

# ToyoScreen® RoboColumns®

## INTRODUCTION

ToyoScreen RoboColumns are miniaturized chromatographic columns pre-packed with TOYOPEARL ion exchange, mixed-mode, hydrophobic interaction or affinity media. These columns are available in different volumes and can be operated with a robotic liquid handling system, such as the Freedom EVO® from TECAN. This approach allows automated high-throughput, small-scale biochromatographic separations of protein samples by running up to eight individual columns simultaneously. Liquid flow in the columns is driven by positive pressure liquid displacement, rather than by air pressure, thus mimicking the situation in columns individually connected to a conventional stand-alone chromatography system. ToyoScreen RoboColumns are packed with TOYOPEARL media by Atoll GmbH, they are identical to the RoboColumns supplied by Atoll GmbH. A 96-well array plate is available to arrange the up to 96 RoboColumn units.

## HIGHLIGHTS

- Miniaturized column format
- High throughput parallel chromatography
- Automated screening of resins and parameters
- Better understanding of the design space

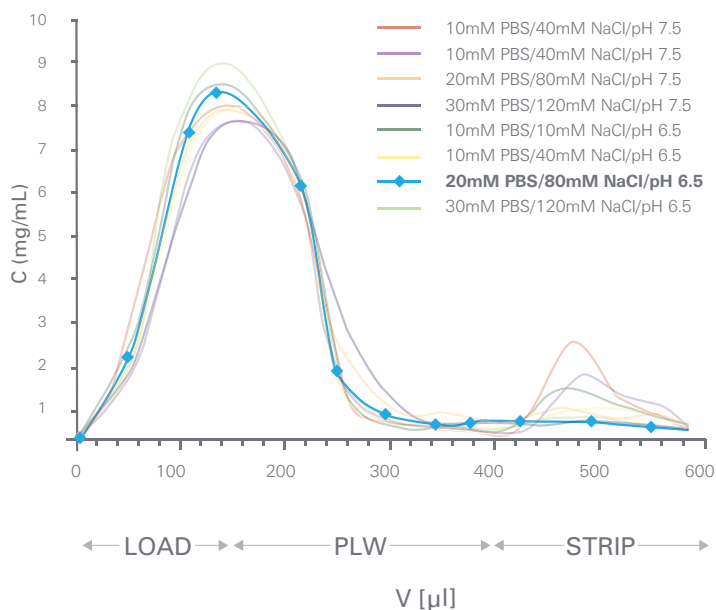
## APPLICATIONS

ToyoScreen RoboColumns can be used in a wide range of applications, including parallel resin screening, screening and optimization of separation conditions, scale-down experiments as well as high throughput sample preparation.

## SCREENING

Parallel screening of chromatographic media as well as screening of conditions for binding, washing, and elution e.g. buffer pH, ionic strength, type of salt. When screening chromatographic conditions in order to optimize the separation and explore the design space the experimental set-up should simultaneously test many different conditions. Design of Experiments (DoE), a statistical approach used to define those factors having the greatest impact on the process, is a suitable tool to minimize the number of experiments needed.

## OPTIMIZATION OF ANION EXCHANGE CONDITIONS



➤ **Figure 1**

Elution profile of a protein A capture eluate on RoboColumns packed with TOYOPEARL SuperQ-650M at various conditions. Data kindly provided by T. Schröder, Atoll GmbH.

Figure 1 shows a screening experiment to optimize the chromatographic parameters for the intermediate flow-through anion exchange step in a purification platform for monoclonals. Protein binding of a Protein A capture eluate on RoboColumns packed with TOYOPEARL SuperQ-650M was analyzed by varying salt concentration and pH of loading and washing buffer. Best results were achieved using 20 mmol/L sodium phosphate, 80 mmol/L sodium chloride, pH 6.5.

## SEPARATION

ToyoScreen RoboColumns can be applied to perform small scale purifications/separations either isocratic or by applying a step gradient. Examples are small scale mAb purification using Protein A affinity for in-process monitoring of fermentation or sample preparation prior to subsequent analysis by MS, ELISA or CGE/SDS-Page.

## FORMATS

ToyoScreen RoboColumns are available in two formats with 200 µL (bed height of 10 mm) and 600 µL (bed height of 30 mm) resin volume, respectively. They are supplied in a row of eight units pre-packed with the same TOYOPEARL resin and sealed with two removable silicon cover seals for proper storage.

They can be individually arranged on a 96 position array plate. All chromatographic media used in the ToyoScreen RoboColumns are also available in larger pre-packed ToyoScreen columns of 1 mL or 5 mL volume and as bulk resins for use at all scales.

## Ordering information

### ToyoScreen® RoboColumn®

Part-No	Description	Volume (µL)	Particle Size (µm)	Pore Size (Å)
45001	GigaCap S-650M	200 x 8	75	1,000
45002	GigaCap S-650M	600 x 8	75	1,000
45003	GigaCap Q-650M	200 x 8	75	1,000
45004	GigaCap Q-650M	600 x 8	75	1,000
45005	GigaCap CM-650M	200 x 8	75	1,000
45006	GigaCap CM-650M	600 x 8	75	1,000
45011	Q-600C AR	200 x 8	65	750
45012	Q-600C AR	600 x 8	65	750
45031	Phenyl-600M	200 x 8	65	750
45032	Phenyl-600M	600 x 8	65	750
45033	Butyl-600M	200 x 8	65	750
45034	Butyl-600M	600 x 8	65	750
45035	PPG-600M	200 x 8	65	750
45036	PPG-600M	600 x 8	65	750
45037	Phenyl-650M	200 x 8	65	1,000
45038	Phenyl-650M	600 x 8	65	1,000
45051	MX-Trp-650M	200 x 8	75	1,000
45052	MX-Trp-650M	600 x 8	75	1,000
45061	AF-rProtein A-650F	200 x 8	45	1,000
45062	AF-rProtein A-650F	600 x 8	45	1,000
45099	Array Plate			

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