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Master Thesis starting October 2020 (or upon agreement) for the length of six months

You will be working with the industrial relevant cell factory *Aspergillus niger*. This filamentous fungus is widely used in biotechnology to produce proteins, enzymes and chemicals. You will work in the field of synthetic biology by creating *A. niger* mutant strains in which a chemiluminescent-based reporter system is genomically integrated. This project is meant to provide the proof-of-concept for our *in silico* prediction on the strength of different promoters. These mutant strains will have both: constitutive and inducible promoters (the tunable gene switch Tet-On). In addition, you will compare the traditional Southern Blot method for gene copy determination to an alternative, quantitative PCR-based approach.

You will learn and apply the following methods:

- Combinatorial assembly of DNA elements using GoldenGate based cloning (MoClo)
- Basic lab techniques for *E. coli* and *A. niger* (colony PCR, protoplasts transformation, genomic DNA extraction, quantitative PCR, Southern Blotting)
- Reporter gene activity measurement in 96-well plates

Are you interested in joining this project?

For further questions and applications, please contact Carsten Pohl (carsten.pohl@tu-berlin.de) and Tabea Schütze (tabea.schuetze@tu-berlin.de) not later than 10.09.2020, give us an overview of your previous laboratory experience and indicate your preferred starting date for the project.

Literature Related to the Project:

- E. Weber, C. Engler, R. Gruetzner, S. Werner, S. Marillonnet (2011) - A Modular Cloning System for Standardized Assembly of Multigene Constructs - <https://doi.org/10.1371/journal.pone.0016765>
- P. Schäpe, M.J. Kwon, B. Baumann, B. Gutschmann, S. Jung, S. Lenz, B. Nitsche, N. Paegle, T. Schütze, T.C. Cairns, V. Meyer - Updating genome annotation for the microbial cell factory *Aspergillus niger* using gene co-expression networks - <https://doi.org/10.1093/nar/gky1183>
- C. Pohl, J.A.K.W. Kiel, A.J.M. Driessen, R.A.L. Bovenberg, Y. Nygård - CRISPR/Cas9 Based Genome Editing of *Penicillium chrysogenum* - <https://doi.org/10.1021/acssynbio.6b00082>