Painless Particles®

Global Newsletter
Volume 22, #1, January 2009

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

BEADS ABOVE THE REST™

In This Issue

It's Freezing Season!

It's winter in North America, and with the cold weather upon us, we are taking precautions to ensure that your orders do not freeze while in transit to you. This includes not shipping on Fridays – to avoid freezing conditions over the weekend. (So, please "bear" this is mind when placing an order - especially if you need it by a certain time.)

Bargain Beads!

Are you starting a new research project or simply looking for a bead, but not sure which one is right? Start with our *Bargain Beads*. You always look at the sale rack first when you shop in a store, don't you? It's the same thing in our *Bargain Beads* section.

This section features regular Bangs beads available at special prices for end-of-run, "close-outs," or left-over lots **(www.bangslabs.com)**. And, if you don't see what you're looking for, simply call our Customer Service Department at 800.387.0672.

Bangs Bead Solutions

As part of our perpetual endeavor to make our customers' lives easier, we thought that one solution would be to offer you our solution. Literally. The Bangs Bead Solution.

And what, pray tell, is the Bangs Bead Solution? It's a ready-to-use aqueous suspending solution for dilution or storage of uncoated plain, dyed, or functionalized polymer microspheres. The antimicrobial agent deters microbial contamination, and stabilizers promote suspension dispersity, peace of mind, and harmonious accord in the laboratory. (We know of what we speak on this one.)

And coming soon (again, perpetual endeavor) will be coupling and storage buffers for protein-coated beads. So really, we're talking about a whole suite of solutions. And buffers. Though we'll probably just stick with the whole "Bangs Bead Solutions" thing because it's so catchy.

But enough waxing philosophic – we invite you to give Bangs Bead Solution a try, and find out just how good life can be.

Catalog Code	Product Description	Quantity
SOLN1	Bangs Bead Solution	500mL, 1000mL, or 2000mL

Happy New (Product) Year!

Introducing the Flash Red Intensity Standard

It's a new year, and we've decided to celebrate in grand fashion! Not with yet another ostentatious party or list of resolutions we don't intend to keep, but with something far better. Better and more tangible. Perhaps something flashy and red, even. Perhaps something exactly like (you can see where this is heading...) a Flash Red Intensity Standard kit!

As a happy coincidence, we are delighted to introduce a new Intensity Standard incorporating our Flash Red fluorophore! Akin to our ever-popular Dragon Green Intensity Standard, this kit consists of five populations of ~8µm polystyrene microspheres dyed with increasing amounts of Flash Red.

The different intensity populations may serve as relative intensity standards for fluorescence-based applications in microscopy or flow cytometry, and as internally-dyed beads, they will stand up to the rigors of imaging. As Flash Red is spectrally similar to Cy™5, traditional red fluorophore filter sets (e.g. Cy5/microscope; PE-Cy5 or APC/cytometer) may be used with the standard.

Catalog Code	Product Description	Quantity
FR06M	Flash Red Intensity Standard	1 kit
DG06M	Dragon Green Intensity Standard	1 kit

(PolyLink) Conjunction Junction

Our Tribute

As we confessed in the last issue of our newsletter, our 20th anniversary has stirred up all sorts of nostalgia within us. So much so that we've again found ourselves transported to an earlier time– an idyllic time of cereal box prizes, Saturday morning cartoons, and, being scientists-in-the-making, academic leanings fostered by (yes, you've guessed it) – *Schoolhouse Rock!*

However, because we're still operating under the mandate of "product feature," and must work in a hundred words or so on one of them (we chose PolyLink), we thought we'd do so with style. Or, at the very least, a bit of fun and frivolity. And so we present to you our tribute to the classic *Schoolhouse Rock!* song, (PolyLink) *Conjunction Junction**.

PolyLink kit, what's your function?
Hooking up beads and proteins and makin' them function.
PolyLink kit, how's that function?
EDAC and MES buffer get most of my job done.
PolyLink kit, why does that function?
Activated groups join in the big re-ac-tion.

PolyLink kit, what's your function?
Immobilizin' proteins without compunction.
PolyLink kit, how's that function?
My data sheet forestalls protocol dysfunction.
PolyLink kit, why does that function?
Helping to deter coupling malfunction.

PolyLink kit, we love your function!
Making a reagent that works like dyn-o-mite.
Amines, carboxyls joined forever – Yeah, that's right.
PolyLink kit, you're truly out of sight!

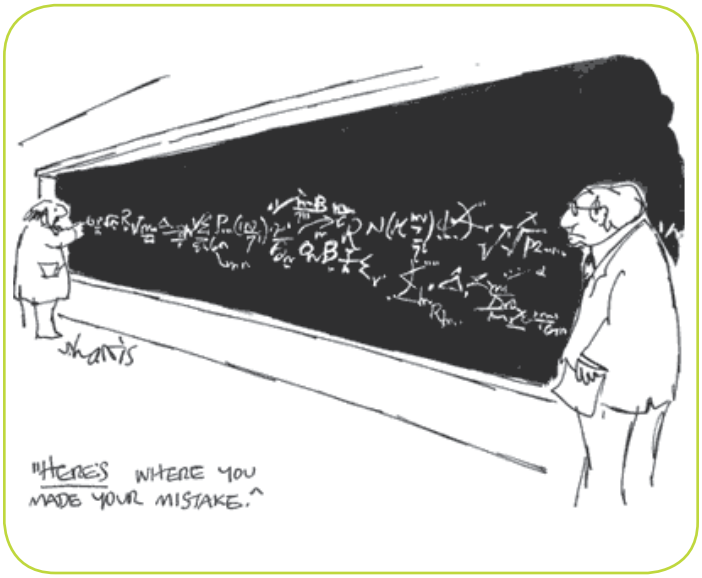
Oohh yeahh....

