Maximize antibody recovery with PrismA PhyTip® columns

• Gabrielle Kerkow, Application Scientist

High capacity and broad range antibody purification

Biotage PrismA PhyTip® columns leverage a unique combination of patented dual flow chromatography technology and Cytiva's MabSelect PrismA™ resin. This powerful pairing enables **high throughput, small volume, automated purification** while benefiting from superior binding capacity of the PrismA resin. The key benefits of this approach are:

- **High performance:** Efficient and effective purification.
- **Minimum dilution:** Concentrated final product.
- **High throughput:** Process more samples in less time.
- **Small volume samples:** Ideal for limited sample sizes.
- **Scalable:** Easily adaptable for different volumes and needs.
- **Reproducible:** Consistent and reliable results.

PrismA PhyTip® Columns: Enhanced binding capacity with increased residence time

When purifying human IgG spiked in a 5x capture buffer, all three PhyTip® columns - ProA, ProPlus, and PrismA – achieved similar recovery levels. However, PrismA PhyTip® columns demonstrated a clear performance advantage, delivering a **30% higher yield** than ProPlus when the flow rate was reduced to 4 µL/sec (Figure 1).

Flow rate	#Cycles	PTC	Avg protein (mg/mL)	Avg yield (µg)	% Recovery
8	8	ProA	0.39	58.5	59%
8	8	ProPlus	0.47	70.36	68%
8	8	PrismA	0.44	65.85	64%
4	8	PrismA	0.92	110.57	98%

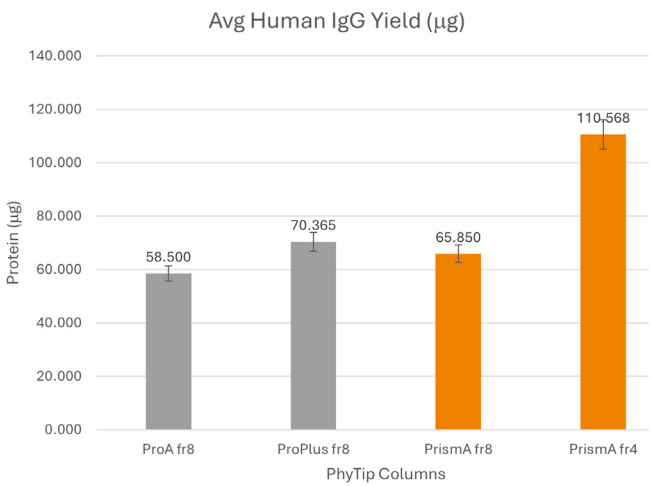

Figure 1. Comparison of percent recovery of PhyTip® Columns. Reconstituted Human-IgG in 5x Capture Buffer at 0.2mg/mL starting concentration and 500 µL starting volume. Significant increase in yield is observed in PrismA PhyTip® Column when flow rate is reduced.

High-capacity serum antibody purification

Under identical purification conditions (an 8-cycle capture at a flow rate of 4 µL/sec), the ProPlus PhyTip® columns yielded 29% more antibodies from serum than the ProA columns. Impressively, the newer PrismA PhyTip® columns demonstrated even higher capacity, delivering a **68% increase over ProA** and an additional **30% gain compared to ProPlus** (Figure 2).

PhyTip® column	Avg conc (mg/mL)	Avg yield (µg)	Capacity % increase from ProA	Capacity % increase from ProPlus
ProA	3.09	463.88	-	-
ProPlus	3.99	598.28	29%	-
PrismA	5.19	778.85	68%	30%

