Lonza

## Bachelor-Arbeit HES-SO

# Job Description Summary

BACHELOR THESIS – HES-SO

Today, Lonza is a global leader in life sciences operating across three continents. While we work in science, there's no magic formula to how we do it. Our greatest scientific solution is talented people working together, devising ideas that help businesses to help people. In exchange, we let our people own their careers. Their ideas, big and small, genuinely improve the world. And that's the kind of work we want to be part of.

As a CDMO Lonza uses two microbial expression systems, either *Escherichia coli* or *Pichia pastoris*, to produce therapeutic proteins. Lonza's XS® *Pichia pastoris* (XS® *Pichia*) expression system provides a solution to overcome the challenges of complex protein production. As a eukaryotic host organism, Pichia pastoris is well suited to assemble complex biologics. Pichia lacks endotoxin, and produces soluble secreted protein of interest rather than forming intracellular inclusion bodies. This simplifies recovery and downstream processing, enabling the production of higher quality products at high yield.

The XS® *Pichia* toolbox is continuously improving to keep pace with the development of novel biotherapeutics. Optimizing the *Pichia* host background via coproduction of helper proteins which support the overproduction of a variety of different proteins of interest is part of the strain improvement activities.

This Bachelor project will characterize two optimized *Pichia pastoris* strains. The two strains overproduce several helper factors which were shown to be very beneficial for the overproduction of several categories of biotherapeutics. These studies will help Lonza to verify that the strains are suitable for large scale manufacturing.

The scope of the work will be:

- Transformation of the two *Pichia pastoris* strains with a selection of target protein genes
- Selection of clones overproducing the target proteins
- Growth performance of the novel strains in microtiter scale and shake flasks in comparison to the wild-type strains
- Optional: Characterization of the corresponding chromosomal integrations via NGS sequencing and PCR

Every day, Lonza's products and services have a positive impact on millions of people. For us, this is not only a great privilege, but also a great responsibility. How we achieve our business results is just as important as the achievements themselves. At Lonza, we respect and protect our people and our environment. Any success we achieve is no success at all if not achieved ethically.

People come to Lonza for the challenge and creativity of solving complex problems and developing new ideas in life sciences. In return, we offer the satisfaction that comes with improving lives all around the world. The satisfaction that comes with making a meaningful difference.