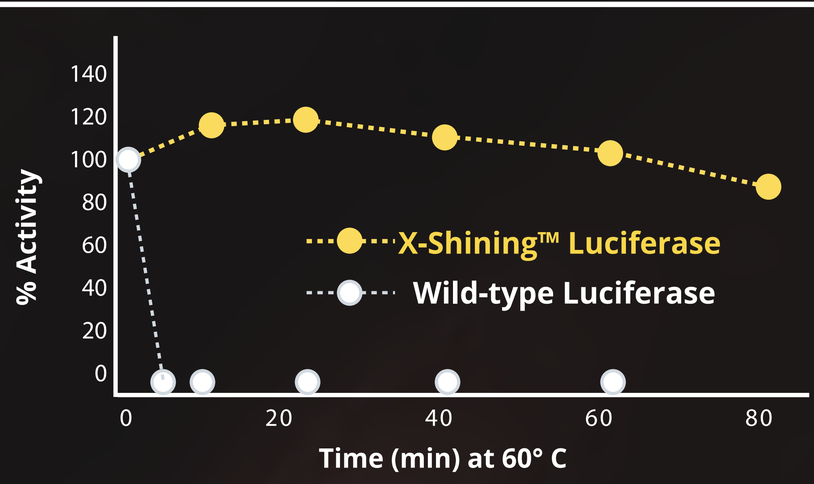
About X-Shining™ Thermostable Luciferase

Biosynth Carbosynth modified thermostable X-Shining™ Luciferase, which is perfect for any luciferin-luciferase-based assay using D-luciferin (dLuc) or synthetic pro-luciferins (caged luciferins). X-Shining™ has been optimised by generic engineering for strongly increase thermostability and storage stability. In temperature stress tests, the enzyme survives temperatures of 60° C for over an hour, whereas a normal luciferase from firefly is inactivated after only a few minutes. This makes it user-friendly and eliminates some of the main disadvantages and limitations of the commonly used wild type luciferase.

Product code	BX174908	BX180145
	10 mg/mL aqueous solution with glycerol	Lyophilised



Comparison of the heat stability of X-Shining™ Luciferase and wild-type recombinant luciferase (from ***Photinus pyralis***) after storage at 60° C.

X-Shining™ Luciferase fully retained its activity after 60 min at 60° C, while standard luciferase was completely inactivated after just 10 min.

Additionally with X-Shining™, the luminiscence signal stability is noticeably increased in comparison to recombinant wild-type luciferase from firefly (data not shown).

X-Shining™ all-in-one ATP Assay

The one-step X-Shining™ all-in-one ATP Assay provides in a **single vial** an omptimized reaction solution for the specific bioluminiscence detection of ATP levels. Simply reconstitute, and the X-Shining™ all-in-one ATP Assay solution can be **directly applied to samples for ATP measurements** or ATP detection in a 1:1 ratio for an immediate bioluminiscent read-out.

Adenosine triphosphate (ATP) is present in all living cells and plays a central role in the energy balance. The intracellular concentration of ATP is tightly regulated and is maintained at a similar level in all cells. When a cell dies, the ATP is completely degraded; ATP levels therefore reflect the presence of any living cell. The bioluminiscence-based assays are extremely sensitive; a standard luminometer can detect as little as 0.1 picomole of ATP.

The measurement of ATP levels is crucial to study growth of cell cultures, cell viability, cell response, biochemical processes, to monitor environmental sample activity levels, to assess water quality, to test for biological contamination and to assess antibiotic efficacy and resistance in populations. In addition, ATP measurement is key to monitor a broad range of enzymatic activities where either ATP is consumed or formed, and for ATP-dependent enzymes, e.g. pyruvate kinase, ATPase, some restriction enzymes and some chromatin-remodeling enymes.

PREPARATION

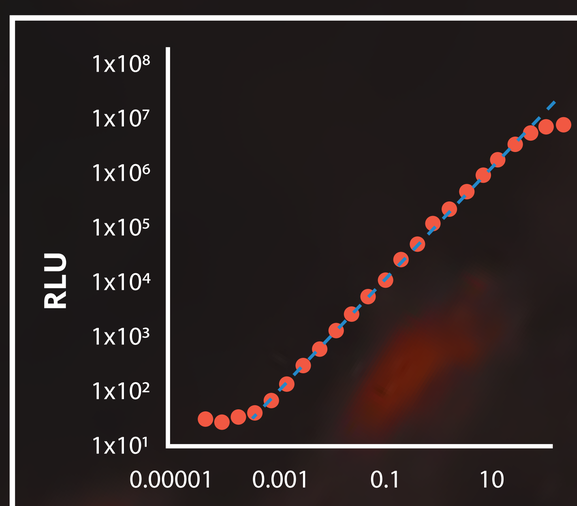
1) Add ATP-free ultrapure water to reconstitute.

MEASUREMENT

1) Mix reconstituted solution with the sample in a 1:1 ratio.

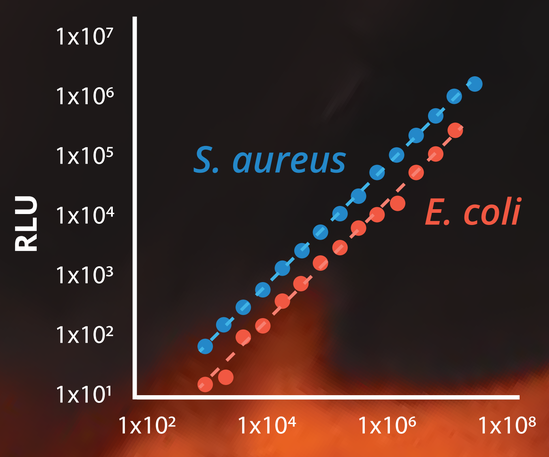
2.- Read luminiscence

Product code	EX180920	X-0010
	1 vial for 50-100 measurements	Bulk



ATP Quantification with X-Shining™ all-in-one

The X-Shining™ all-in-one ATP Assay shows an excellent signal development over a wide ATP concentration range, from 0.1 fmol to 10 pmol in 96-well plate assays when using a 0.2 mL reaction volume.



Quantification of ATP from Bacterial Cells

Upon cell lysis, cells release their ATP content. In this example, we quantify the ATP content released by *Escherichia coli* and *Streptomyces aureus* cells after lysis due to addition of 0.2 % dodecyltrimethylammonium bromide (DTAB).

The X-Shining™ all-in-one ATP Assay shows an excellent signal correlation in the detection of ATP released by lysed *E. coli* and *S. aureus* cells over a wide concentration of bacterial cells, i.e.