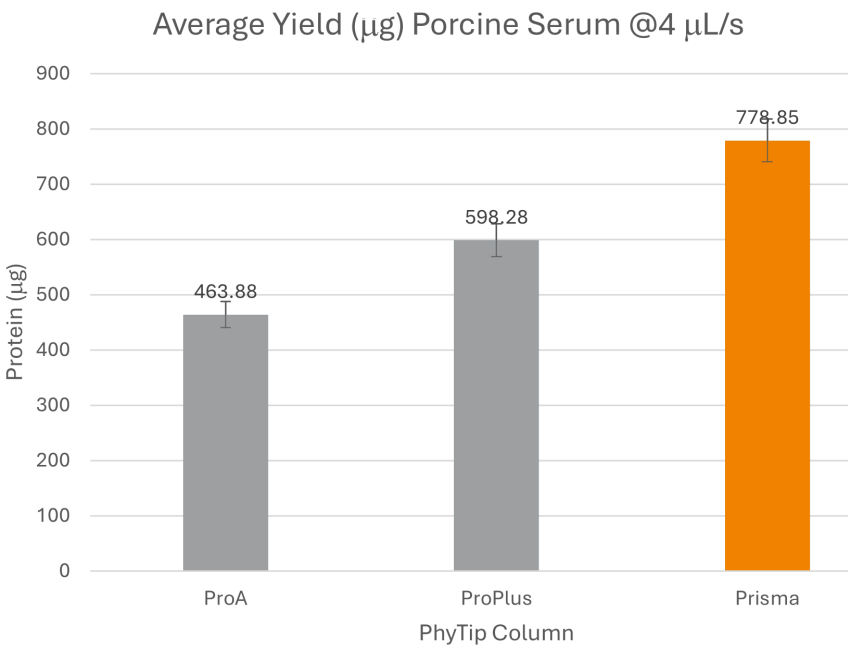

Figure 2. Purification of antibodies from Porcine Serum using PhyTip® Columns. Serum was diluted 1:2 with 1x Capture Buffer. Starting volume was 1000 µL. Samples were all processed with the same capture cycles, flow rate, and other conditions.

Further testing revealed that reducing the flow rate from 8 µL/sec to 4 µL/sec resulted in 20% higher yield with PrismA PhyTip® columns (Figure 3). Notably, the same flowrate adjustment did not improve yields for ProPlus PhyTip® columns, underscoring PrismA's superior binding efficiency and responsiveness to residence time.

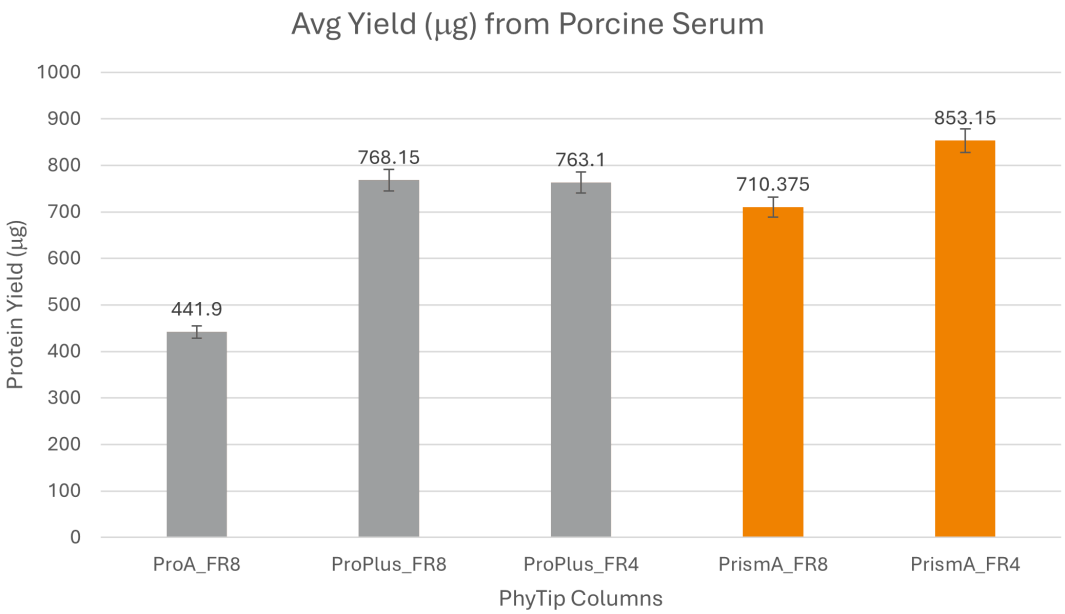

Figure 3. Effects of Flow Rate on PhyTip® Columns. A significant increase in yield when reducing flow rate is observed in PrismA PhyTip® Column from 8 µL/s to 4 µL/s. This is not observed in ProPlus PhyTip® Columns. Samples here were 1:2 Porcine Serum diluted with 1x Capture Buffer. Starting volume 500 µL.

Conclusion:

Choosing between ProPlus and PrismA: Speed vs. maximum capacity

If time is a limiting factor and a higher capacity than ProA is needed, ProPlus PhyTip® columns offer a strong performance advantage without requiring slower flow rates.

For users seeking maximum antibody recovery and binding capacity, PrismA PhyTip® columns are the optimal choice. However, to unlock their full potential, a reduced flow rate during the capture step is essential. Notably, increasing the number of capture cycles did not significantly improve binding efficiency with PrismA resin, highlighting that flow rate - not cycle count - is the key driver of performance.

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