* With apologies to *Schoolhouse Rock!* Though we're pretty sure that we would have been a shoe-in for the *Science Rock* division. (www.schoolhouserock.tv)

We invite you to find out why we're so enthused about PolyLink Protein Coupling kits for the covalent immobilization of proteins to carboxylated microspheres. And because we may have been a little sketchy on the details, you can review an actual protocol in Product Data Sheet #644.

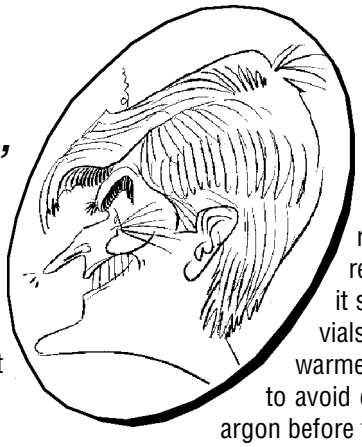
Catalog Code	**Product Description**
PL01N	PolyLink Protein Coupling Kit

Figure 1: *PolyLink Protein Coupling Kit.*



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

Ask *"The Particle Doctor®"*



Q: I'm having trouble seeing my fluorescent beads after mounting them on a slide. Any ideas as to why this is, or what I can do to prevent it?

A: So, it's lights out, eh? (Sorry, that wasn't punny at all...)

Getting down to business.... Many fixatives, mounting media, and adhesives have components that act as solvents. Organic solvents will swell the polymer matrix, and allow release of fluorophore. A water-soluble mounting medium (e.g. **Polysciences' Mowiol® 4-88 [Catalog #17951]**, **Aqua-Poly/Mount [Catalog #18606]**) should resolve the problem. In fact, aqueous mounting media are used with fluorescent microspheres in the production of **Polysciences' Confocal Microscopy, Multifluorescent Adjustment and Calibration Kit (Catalog #24016)**.

Other alternatives include using surface-labeled beads (as in our flow cytometry line, though these won't be as bright as internally dyed beads, i.e. fluorescence intensities are nearer to those for stained biologic samples) or beads synthesized using fluorescent monomer (see our sister company's **[Polysciences'] Fluoresbrite® PolyFluor® Microspheres**). Please note, however, that the polymer base bead will be susceptible to the effects of solvent, so there may be diminished signal.

Q: I just purchased carboxylated beads, which I have been coating with antibody. Though I have little experience with this, I have had continued problems with reproducibility, sometimes achieving good results, and other times experiencing very low coupling. What can I do to improve my results?

A: Well, first you must stand on one foot... (Sigh. The jokes just don't seem to get any better, do they...?)

As a general recommendation, you should rigorously standardize all aspects of the coupling process – both the written protocol and its execution. Though this seems obvious, it's important to take a critical look at your process (including washes, reagent addition, incubation and mixing steps, etc.) and raw materials (reagents, base beads, buffers, etc.). Seemingly small deviations or inconsistencies can show themselves through variability in your results.

If you're confident that reagents and protocols have been consistent, I would suggest examining the EDAC (activator), which should have the appearance of a free-flowing white powder. EDAC is extremely hygroscopic, and will absorb water with disastrous results. Persistent clumps are evidence that the reagent has been contaminated with moisture, and it should be discarded and fresh EDAC obtained. New vials of EDAC should be stored desiccated at -20˚C, and warmed to room temperature in a desiccator before opening to avoid condensation. The headspace may be flooded with argon before the vial is re-sealed and stored.

If you haven't settled on a specific protocol, you could use our **PolyLink Protein Coupling Kit (Catalog #PL01N)** as a (new) starting point from which to optimize. Our PolyLink coupling kit features standard EDAC-mediated coupling chemistry, and includes a good general protocol (see Product Data Sheet #644).

Q: I'll be coating your 5.5µm Protein A-coated beads with IgG, but would prefer to forego the crosslinking step with DMP. Do you think that the IgG coating will be stable without the crosslinking? Can I count on the coating stability to be like that of covalently bound protein?

A: The affinity of protein A for IgG varies by antibody host species and subclass (see a chart in TechNote 101, *ProActive® Microspheres*). This means that, without crosslinking, the beads should be used in an environment that is otherwise antibody-free. As an affinity interaction, it may be susceptible to competitive binding (dissociation of the intended antibody through competition with Abs in the sample). You will also want to consider the inherent stability requirements of the application in addition to the desired shelf-life. For example, for quantitative assays, extended stability, or if target is to be eluted, I would suggest crosslinking. If the beads simply need to capture target for a qualitative application, and will be used to fulfill a short-term objective (i.e. a lengthy shelf life isn't required), then crosslinking may not be so important.

Mail Bonding

(Subscribers "do the 'write' thing"!)

- *We have always been pleased with the products and service that Bangs provides. It's refreshing to know that every time I call Bangs Labs that the first person I talk to has the answers I'm looking for. You are going above and beyond the call of duty. Thank you. M.A., MD*

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"An expert is a man who has made all the mistakes which can be made in a very narrow field." – Niels Bohr

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