



PERSONAL PURIFICATION SYSTEM

The new **Personal Purification System™** from PhyNexus is a unique bench top system comprising the MEA Purification System and PhyTip™ columns that allows researchers to rapidly perform high performance micro-scale purifications of their recombinant proteins and antibodies at the touch of a button. The simple operation and programming of the system combined with the power of the PhyTip columns makes the Personal Purification System ideal for:

- * Purification of recombinant proteins and antibodies ready for functional analysis
- * Optimizing expression conditions within process development
- * Optimizing purification conditions prior to scale-up



Figure 1. The Personal Purification System, a 12 channel, bench top system with optional cooling for high performance purification and enrichment of recombinant proteins and antibodies.

The high performance purifications obtained by PhyTip columns can now be automated with a small bench top system that utilizes the industry standard 96-well plate format with reproducible plate-to-plate recovery of high-purity samples.

This bench top system, the MEA Purification System, utilizes a 12 channel pipetting device which is available either as a 200 μL system (with 200+ PhyTip columns that contain 5 μL resin beds) or 1000 μL system (with 1000+ PhyTip columns that contain 10 μL resin beds). Either system can be swapped out rapidly – in less than 5 minutes, to make the system completely flexible for a variety of applications.

The precision engineered moving head automates the sequential process of reproducibly capturing, purifying and then enriching samples. When used with the unique PhyTip™ Cover, elution plates retain the integrity of the final elution at volumes as low as 10 μL , guaranteeing high concentrations of ultra-high purity samples.

And with the dedicated cooling system option, the Personal Purification System can be utilized on any standard lab bench, without the need to occupy limited cold room space.

Results:

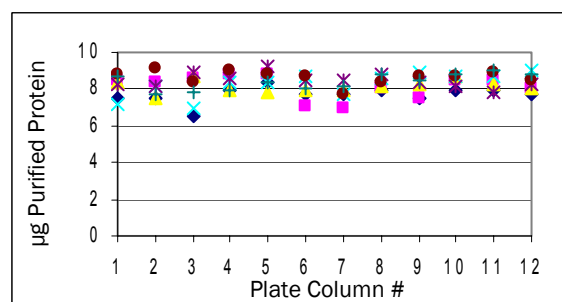
Reproducibility data from Tip-to-Tip and Row-to-Row shows that the Personal Purification System and associated PhyTip columns provide not only the highest performance in terms of purity, but are also unmatched in their ability to reproducibly provide the same mass/concentration for a full 96-well plate of samples.

E. coli lysate purification: From a preparation of His-tagged Ubiquitin in *E. coli* lysate, 200 μL was aliquoted into each well of a 96-well plate. Using the 200+ PhyTip columns with IMAC affinity resin, a standard purification protocol was applied to the Personal Purification System. This involved a single Capture step of two cyclings, two separate Wash steps and a final Elution step into 20 μL of Elution Buffer. Total time to run all 96 samples was less than 2 hours. Quantitative analysis of the purified protein was carried out using HPLC. See *Figure 2*.

Overall purity obtained = >98%

Total Mass of protein obtained: Average per well = 8.2 μg . RSD = 3.7%

Figure 2. Full plate, quantitative assay, using Personal Purification System. Note the high performance results obtained using the PhyTip columns, demonstrating the Tip-to-Tip and Row-to-Row reproducibility of the Personal Purification System. The Y axis represents μg 's of purified protein and the X axis is the column number in the 96-well plate.





PERSONAL PURIFICATION SYSTEM (CONT'D)

High-speed automated optimization of separation conditions:

With the simple flexibility of the Personal Purification System, optimization of protocols can easily be run to determine the optimum conditions for separations, as well as giving information and guidance that is useful for scale-up experiments, thus saving time and money. Figure 3 to the right demonstrates a single optimization experiment comparing 2 cycle and 4 cycle Capture Step and Elution Buffer effectiveness at 150 mM Imidazole and 250 mM Imidazole. Results clearly show that higher yield (> 9 µg purified protein) is obtained with 4 cycle capture step and 250 mM Imidazole Elution Buffer. Quantitative analysis of the purified products indicates that the high performance PhyTip columns along with the precision movement of the MEA Purification System provide for highly reproducible results that can be guaranteed from sample to sample.

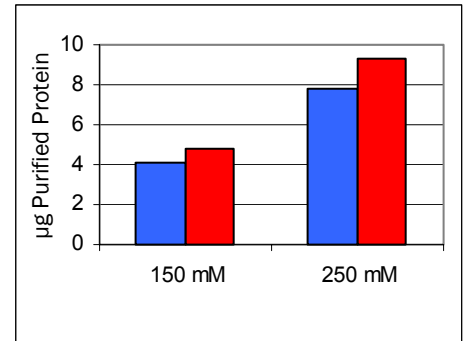


Figure 3. Optimization of Capture steps and Elution conditions using Personal Purification System. Blue = 2 Capture cycles and Red = 4 Capture Cycles. Y axis = µg purified protein.

High Performance PhyTip columns

PhyTip columns are the most efficient and cost effective way to purify recombinant proteins and antibodies using standard affinity resins. Their unique design allows for maximizing the capture efficiency, and hence total yield, by repeatedly passing the sample solution over the resin bed at a precise flow rate. And with high efficiency wash conditions where the 5 µL (or 10 µL) resin bed is washed several times with 200 µL (or 1000 µL) of Wash Buffer, purity is unmatched. Finally, the elution process can be performed with as little as 10 µL of Elution Buffer, providing the highest enrichment and concentration of functionally active protein possible at these scales. The 5 µL column has an effective capacity of 50 µg, while the 10 µL column has an effective capacity of 100 µg; standard affinity chemistries include Ni-IMAC, Protein A, Protein G, and Glutathione (other column volumes and chemistries available as custom requests). Combining the high performance of PhyTip columns with the reproducibility and precision of the PhyNexus MEA Purification makes the Personal Purification System the ideal choice for any laboratory.

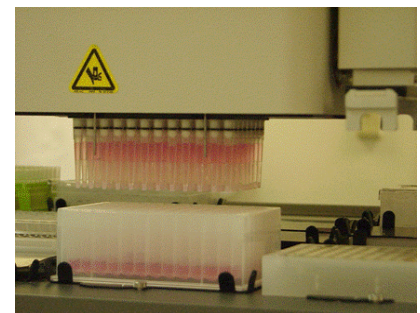


The Personal Purification System: simple automation for high performance purification.

Complementing 96-well Robotics Platforms

For researchers with access to major robotics platforms, the Personal Purification System complements the larger dedicated systems by offering:

- Rapid optimization of conditions which are easily transferable to the 96-well robotic platform, without using precious robot time
- Easily accessible alternative when 96-well robotic platform is unavailable
- Cost effective automated operation when fewer than 96 samples need to be run



MEA System (US Power Supply)	Part Number PHR 96-000-00	\$ 24,950.00
200+ 12 Channel Pipettor with Clamping Device	Part Number PHR 12-020-00	\$ 1,795.00
1000+ 12 Channel Pipettor with Clamping Device	Part Number PHR 12-100-00	\$ 1,995.00
MEA Cooling System	Part Number PHR 00-000-96	\$ 1,995.00

FOB San Jose, CA