

# Promega update

July 2006

## Protein Expression, Purification, Analysis and Imaging

### Protein Expression

Promega's coupled transcription/translation systems provide a quick and easy tool for studying protein function and/or protein:protein interactions. The single tube format eliminates the need to perform separate *in vitro* transcription and translation reactions. To cater for the diverse requirements of protein expression, systems based on prokaryotic (S30) extracts, plant (wheat germ) extracts and mammalian (rabbit reticulocyte) lysates are available.

Just launched is the **TnT® SP6 High-Yield Protein Expression System**, which enables expression of up to 10-fold more protein, compared to the conventional TnT® system.

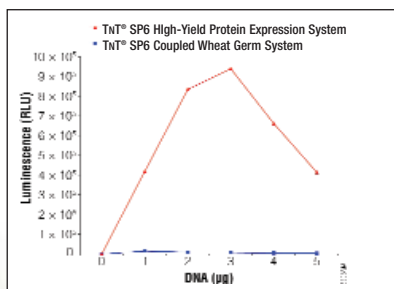


Figure 1. Comparison of *Renilla* luciferase expressed with TnT® SP6 High Yield and TnT® SP6 Wheat Germ.

### Protein Purification

For the isolation of fusion tagged proteins, Promega offers several unique purification systems.

Now available are spin columns for the purification of poly-Histidine- or Histidine-Glutamine-tagged proteins. The **HisLink™ Spin Protein Purification System** provides a fast and simple method of purifying tagged expressed proteins from *E. coli*, using either centrifuge or vacuum-based methods.



	MagneHis™ System Cat.# V8500, V8550	HisLink™ Resin V8821	HisLink™ 96 System V3680, V3681	HisLink™ Spin System V1320	MagZ™ Protein Purification System V8830	MagneGST™ System V8600, V8603	FastBreak™ Reagent V8571, V8572, V8573
Small- to medium-scale purification of polyhistidine- or HQ-tagged proteins	●	■	●	●	■	■	■
Large-scale purification of polyhistidine- or HQ-tagged proteins	■	●	■	■	■	■	■
Purification of polyhistidine- or HQ-tagged proteins from TNT® reactions	■	■	■	■	●	■	■
Small-scale purification of GST-tagged proteins	■	■	■	■	■	●	■
High-throughput /automated purification	●	■	●	●	●	●	■
Lyse <i>E. coli</i> directly in media	■	■	■	■	■	■	●
Protocols for small- to medium-scale purification of polyhistidine- or HQ-tagged proteins from mammalian or insect cells	●	■	●	●	■	■	■

Key: ● Recommended ■ Not Recommended

Figure 2. Choice of protein purification systems and reagents by application.

For more information visit [www.promega.com/uk/protein](http://www.promega.com/uk/protein)

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## A Bioluminescent Assay for Monoamine Oxidase (MAO) Activity

MAO is a key enzyme in detoxification and bio-activation of amine containing compounds and plays a key role in inactivation of neurotransmitters.

The ability to measure monoamine oxidase (MAO) activity and the effect of test compounds on that activity is critical for selecting specific MAO inhibitors, discovering potential drug-drug interactions and assessing

MAO-catalyzed detoxification/bioactivation of various target compounds. Current methods for measuring MAO activity are time-consuming and expensive, hence, Promega has developed MAO-Glo™, homogeneous, luminescent assay for measuring MAO activity, which is faster and more sensitive.

For more information visit [www.promega.com/uk/adme](http://www.promega.com/uk/adme)

# Systems Biology

## Meeting the new demands of modern nucleic acid purification

Today, researchers are being asked to build an integrated view of molecular cell biology, building up from the base of genomic information gathered over the last decade. The challenges of understanding the way molecular processes function together are even greater than those faced to date and modern research techniques are making ever greater demands on methods for isolating nucleic acids.

Techniques such as microarraying and real-time PCR require large amounts of highly pure RNA, whilst transfection experiments and library construction are demanding better large scale plasmid purification. Producing the larger quantities of good quality RNA or Plasmid DNA required is time consuming, labour intensive and increasingly a major bottle neck for many labs.

Promega has taken the requirements of this new generation of research techniques and developed a family of novel nucleic acid purification systems to meet these needs.

