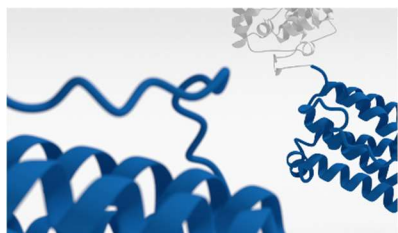


## VALIDOGEN's SERVICES



### Expression Feasibility Studies

- Assessment of expression feasibility
- Selection of most suitable production strategy
- Preparation of product samples for determination of e.g. activity, stability, ...



### Production Strain Development

- Maximization of productivity & quality
- Exploitation of VALIDOGEN's entire protein production toolbox
- Several thousand clones in combinatorial microscale - cultivation & screening



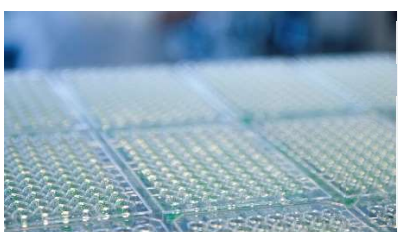
### Bioreactor Cultivation Development

- Scalable, robust, transferable & CMC-ready manufacturing system
- Optimized VALIDOGEN cultivation protocols
- Comprehensive process development / characterization (e.g. DoE)



### Protein Purification Development

- Rapid process setup & systematic purification process development
- Preparation of product samples tailored to individual specifications
- Analytical tools for target protein as well as product & process related impurities



### Enzyme Engineering

- Enzyme engineering performed in final production host
- Advantage of VALIDOGEN's high-throughput microscale screening protocol
- Random and rational engineering strategies



### Cell Banking

- Purity / viability / sequence confirmation
- Copy number determination
- Assessment of integration events and locus