Painless Particles®

Global Newsletter
Volume 23, # 2, September 2010

Bangs Laboratories, Inc.
A DIVISION OF POLYSCIENCES, INC.

BEADS ● ABOVE THE REST™

In This Issue

Last Call for The Latex Course™!

Bangs Laboratories will be presenting the 18th offering of our popular course "Designing Microsphere-Based Tests and Assays" at *Disney's Grand Floridian Resort & Spa* in Lake Buena Vista, Florida, from **October 3 – 5, 2010**.

Topics covered include details of the newest polystyrene "latex" microsphere applications, including multiplex bead assays for antibody screening and immunochromatographic rapid tests. Plus, attendees will take home useful strategies for ligand attachment, working with microspheres, and product characterization. At the completion of the course, all attendees will receive a copy of The Latex Course 2010 Book.

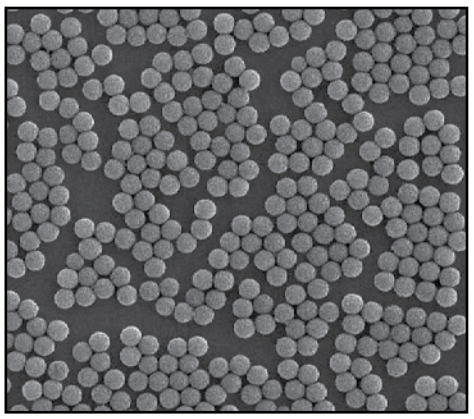
Hurry! Space is filling fast. To check availability, please contact Customer Service at 800.387.0672 or e-mail us at **info@bangslabs.com**. Course details can be found at **www.bangslabs.com/service/the_latex_course**.

We can't wait to see you in (hopefully sunny and warm) Florida!

(Micro)Sphere of Influence:

Introducing 1µm ProMag™!

Our beads keep getting smaller, and our sphere of influence larger. How do we do it, you ask? Is it New Math? Our winsome personalities? Totally awesome beads?



Like its 3µm counterpart, 1µm ProMag boasts stringent size uniformity, fast and uniform separations, high coating capacity, and low nonspecific binding of proteins. The surfactant-free carboxyl version is ideal for the covalent binding of biomolecules such as antibodies, peptides, and oligonucleotides. Streptavidin ProMag may be easily coated with biotinylated ligand, or used to capture biotinylated targets, such as PCR amplicons or labeled cells. And our new pre-activated Bind-IT™ chemistry offers easy and stable binding of antibody.

The smaller (1µm) size offers far greater surface area per unit weight, which may present a considerable advantage for the purification of biomolecules or capture of low concentration targets. Smaller-diameter spheres additionally remain suspended for longer periods of time, simplifying assay incubation steps.

Diminutive, bijou, Lilliputian.... Call them what you will; our products may be tiny, but they deliver in a big way.

Catalog Code	Product Description	Quantity
PMB1N	ProMag™ Series 1• Bind-IT™	2mL, 5mL, or 10mL
PMC1N	ProMag™ Series 1 • COOH Surfactant-free	5mL or 25mL
PMS1N	ProMag™ Series 1 •Streptavidin	1mL, 2mL, 5mL, or 10mL

Mail Bonding: Subscribers Do the "Write" Thing

- *"Thanks for your help. Bangs Labs is always the first choice for us. Most important is that we can get technical support from you." S., China*
- *"The online calculation program works great." M.K., CA*

Alive and Kicking

ViaCheck™ Standards for Viability Analyzers

It's little wonder that cell viability analyzers are all the rage these days, given that: a.) analytical instruments (including viability analyzers) are cool, b.) we sound smart when we talk about using them, and c.) they offer rapid and economic means to assess the status of cell cultures used in research laboratories and in the commercial production of therapeutic proteins.

If you've been so fortunate as to convince Management to equip your facility with a few of these babies, we're confident that you and your eyeballs will soon find plenty of things to do besides counting trypan blue-stained cells. However, before you get too comfortable in that breakroom chair, we suggest that you give some thought to a program for instrument validation and QC.

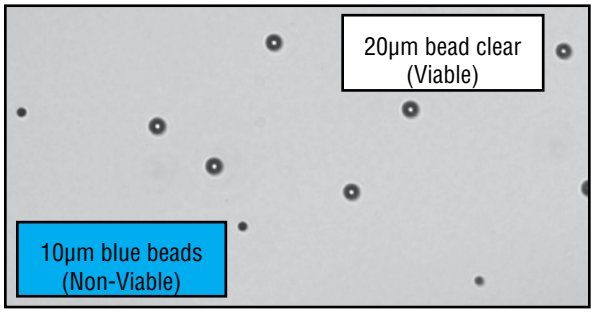
Conveniently, our **ViaCheck Viability and Concentration standards** may be used to validate image-based viability instruments before they're commissioned, and to ensure optimum performance on an ongoing basis. The microsphere standards are pre-stained, and need only be loaded into the analyzer for confirmation of live/dead ratios and counts. Non-biological surrogates remove the need for sample preparation, and offer exceptional stability and reproducibility.

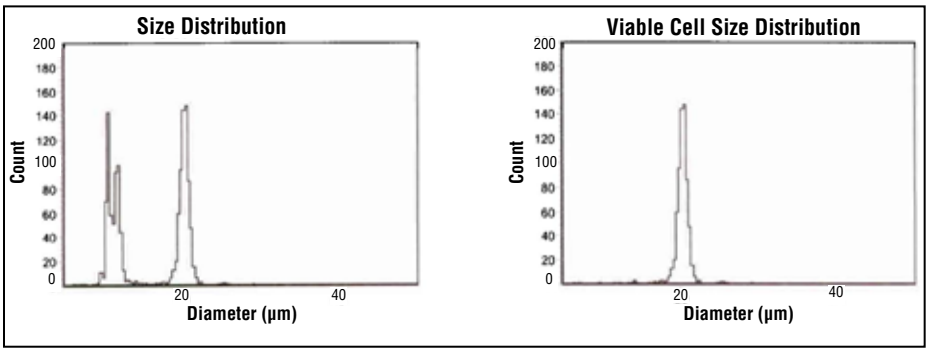
ViaCheck standards – pretty cool, huh?