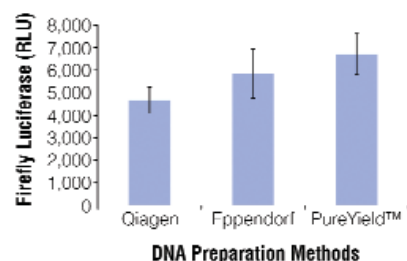
The PureYield™ range is designed to provide high purity and yield for **RNA midipreps** and **Plasmid midi and maxipreps** using a new purification format that provides major time savings over conventional approaches.

Ordering Information	Cat. No.	Size	Price
PureYield™ Plasmid Midiprep System	A2492	25 Preps	£113
	A2495	100 Preps	£401
PureYield™ Plasmid Maxiprep System	A2392	10 Preps	£98
	A2393	25 Preps	£230
PureYield™ RNA Midiprep System	Z3740	10 Preps	£70
	Z3741	50 Preps	£295

**PureYield™ Plasmid Midi and MaxiPrep systems** use novel membrane technologies, delivering **transfection quality** plasmid DNA in a fraction of the time required for other methods.

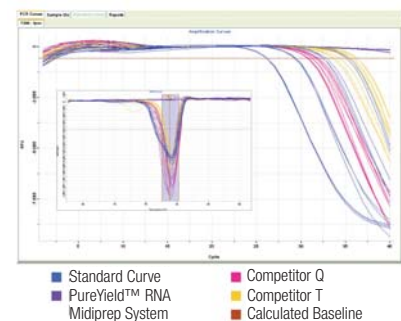


**Figure 3.** Time savings for plasmid midipreps against the current leading brand.



**Figure 4.** Transfection efficiency of plasmid DNA purified using three leading midprep systems. Efficiency was measured through expression of the transfected firefly luciferase gene expressed from the psi-Check 2 vector system.

**The PureYield™ RNA Midiprep** uses a unique clearing agent to reduce genomic DNA contamination to undetectable levels.



**Figure 5.** Plexor qPCR analysis for detection of genomic DNA contamination.

Purification takes around 90 minutes from start to finish from virtually any starting material. Table 1 shows the quantity of start material and yields from common sample types.

**Table 1.** Total RNA yields for different sample types.

Sample	Maximum Quantity	Yield
Liver	300 mg	990 µg
Lung	300 mg	194 µg
Kidney	200 mg	329 µg
Spleen	150 mg	431 µg
Brain	300 mg	305 µg
Heart	300 mg	255 µg
Muscle	300 mg	115 µg
<i>E. coli</i>	1x10 <sup>10</sup> cells	873 µg
Canola	300 mg	88 µg
HeLa Cells	5x10 <sup>7</sup> cells	329 µg
Blood	20 ml	10 µg

Together, the **PureYield™ plasmid and RNA purification systems** help to ensure quality of results and reduce the time spent purifying plasmids and RNA so scientists can focus on their research.

**i** For more information and the chance to try a free sample, visit

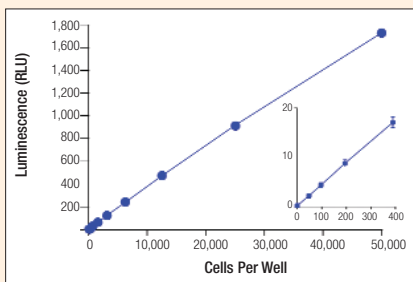
[www.promega.com/uk/pureyield](http://www.promega.com/uk/pureyield)



# CellTiter-Glo<sup>®</sup> – The Perfect Cell Viability Assay

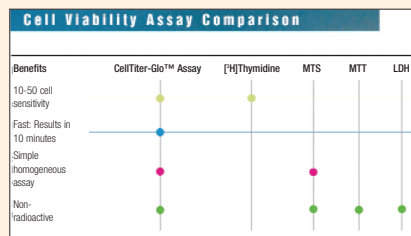
Measure as few as 10 cells in a 10 minute assay with a single step protocol.

CellTiter-Glo<sup>®</sup> measures ATP as a marker of viability. The assay produces a luminescent signal proportional to the amount of ATP released from viable cells.



