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### **Abstract**

#### **High throughput process development on Tecan Freedom EVO® Robotic Workstations**

The demand for biopharmaceutical products is increasing rapidly; however, development timelines of about 12 years leave little time for return on investment before a patent expires. Fast process development is therefore crucial to speed up the market entrance of new biopharmaceuticals. Until recently, process development was restricted to a sequential experience based regime. However, new innovative methods have been developed to perform e.g. up to 96 parallel chromatographic experiments on a Tecan Freedom EVO® robotic workstation, allowing for thermodynamic, kinetic, dynamic binding, and elution studies in an automated, parallelized, and miniaturized mode, which saves time, money, and target molecule.

Here we present an overview of the most important tools and unit operations in the field of biopharmaceutical protein purification which can be evaluated on Tecan Freedom EVO® robotic workstations. Next to experimental tools for solubility studies and aqueous extractions we will present the complete range of tools for chromatographic process development. In addition the necessity of intelligent screening approaches using mathematical search algorithms and adequate analytics will be discussed. In the context of the above case studies with model proteins but also industrial feedstocks such as plasmid DNA, Insulin or mAb will be presented.

### **Biography**

- 10/90 – 01/97 M.Sc. / Diplom Ingenieur in Chemical Engineering, Faculty of Chemical Engineering University of Karlsruhe (TH), Karlsruhe, Germany
- 10/93 – 10/95 Master of Philosophy (M.Phil.), Heriot-Watt University, Edinburg, Scotland
- 03/97 – 11/00 Doctor of Philosophy (Ph.D.), BioCentrum, Center for Process Biotechnology, Prof. O.R.T. Thomas Technical University of Denmark, Lyngby, Denmark
- 01/01 – 12/02 Group leader - Downstream Processing, Institute of Enzyme Technology, Prof. M.-R. Kula, Heinrich-Heine University Düsseldorf, Düsseldorf, Deutschland
- 01/03 – 01/08 Group leader – Bioseparation, Institute of Biotechnology 2, Prof. C. Wandrey Forschungszentrum Jülich GmbH, Jülich, Deutschland
- 02/08 – Professor, Institute of Process Engineering in Life Sciences Section IV: Biomolecular Separation Engineering, University of Karlsruhe