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## **Protein Purification Moves from the Lab Bench to the Bank**

Rockville, MD—A successful partnership between Potomac Affinity Proteins LLC and Bio-Rad® Laboratories has produced an innovative new product for protein purification. Marketed as [“Profinity™ eXact”](#) by Bio-Rad, the new product makes it possible to rapidly purify virtually any type of manufactured protein in its native form.

Potomac Affinity Proteins (PAP), A UMBI spin-off company, is the brainchild of Dr. Philip Bryan, professor at UMBI’s Center for Advanced Research in Biotechnology (CARB), and Profinity eXact is its first commercial product. “Years of research to learn how to control the target and timing of protease action have paid off in our first commercial product,” said Dr. Bryan.

UMBI’s CARB center is a world-class facility for characterization of the structure and function of molecules such as proteins. The formation of PAP is an example of a successful “mom and pop” business that grew out of basic biotechnology research. The company is now headed by President Bonnie Bryan, Dr. Bryan’s wife.

The most effective traditional methods for protein purification are based on affinity—which requires the manufacturer to build in a tag that is used to separate the protein as a clean product. The tag binds specifically to a solid support, which allows the purified protein to be washed free of impurities. But this tag modifies

the protein, and must be removed after purification. The effectiveness of the tagging operation, and the effectiveness of removal, vary from protein to protein, and reduce the quality of the protein and the amount obtained after the cleaning process. Sometimes, remnants of the tag are left behind; so many manufactured proteins cannot be isolated in their native form.



**Bio-Rad and Potomac Affinity Proteins celebrated the product launch at the Paloma Vineyard in California. From left to right are Dennis Yee, Bio-Rad product Team Leader, Philip Bryan, Technical consultant, Potomac Affinity Proteins and UMBI (CARB) faculty, Marie Nguyen, Biorad, Bonnie Bryan, President, Potomac Affinity Proteins, and Tanis Correa, William Strong, Shane Peterson and Lei Li of Bio-Rad. Not pictured are Biao Ruan and Natasha Oganesyanyan of Potomac Affinity Proteins.**

[“Profinity™ eXact”](#) allows efficient recovery of clean protein in its original, native form, and tag removal is built into the system. The method is based on a genetically modified enzyme which is unusually stable, and is often used as a cleaning agent in laundry detergents. For years, Dr. Bryan has studied the structure and function of these enzymes—called subtilisins-- and has created a

special modified version that functions both to bind a tag and as a tag-remover for protein purification. The result is that just about any manufactured protein can be quickly and cleanly recovered in native form, free of the tag used for purification. The modified subtilisin can be recycled and used again for additional protein manufacture and purification.

Profinity™ eXact has immediate applications in protein purification for scientific research and for various diagnostic applications. In the future, related products will have important applications for production of clean, native proteins for pharmaceuticals.

With research centers in Baltimore, Rockville, and College Park, UMBI, the University of Maryland Biotechnology Institute, is the newest of 13 institutions forming the University System of Maryland. UMBI has more than 60 ladder-ranked faculty and a mandate to advance the biotechnology economy while preparing a well-equipped workforce. Celebrating more than 20 years of service to Maryland and the world, UMBI is led by microbiologist and former biotechnology executive Dr. Jennie C. Hunter-Cevera. For more information visit [www.umbi.umd.edu](http://www.umbi.umd.edu).

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