Catalog #	Description
VC10B	ViaCheck™ 0% Viability Control
VC20B	ViaCheck™ 50% Viability Control
VC30B	ViaCheck™ 75% Viability Control
VC40B	ViaCheck™ 90% Viability Control
VC50B	ViaCheck™ 100% Viability Control

Catalog #	Description
VC60N	ViaCheck™ Concentration Control (1 x 10^6)
VC70N	ViaCheck™ Concentration Control (4 x 10^6)
VC80N	ViaCheck™ Concentration Control (8 x 10^6)

Photograph and Vi-CELL™ XR data of ViaCheck™ 50% Viability Control Particles.

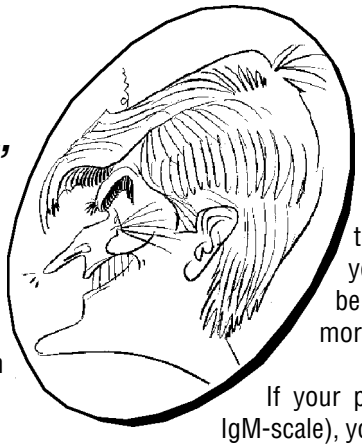




RESULTS

Cell Count	1286
Viable Cell Count	677
Viability (%)	52.6
Total Cells / mL (x 1.0E6)	1.32
Viable Cells / mL (x 1.0E6)	0.69
Average Diameter (µm)	15.98
Average Circularity	0.95
Images	50
Average Cells / Image	25.7
Average Background Intensity	205

Ask *"The Particle Doctor®"*



Q: I'm interested in your new pre-activated ProMag™ Bind-IT™ microspheres, however, my process includes an elution step that I'm afraid will be detrimental to the antibody coating. Can you address ProMag Bind-IT's resistance to harsh conditions?

A: ProMag Bind-IT microspheres offer a system for highly stable, non-covalent coating of antibody, and we have achieved lengthy stability periods when coated microspheres are stored under normal conditions. Though most applications don't call for re-use of antibody-coated beads after an elution step, we have conducted limited testing, and found that transitory exposure to low pH (2.8) and high pH (10) elution buffers has little or no effect on mAb-coated ProMag Bind-IT beads. We also found that protein-coated Bind-IT beads tolerate boiling in 2% SDS for 10 minutes with only a very small loss of protein detected in silver-stained gels. Ultimately, we believe that they should hold up under normal elution steps. However, we still encourage you to be as kind as you can to them, and of course test the specific conditions both to ensure suitability of the immobilization strategy and to determine effects of the process on the mAb itself – it probably doesn't matter that the protein remains stably bound if it's being denatured.

Q: I'm trying to coat a biotinylated protein onto your streptavidin-coated microspheres, however, I'm having trouble getting the expected amount bound. Do you have any ideas of what I could be doing wrong? Are there any tips you could share with me?

A: Firstly, don't despair – a couple of common issues come to mind, and they're generally easy to fix. As a first step (well, second step if we count the not despairing part), you should ensure that the beads are being washed sufficiently prior to coating. The as-supplied storage buffer contains a blocking molecule and other stabilizers that could reduce binding efficiency. As a matter of course, we suggest a few pre-washes (3X - centrifuge, decant, resuspend in buffer) to remove these prior to coating with the biotinylated ligand. You will also want to ensure that your binding buffer is free of (or contains only minimal amounts of) potential interferents such as blocker, surfactant, etc.

I'll also note that we use a biotin-FITC assay to determine binding capacity. As a small conjugate (831 Da), biotin-FITC is able to efficiently access streptavidin binding pockets. The capacity of the beads for biotinylated protein will be somewhat subject to steric effects, i.e. as we expect the far larger protein to mask binding sites that would be accessible to small molecules. Using the "Surface Saturation" equation that is provided in our TechNote 206 will probably give you a better estimate of the amount of protein that can be coated onto the surface, and adding some amount more than this will aid in achieving saturation.

If your protein is of gargantuan proportion (I'm thinking IgM-scale), you might consider biotinylating it with a reagent that incorporates a spacer, such as some of the "long chain" tethers that are available.

Q: I just purchased some of your ViaCheck™ Viability Standards and Concentration Controls for use with my Vi-CELL™ and CEDEX analyzers. I see the reported values for viability and concentration on the products' Certificates of Analysis, however, I'm not sure what I should be using as pass/fail criteria when I run them on my instruments.

A: Certificates of Analysis for ViaCheck products provide formal lot-specific values for concentration (and viability). We don't offer firm pass/fail criteria for customer runs as these need to be established by each facility, taking historical instrument performance and study objectives into consideration. Users will often base their pass/fail criteria around the formal result that we report, for example, +/- 10% of our reported viability value. We would encourage you to use several runs over time (and on multiple instruments, if you have them) to establish your specifications. This will allow you to get to know your instruments (their capabilities and any quirks) and to set meaningful specifications.

Cartoon reprinted with special permission from Sidney Harris <SHarris777@aol.com> and www.sciencecartoonsplus.com.

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Address Service Requested

ProMag™ 1µm!
(See Page 1 for details.)

"In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs." – Francis Darwin

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B E A D S • A B O V E T H E R E S T ™