Enabling CIMmultus DEAE columns at scale for Plasmid DNA Capture

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Increasing demand of highly purified plasmid DNA (pDNA) at gram scale asks to have controllable, robust and scalable workflow to capture pDNA from cell lysates. With the aim to develop a process that meets those criteria, we did screening experiments and tested various resins, columns, and membranes suitable for pDNA capture and found that CIMmultus DEAE monolith columns offers most promising results in terms of high binding capacity for pDNA, high working flow rates and easy to scale up properties. This presentation will explain:

- scientific challenges that were experienced throughout the development process and solutions that were applied to solve or maintain those challenges across the batches
- resin and membrane screen study data and why CIMmultus DEAE monolith column was chosen for further development
- work that has been done to enable monolith columns to work across different size pDNA constructs (4 and 12kB) and deliver high purification yields while maintaining high pDNA purity
- column scale up results where purification scale was increased from 1mL to 800mL
- how introduction of the monolith columns improved pDNA manufacturing process
- outstanding gaps and future work around pDNA capture step robustness and capability to handle pDNA with elevated level of impurities