**Figure 6.** Excellent sensitivity and extended linearity of the CellTiter-Glo<sup>®</sup> Assay.

## Comparison of Promega Cell Viability Assays



Ordering Information	Cat. No.	Size
CellTiter-Glo <sup>®</sup> Luminescent Cell Viability Assay	G7570	10 ml
	G7571	10 x 10 ml
	G7572	100 ml
	G7573	10 x 100 ml

**i** For more information visit our website at [www.promega.com/uk/perfectassay](http://www.promega.com/uk/perfectassay)

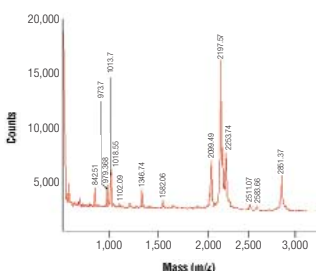
Judge for yourself – Evaluate a FREE SAMPLE.

[www.promega.com/uk/perfectassay](http://www.promega.com/uk/perfectassay)

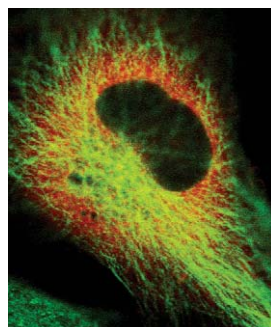
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## Protein Analysis

For mass spectrometry, Promega's **Trypsin Gold** is manufactured to provide maximum specificity. Lysine residues in the porcine trypsin have been modified to yield a highly active and stable molecule that is extremely resistant to autolytic digestion.



**Figure 7.** Spectrogram of bovine carbonic anhydrase II digested by Trypsin Gold, Mass Spectrometry Grade.



**Figure 8.** P65 HaloTag<sup>™</sup> fusion protein with concomitant B111 tubulin staining in HeLa cells.

## Protein Imaging and Capture

### HaloTag<sup>™</sup> Interchangeable

**Labelling Technology** bridges cellular imaging and protein analysis using a single tool. A single HaloTag<sup>™</sup> fusion can impart a variety of functionalities, including fluorescence, affinity tagging or direct attachment to a solid surface.

A trial vector is currently available at [www.promega.com/halotag](http://www.promega.com/halotag)

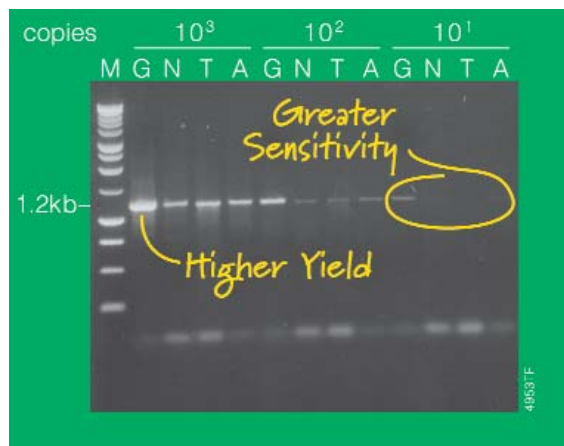
Ordering Information	Cat. No.	Size
TnT <sup>®</sup> SP6 High-Yield Protein Expression System	L3261	10 rxns
	L3260	40 rxns
HisLink <sup>™</sup> Spin Protein Purification System	V1320	25 rxns
Trypsin Gold, Mass Spectrometry Grade	V5280	100 µg

**i** For more information visit our website at [www.promega.com/uk/protein](http://www.promega.com/uk/protein)



## Standard Taq makes way for GoTaq®

The time has come to retire our original, standard Taq products in favour of our higher performing and more popular GoTaq® polymerases. By 1st of September this year we will have stopped selling our standard Taq products, so if you are still using them, now is the time to upgrade to GoTaq®. Transferring to GoTaq is easy, most people find they don't need to change their reaction conditions and yet the results are consistently better, plus you get the added benefit of an extra buffer with built in gel running dyes.



**Figure 9.** GoTaq® Green Master Mix (G) outperforms standard Taq DNA Polymerase (competitors NEB (N), Takara (T) and Amplitaq® (A) under standard conditions.

**i** Contact us now for a sample of GoTaq® and see for yourself why we have decided to move up to better PCR.

**Visit:** [www.promega.com/GOTAQ](http://www.promega.com/GOTAQ)

## Join the 2006 World Cup Promotion and SCORE Big with Promega!

Collect 3 stickers found on selected Promega Products and you can win fabulous prizes!

- iPod Shuffle
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**i** For more information on how to enter visit

[www.promega.com/worldcup](http://www.promega.com/worldcup)

**The 2006 Promega  
World Cup Promotion runs  
April 1 – July 31, 2006.**

Valid in participating countries only, please contact your local Promega representative for details.

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